The Impact of White Space on User Experience for Tablet Editions of Magazines

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OUTLINE

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INTRODUCTION

After declining for six years (Wang, 2016), printed magazines are facing the dilemma of a "paperless" era.
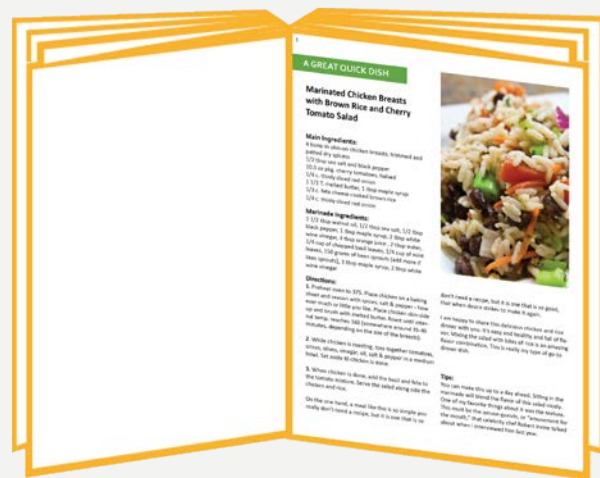
- Tablet ownership will be a major driver of digital magazine revenues (2014)
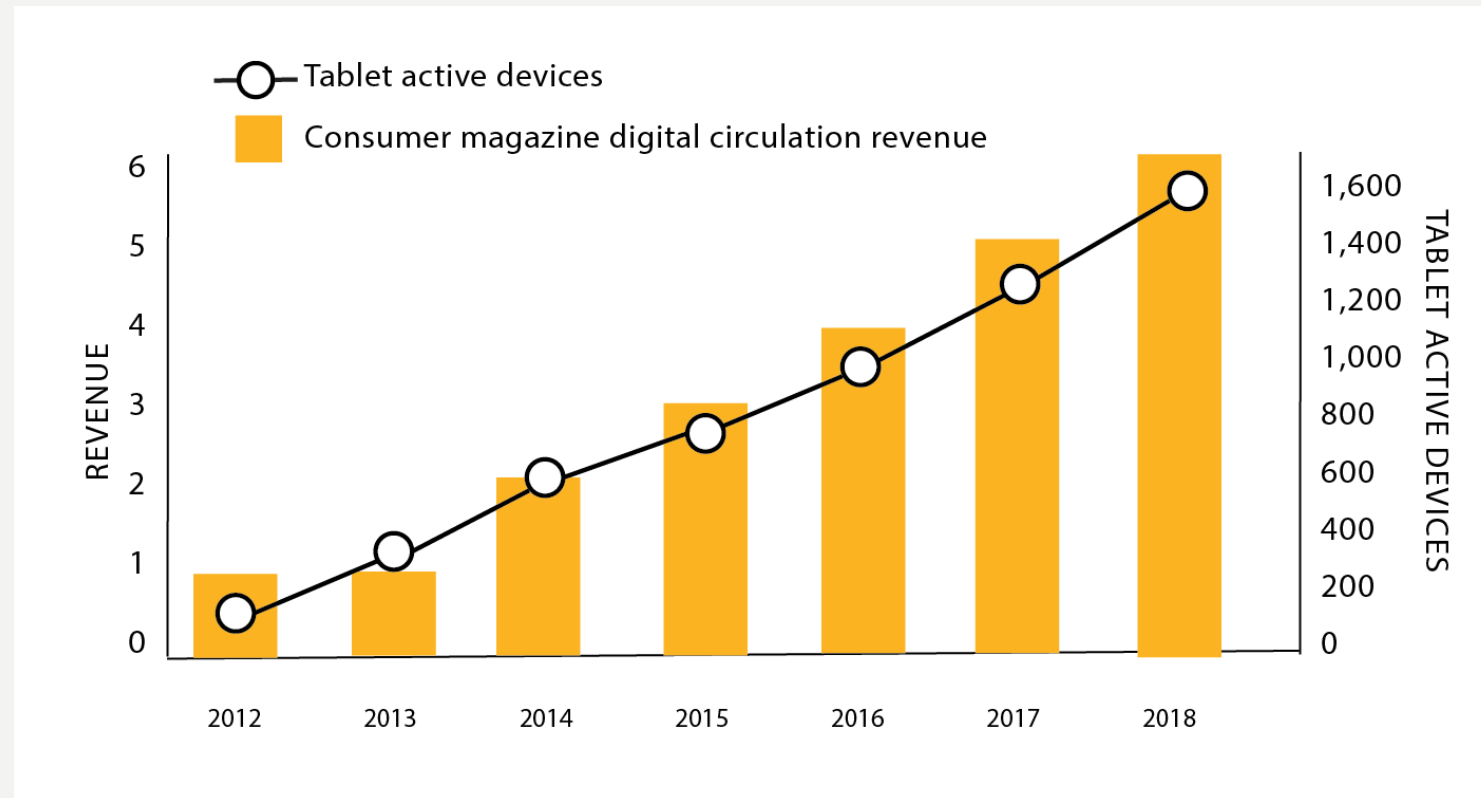
Global entertainment and media outlook, PWC, 2014

TOPIC STATEMENT

- Limited studies have looked into white space of digital magazines and people's preference.

