CSE4461 Hypermedia and Multimedia Technology
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USING SMART PHONE APPS WITH PRESBYOPIA

Objectives

- Test two read-it-later apps for users with presbyopia

- Which functions and design qualities are important?

- Recommend design changes

Methodology - Changes

- Less cases testing variables (1 device, 2 apps)
- More participants
- 2 by 5, within subjects design

Device and Applications

- Device: Samsung Galaxy Note 3

- App 1: Instapaper
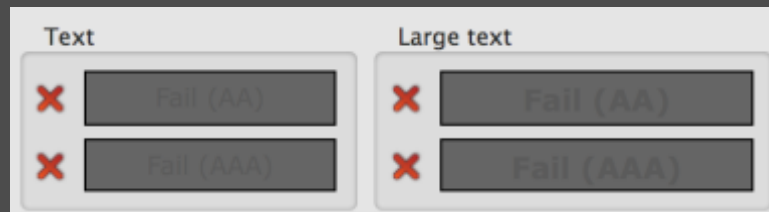
- App 2: Pocket

WCAG Text Contrast

- WCAG AA and AAA
- Text below 18 point should have a minimum contrast ratio of at least 4.5:1
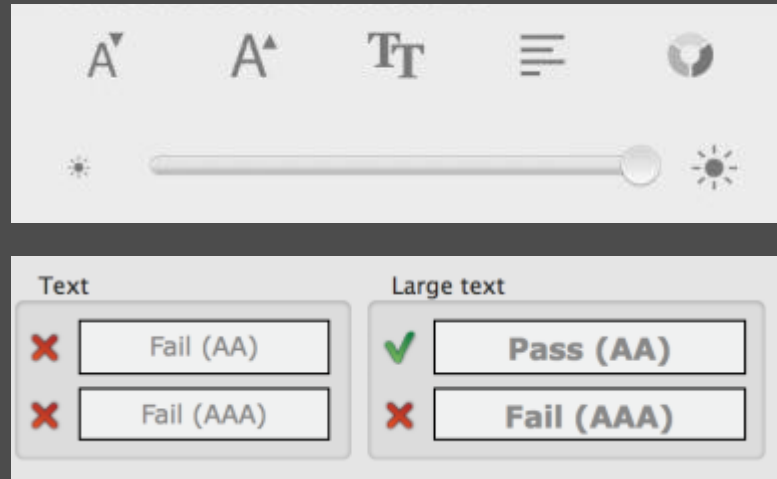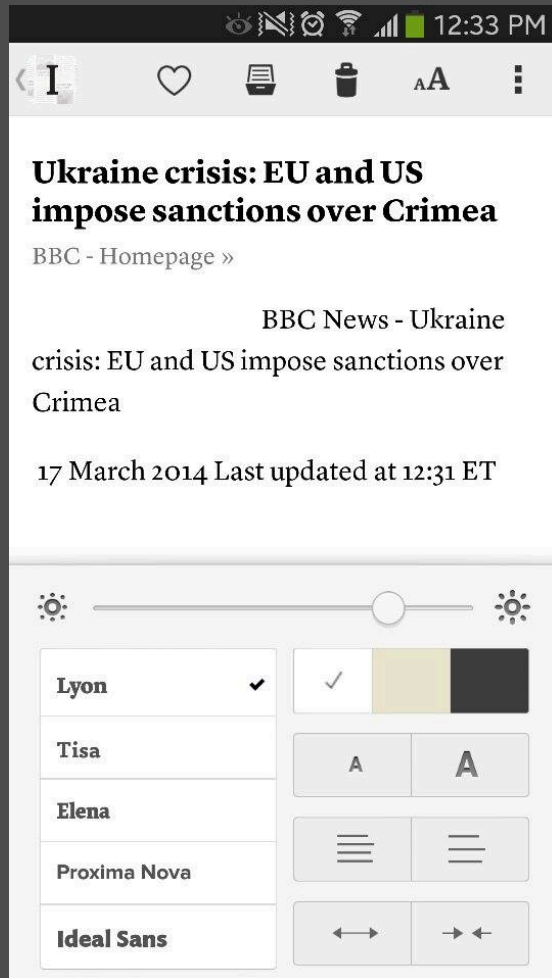
Best contrast
21.0:1