- Food magazine is one of the fastest growing genre for digital magazine publishing.
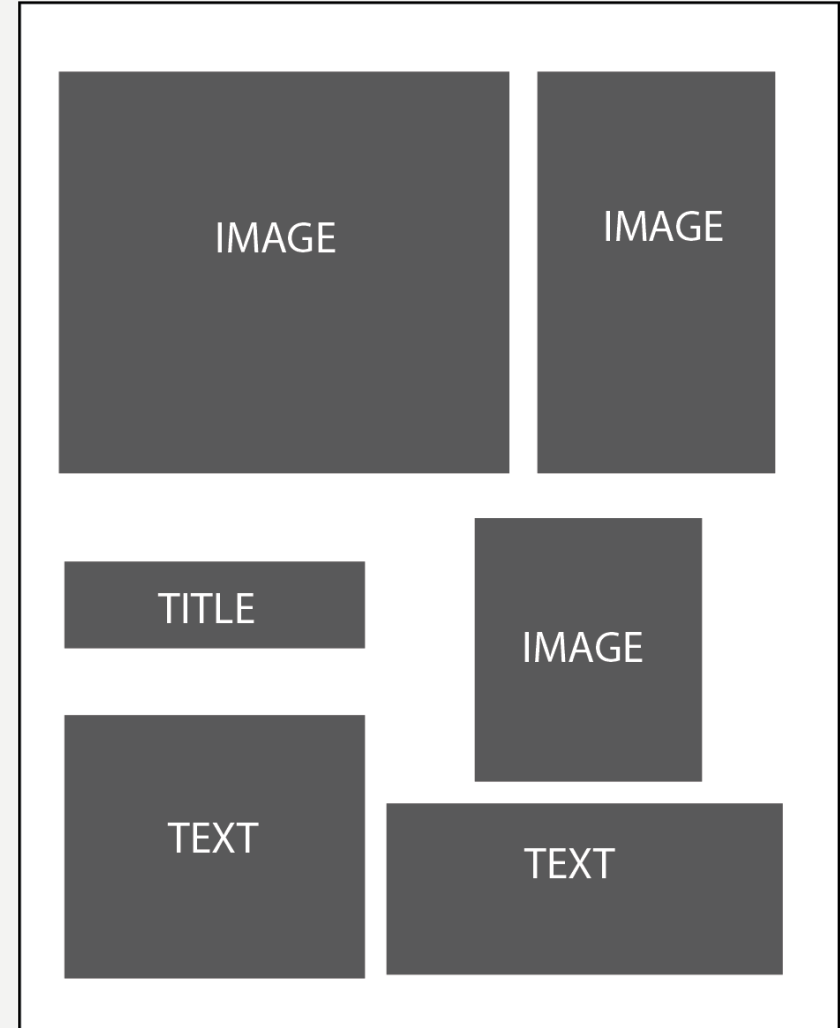
White space

User experience

Digital food magazine

THE GOAL
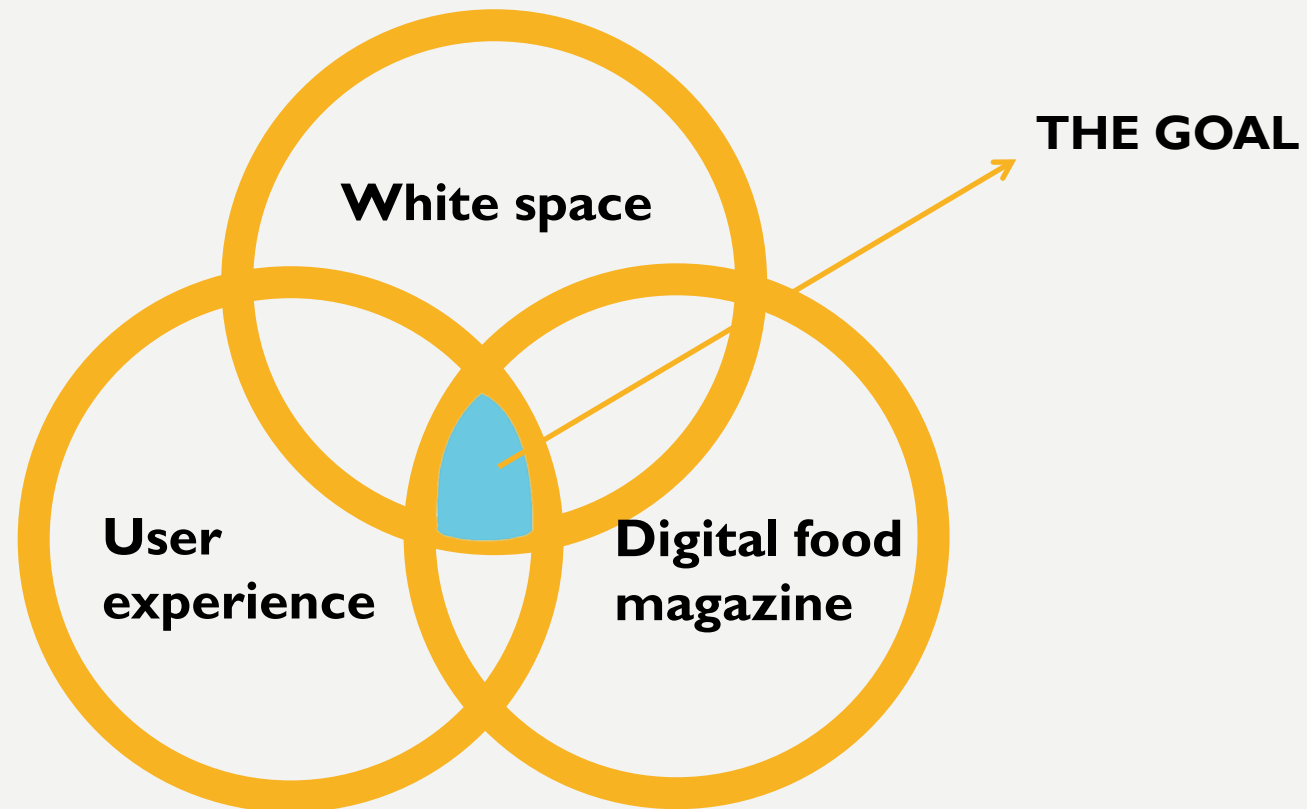
THEORETICAL BASIS

◆ White Space
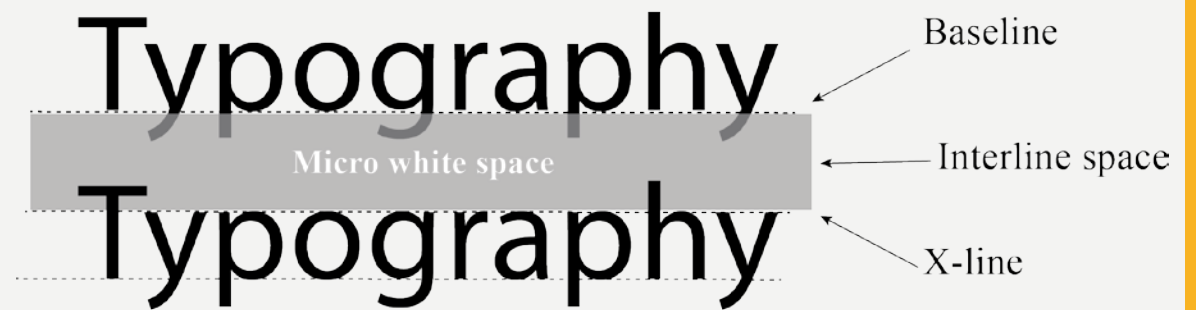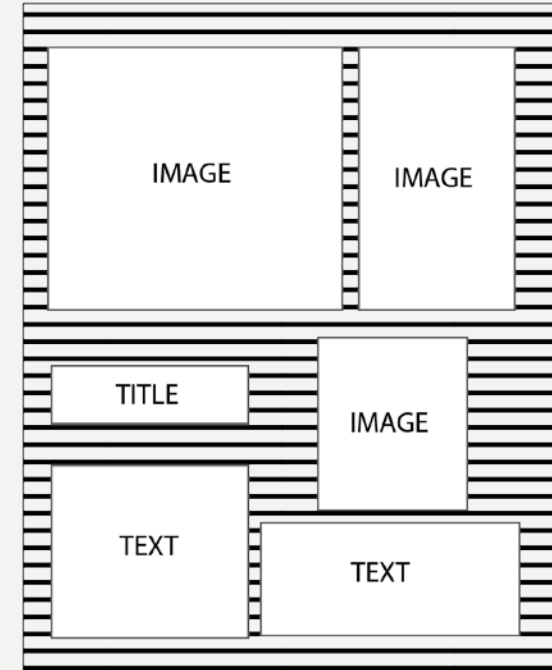
◆ User Experience

WHITE SPACE

To assess the white space for the purpose of this research, the well-known "figure-ground" relationship is adopted.

All the framed content represented by the blackened rectangle figures is considered as the figure, and the space between the rectangle figures is the ground.

MACRO & MICRO

- The white space is separated into macro and micro

- The shadow area is the macro white space. Macro white space is the space between major elements in a composition

- The micro white space is the interline space, which is the space from the baseline to the x-line of the line below
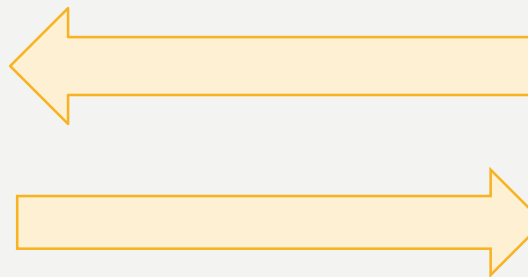
USER EXPERIENCE

- User experience (UX) is defined as "a person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service" (ISO/FDIS 9241-21)

Visual Aesthetics, Readability and Legibility
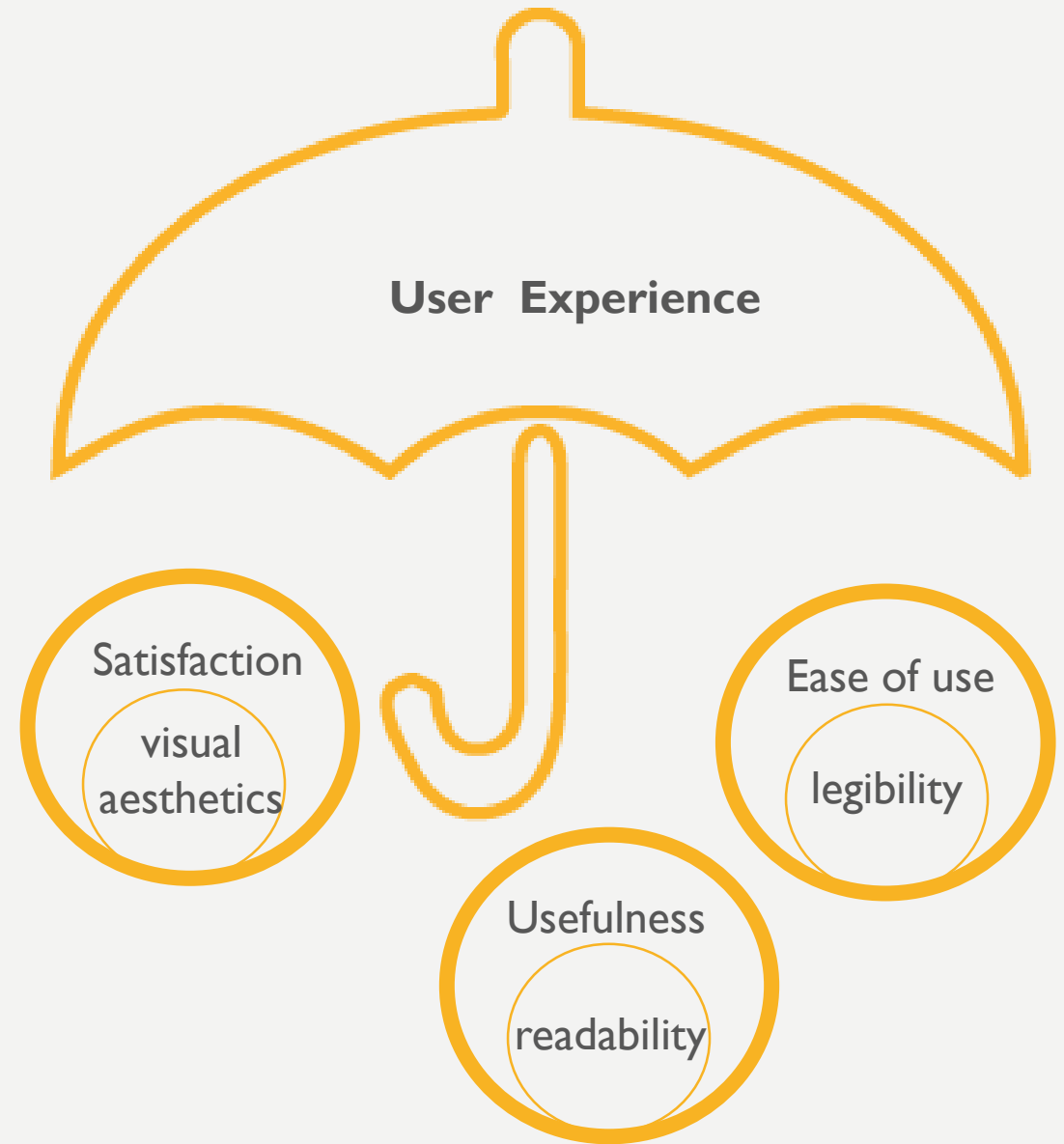
Interaction with digital magazines on the iPad

LITERATURE REVIEW

The influence of white space on:

➢ Perceived aesthetics and usability

➢ Legibility

➢ Perception

Dimensions of user experience:

➢ Satisfaction (visual aesthetics)