Worst Contrast
1.16:1

Text		Large text	
✔	Pass (AA)	✔	**Pass (AA)**
✔	Pass (AAA)	✔	**Pass (AAA)**

Text		Large text	
✘	Fail (AA)	✘	Fail (AA)
✘	Fail (AAA)	✘	Fail (AAA)

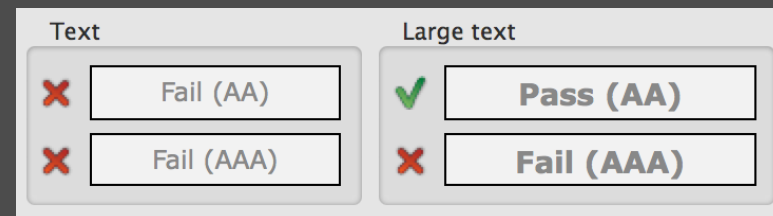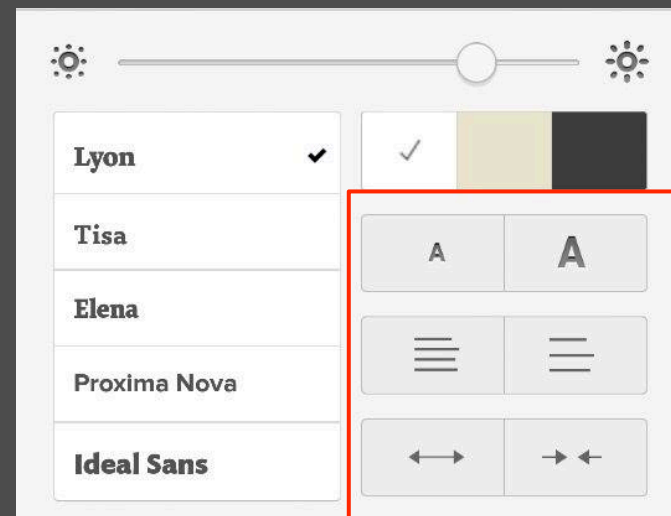# Pocket Contrast Ratio