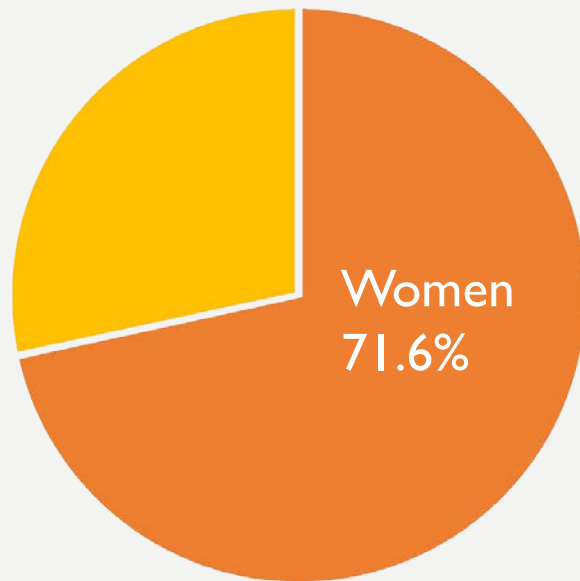➢ Usefulness (readability)

➢ Ease of use (legibility)

User Experience

Satisfaction

visual aesthetics

Ease of use

legibility

Usefulness

readability

RESEARCH GOALS

- The study focused on user's reactions and responses while reading magazines with varying levels of white space.

- Three aspects of user experience: Visual aesthetics, Readability and Legibility

  Visual aesthetics: The degree of how harmonious or beautiful the design appears to a person.

  Readability: the degree to which a body of text is easy for people to read and understand.

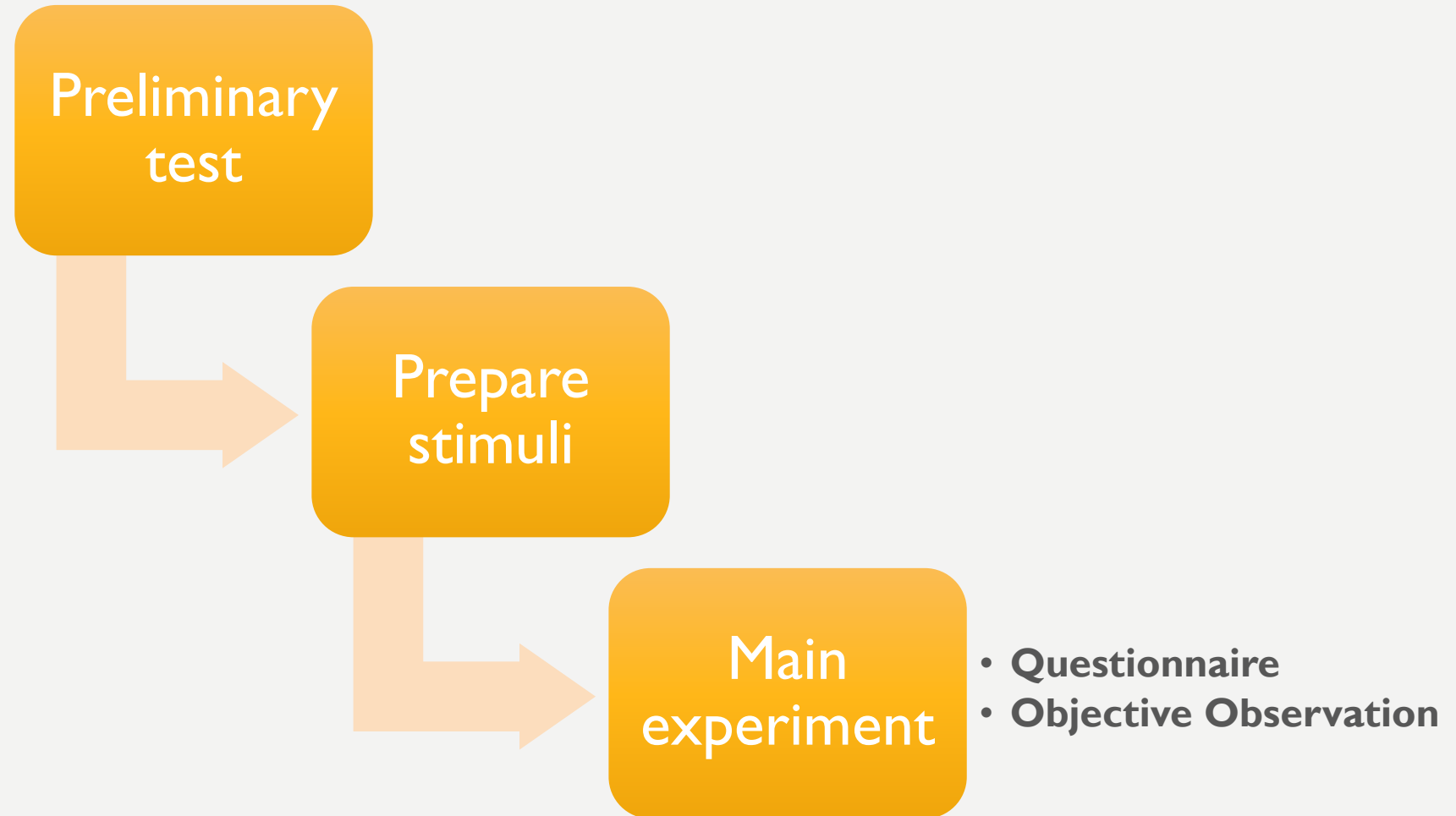 Legibility: the ease of how characters and words can be distinguished by eyes.

RESEARCH QUESTIONS

- For articles in the digital editions of food magazines on an iPad platform, does white space impact the User Experience (visual aesthetics, readability and legibility) for readers?

- If so, which dimensions of User Experience have been affected acutely by white space?

- Are there any exact quantitative features in terms of white space attributes that can help designers understand design patterns for digital magazines concretely and explicitly?

PARTICIPANTS

- 62 female students between 18 to 28 years old in RIT

- According to *Food Network Magazine Media Kit* female readers in the Food Network audience amount to 71.6 %, 59.2% of the readers are in college.

Women
71.6%

College
59.2%

METHODOLOGY

Preliminary test

Prepare stimuli

Main experiment

- **Questionnaire**
- **Objective Observation**

- 5 levels of macro : 31%, 38%, 45%, 52%, 59%

3 levels of micro: 105%, 120%, 135%

15 stimuli
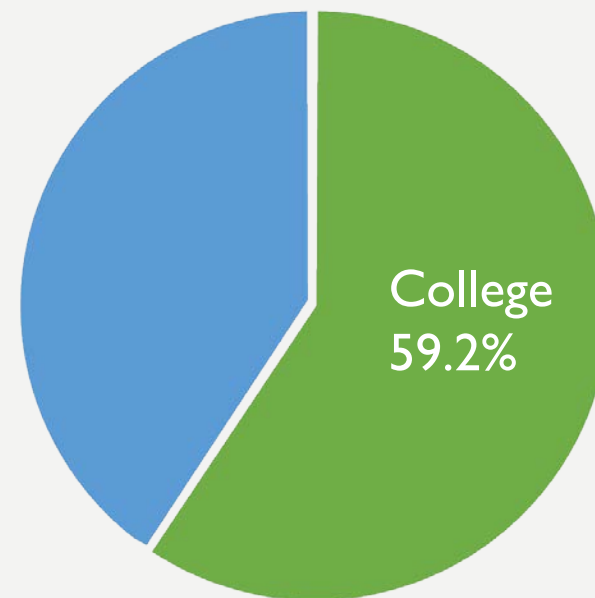
MAIN EXPERIMENT

◆ **The First Part (perceived self-report)**

QUESTIONNAIRE

_____

_____

_____

➢ Seven-point anchored scale to rate each page.
➢ Three questions for each page:
1. How satisfied are you with the visual aesthetics of this page?
2. How legible do you find this page?
3. How readable do you find this page?

The Second Part (objective observation)

➢ Legibility

Letter counting was adopted.

Number of letters participant counted and the completion time were documented.

o *Two measures for Legibility*

1. Average time, the participant used/ Total number of all letters

2. Number of letters participant counted/Actual number of the specified letters

➢ Readability

Memorizing the name of ingredients

Number of ingredients they memorized was documented

o *One measure for Readability*

The number of ingredients they remembered/ The total number of ingredients

ANALYSIS OF DATA

Questionnaire

- The two-way repeated measures Analysis of Variance (ANOVA)
- Main effects: macro, micro white space, and the interaction effect between macro and micro white space variables.
- Within-subject design
- The participants were considered as Random Effect.
- F ratio is the statistical use to test null hypothesis. $p=0.05$ was used as a cutoff value to designate statistical significance.
- Least square means are the estimated group means using the analysis procedure.

FINDINGS

Visual Aesthetics ➤ Questionnaire

Fixed Effect Tests for Visual Aesthetics

Source	F Ratio	Prob > F
Macro	3.14	0.0141
Micro	11.90	<.0001
Macro*Micro	3.13	0.0017

The highest score   The lowest score
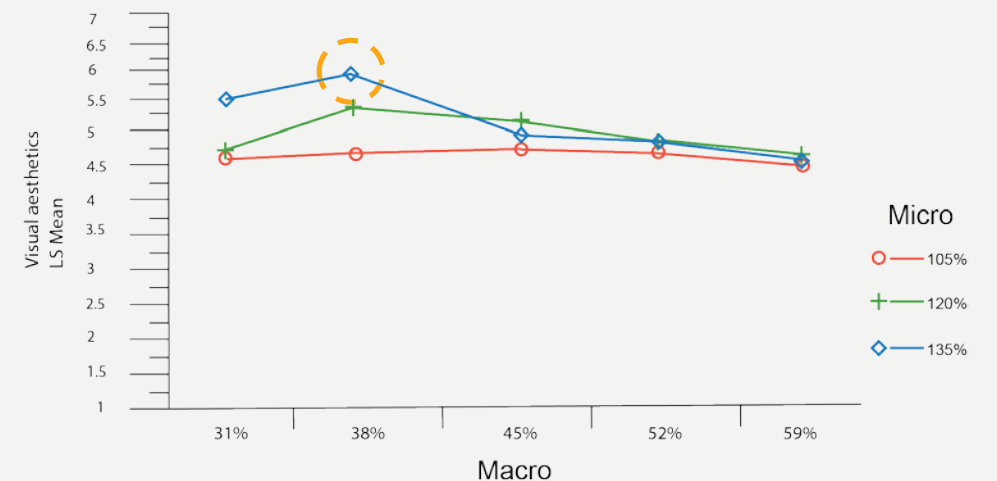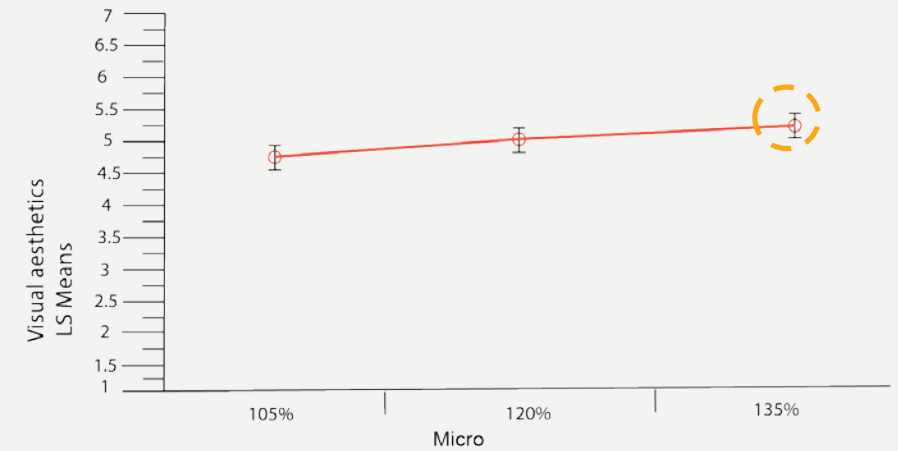

38% macro 135% micro

59% macro 105% micro

Macro

Micro
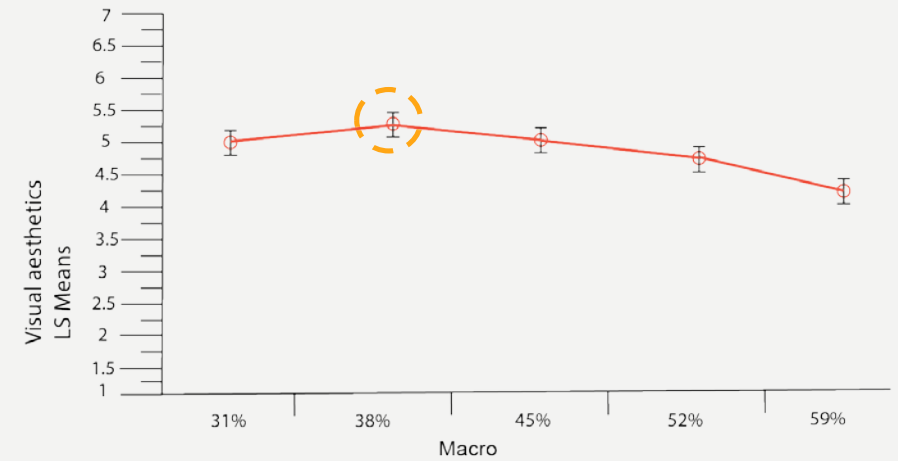
The interaction of Macro and Micro