Text Contrast

Ratio: 3.90:1

Instapaper Contrast Ratio

Text Contrast

Ratio: 4.01:1

Test Process

Test Tasks

- 1 – Open browser, find article, export to app, open in app
- 2 – Open display settings and change the font face
- 3 – Change font size and spacing
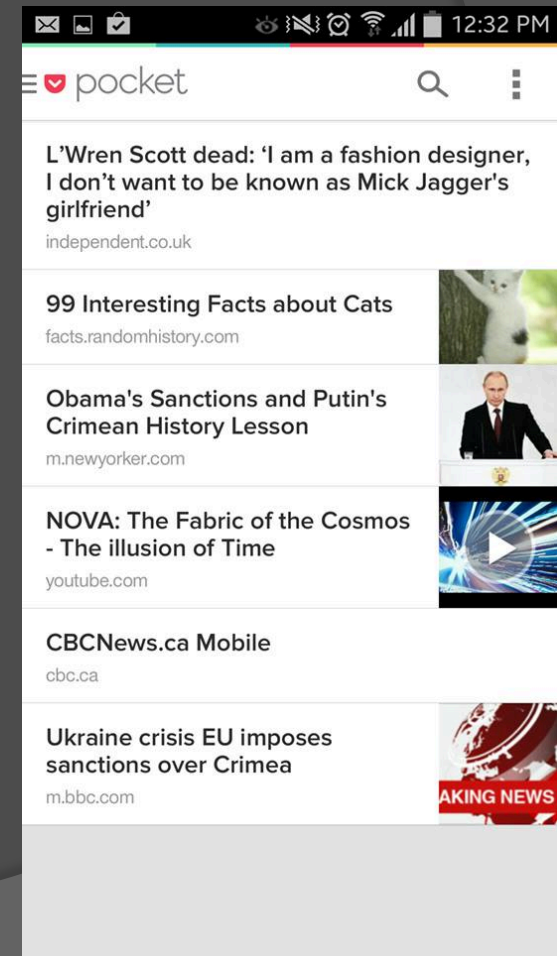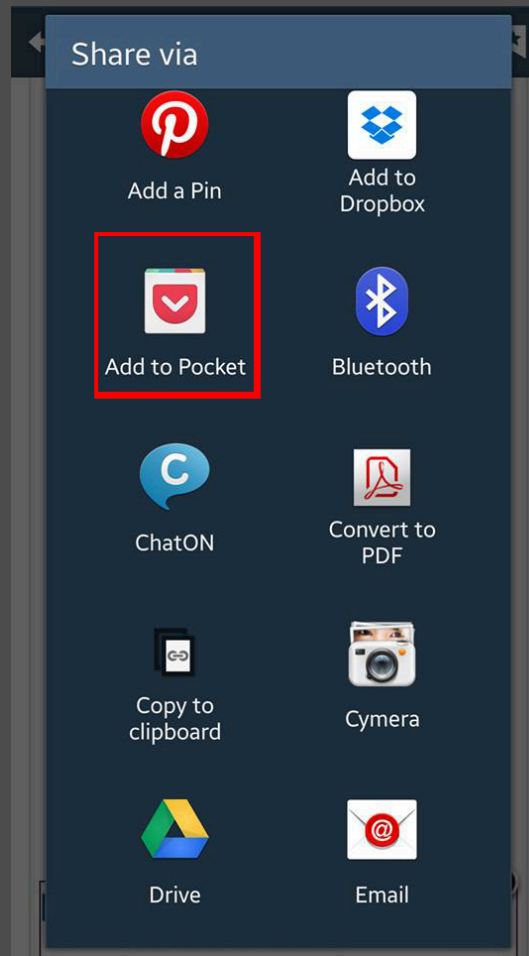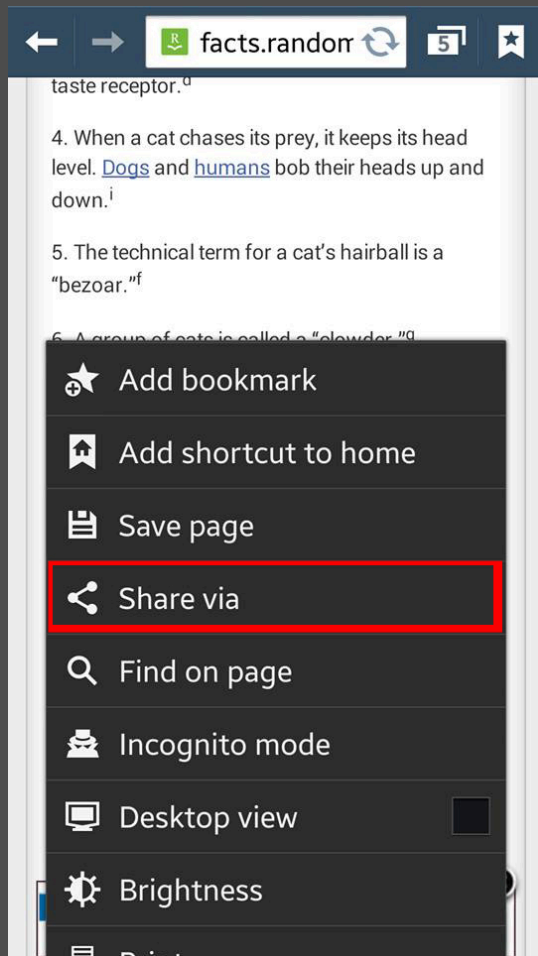- 4 – Change background colour and brightness

Initial Results & Trends

- Improvement over time (speed)

- Common errors
  - "Misclicks"
  - Instapaper's archive
  - Pocket's background colour

Progress Over Time

Trial 1											
Participant	Time (s)				Min	Max	Average	Errors			
	1	2	3	4				1	2	3	4
P1	74.6	44.3	26.7	70.9	26.7	74.6	54.125	4	2	0	4
P2	147.7	14.4	10.4	5.1	5.1	147.7	44.4	8	1	1	0
P3	50.7	22.1	7.4	12.3	7.4	50.7	23.125	0	1	0	0
P4	24.9	4.4	4.6	11.9	4.4	24.9	11.45	0	0	0	1
P5	69.2	11.2	95.1	52.1	11.2	95.1	56.9	2	2	4	12
P6	16.5	12.1	14.4	6.2	6.2	16.5	12.3	0	0	0	0
P7	21.5	8.3	1.6	8.3	1.6	21.5	9.925	0	0	0	0
P8	53.7	8.9	14.7	8.3	8.3	53.7	21.4	2	1	0	0
P9	45.1	8.3	5.6	5.4	5.4	45.1	16.1	4	0	1	0
P10	34.6	11	18.6	8.2	8.2	34.6	18.1	1	0	2	1
P11	70.9	23.8	16.6	7.7	7.7	70.9	29.75	3	1	0	0
P12	42.2	25.6	4.5	11.8	4.5	42.2	21.025	0	0	0	0
P13	20	7.2	3.4	7	3.4	20	9.4	0	0	0	0
P14											
Min	16.5	4.4	1.6	5.1			Min	0	0	0	0
Max	147.7	44.3	95.1	70.9			Max	8	2	4	12
Avg	51.66153846	15.50769231	17.2	16.55384615			Avg	1.846153846	0.615384615	0.615384615	1.384615385