- **Legibility** ➤ Questionnaire

Fixed Effect Tests for Legibility

Source	F Ratio	Prob > F
Macro	4.76	0.0008
Micro	28.76	<.0001
Macro*Micro	3.08	0.0020

The highest score

The lowest score

38% macro 135% micro

31% macro 105% micro

Macro

Micro

The interaction of Macro and Micro

- **Readability** ➢ Questionnaire

Fixed Effect Tests for Readability

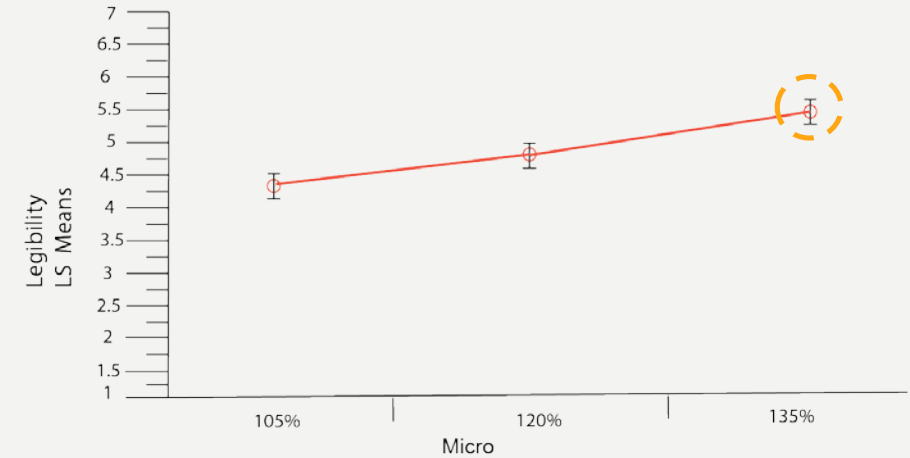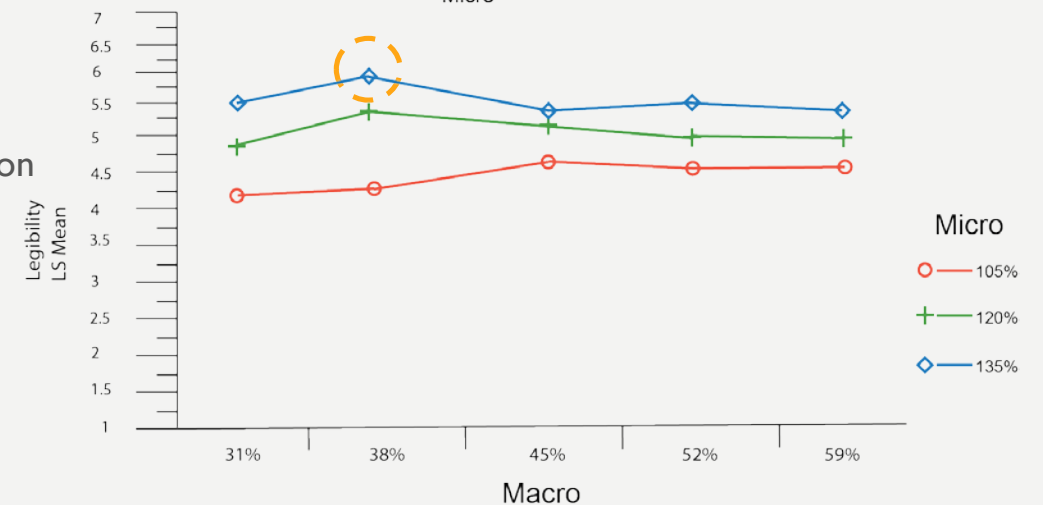| Source	F Ratio	Prob > F
Macro	3.96	0.0034
Micro	8.57	<.0001
Macro*Micro	2.33	0.0179

The highest score

38% macro 135% micro

The lowest score

31% macro 105% micro

Macro

Micro

The interaction of Macro and Micro

ANALYSIS OF DATA

Objective observation

- The two-way Analysis of Variance (ANOVA)

- The participants were considered as Random Effect.

- F ratio is the statistical use to test null hypothesis. $p=0.05$ was used as a cutoff value to designate statistical significance.

- Least square means are the estimated group means using the analysis procedure.

- **Legibility**

  ➢ Objective observation

Measure: **Average time, the participant used/ Total number of all letters**

Fixed effect Tests for the distinguishing letter time

Source	F Ratio	Prob > F
Macro	11.63	<.0001
Micro	33.72	<.0001
Macro*Micro	7.33	<.0001

Macro
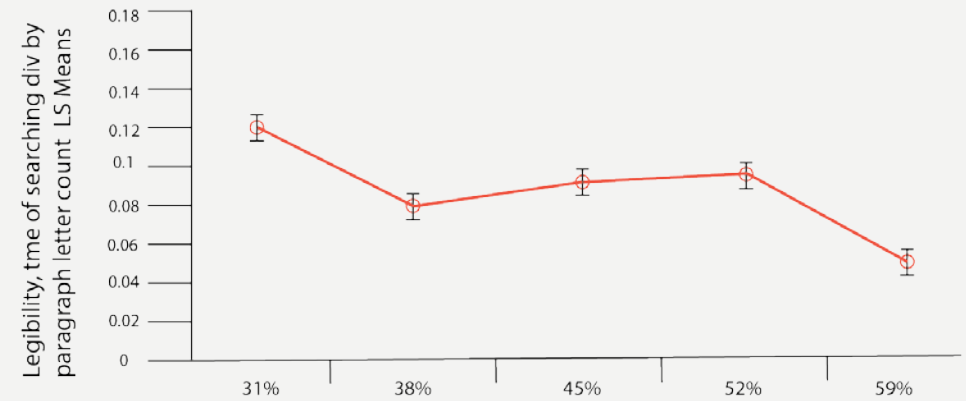
Micro
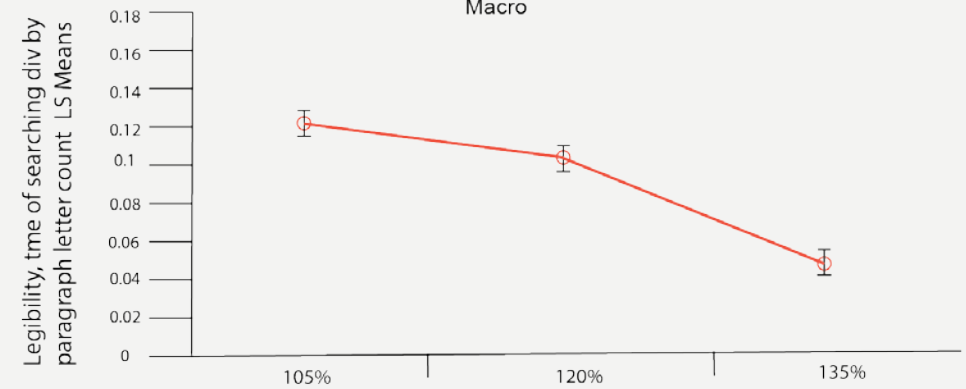
The interaction of Macro and Micro
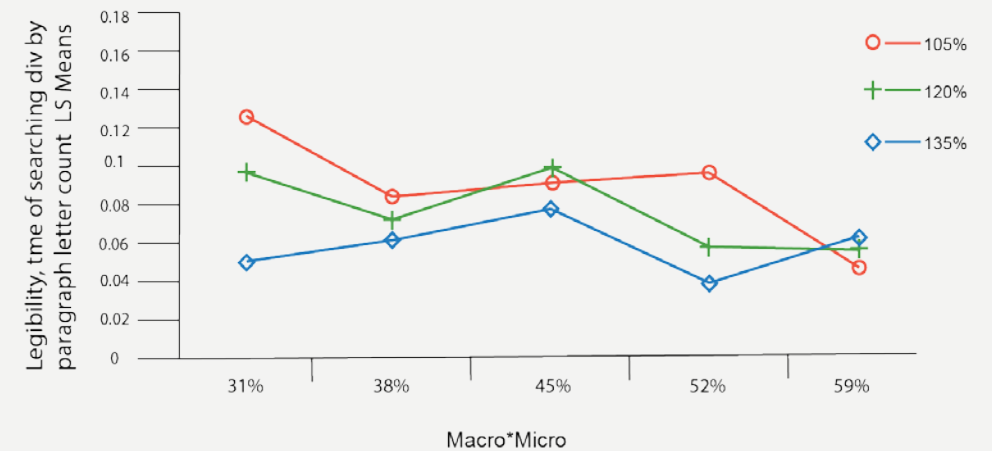
- **Legibility**

  ➢ Objective observation

Measure: **Number of letters participant counted/Actual number of the specified letters**

Fixed effect Tests for the percent of correct for letter counting

Source	F Ratio	Prob > F
Macro	1.20	0.3153
Micro	3.16	0.0472
Macro*Micro	3.75	0.0008

The least square plot of percent of correct for letter counting, micro white space
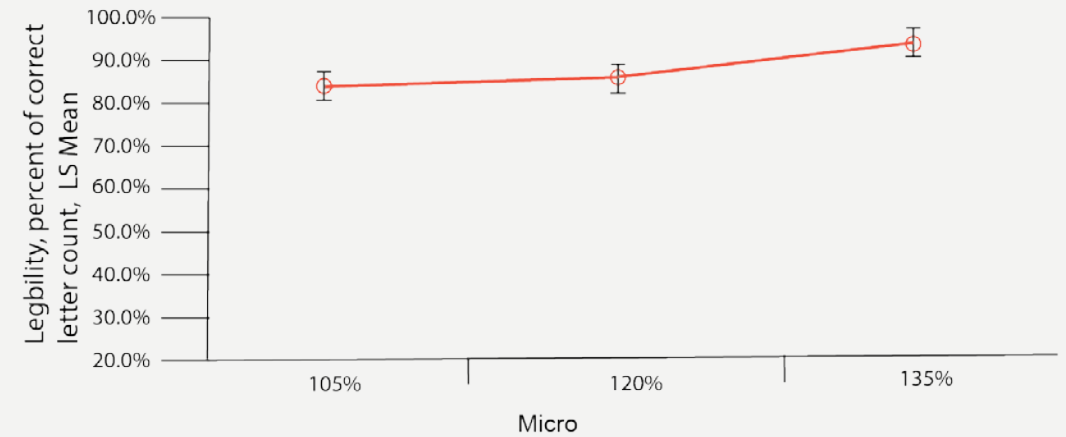
The least square plot of percent of correct for letter counting, Interaction of macro and micro white space
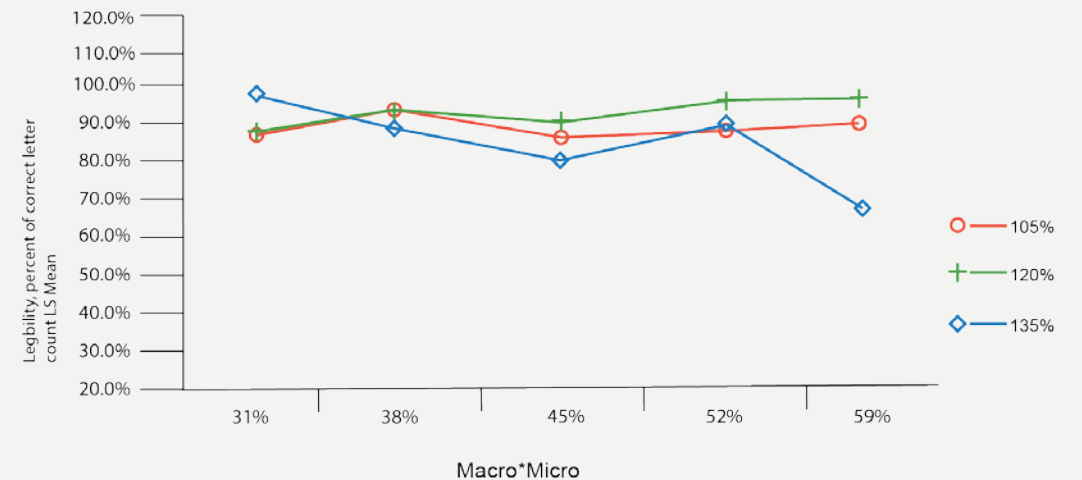
- **Readability**

  ➢ Objective observation

Measure: **The number of ingredients they remembered/ The total number of ingredients**

Fixed effect tests for the percent of correct recall

Source	F Ratio	Prob > F
Macro	3.56	0.0095
Micro	14.53	<0.0001
Macro*Micro	6.64	<0.0001

Macro

Micro
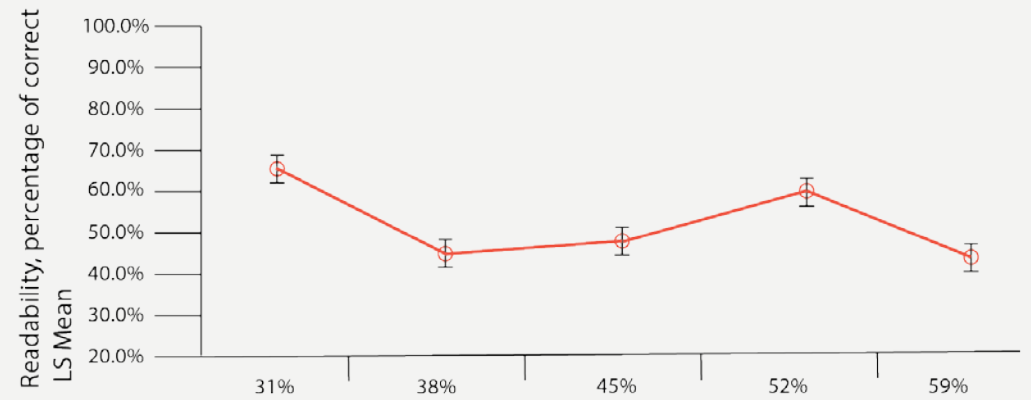
The interaction of Macro and Micro
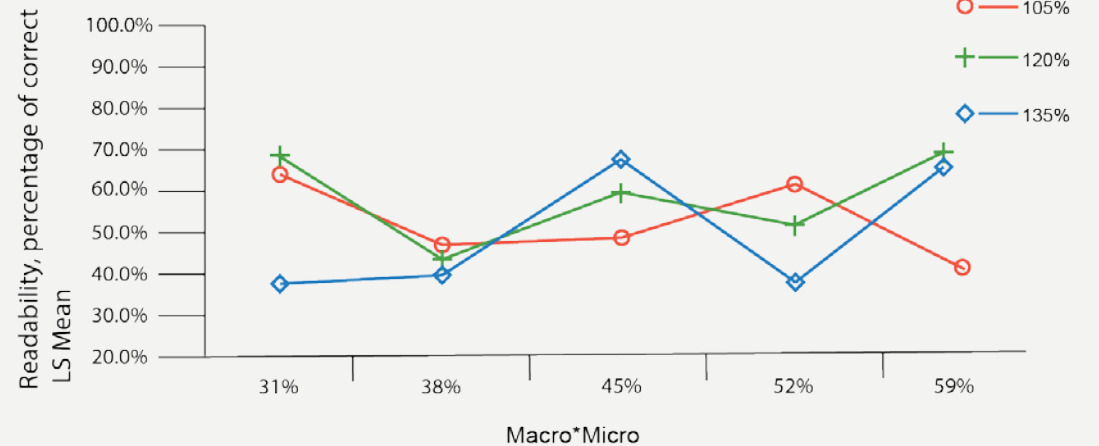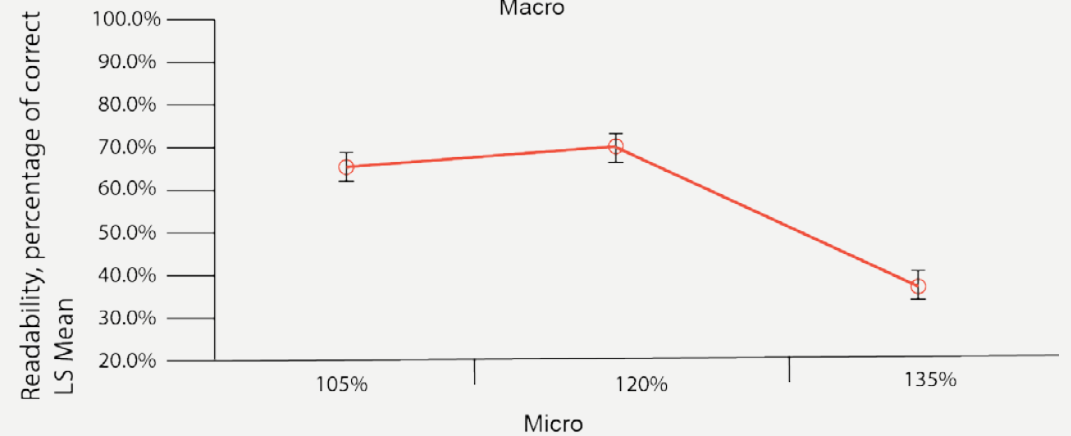
CONCLUSIONS

Questionnaire

1. For articles in the digital editions of food magazines on an iPad platform, does white space impact the User Experience (visual aesthetics, readability and legibility) for readers?

2. If so, which dimensions of User Experience have been affected acutely by white space?

   - Three fixed effects: macro, micro and the interaction of macro and micro white space had significant impact on all three attributes of UX based on the questionnaire data.

3. Are there any exact quantitative features in terms of white space attributes that can help designers understand design patterns for digital magazines concretely and explicitly?

   - The questionnaire data demonstrated that majority of 62 participants chose the 38% macro white space and 135% micro white space as the best combination regarding all three aspects of UX.

CONCLUSIONS

Objective Observation

1. For articles in the digital editions of food magazines on an iPad platform, does white space impact the User Experience (visual aesthetics, readability and legibility) for readers?

2. If so, which dimensions of User Experience have been affected acutely by white space?
   - For the Legibility:
     - The macro, micro white space and their interaction were important factors affecting the time for distinguishing letters. Micro white space and macro/micro interaction were significant for the percent of correct letter counting.
     - Macro white space didn't have significant effect on the percent of correct for letter counting.
   - For the Readability all three effects were significant.

3. Are there any exact quantitative features in terms of white space attributes that can help designers understand design patterns for digital magazines concretely and explicitly?
   - 135 % Micro white space had the most significant effect on legibility.
   - 120% Micro white space had the most positive effect on readability.

FUTURE RESEARCH

- In the future, the study of the effects of negative space as the generalization of the white space concept can be conducted with different colors of the background. White text on the black background is an example.

- Choice of different letters for the legibility study may reveal different effects of Macro and Micro white space and can be a goal for the future research.

- White space on the mobile devices.

REFERENCE

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- Amin, M., Rezaei, S., & Abolghasemi, M. (2014). *User satisfaction with mobile websites: the impact of perceived usefulness, perceived ease of use and trust, Nankai Business Review International , 5* (3), pp. 258-274.

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THANK YOU!!!!

Q&A