Trial 5											
Participant	Time (s)				Min	Max	Average	Errors			
	1	2	3	4				1	2	3	4
P1	54.5	5.9	6.1	4.4	4.4	6.1	17.725	1	0	0	0
P2	27.1	4	3.9	2.8	2.8	4	9.45	0	0	0	0
P3	60.5	4.8	4.4	2.4	2.4	4.8	18.025	0	0	0	0
P4	21.1	2.8	3.5	4.5	2.8	4.5	7.975	0	0	0	1
P5	76.1	13.9	18.6	6.8	6.8	18.6	28.85	7	4	3	2
P6	20.1	9.6	6.4	3.4	3.4	9.6	9.875	0	0	0	0
P7	25	3.9	2.4	1.3	1.3	3.9	8.15	0	0	0	0
P8	23.2	3	2.7	2.3	2.3	3	7.8	0	0	0	0
P9	24.9	4.1	0.6	0.7	0.6	4.1	7.575	2	1	0	0
P10	18.2	4.9	2.6	1	1	4.9	6.675	0	0	0	0
P11	26	8.3	15.3	6.1	6.1	15.3	13.925	0	0	1	0
P12	33.5	3	2.2	11.4	2.2	11.4	12.525	1	0	0	0
P13	21.2	6.8	3.6	3.6	3.6	6.8	8.8	0	0	0	0
P14											
Min	18.2	2.8	0.6	0.7			Min	0	0	0	0
Max	76.1	13.9	18.6	11.4			Max	7	4	3	2
Avg	33.18461538	5.769230769	5.561538462	3.9			Avg	0.846153846	0.384615385	0.307692308	0.230769231

Downloading & Exporting Article
To Application

Saved to Pocket
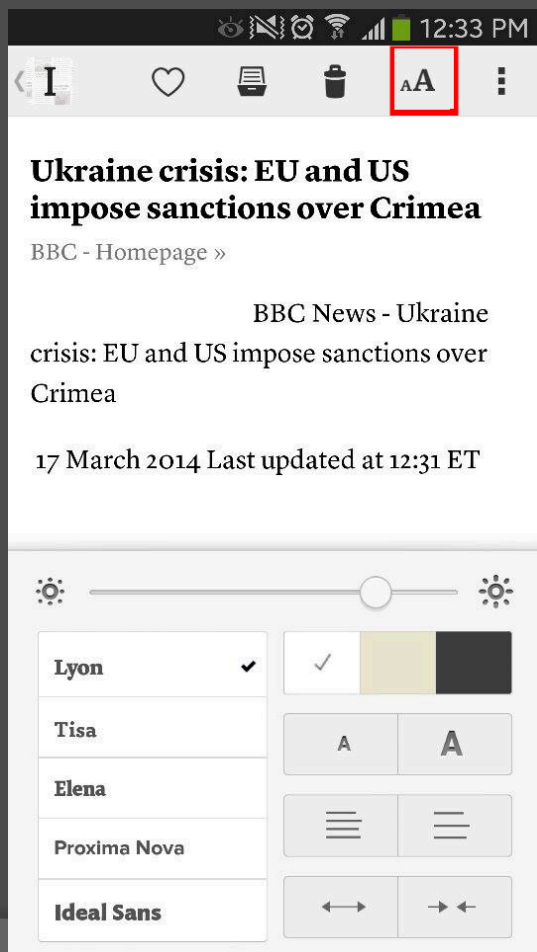
Instapaper – Option Overload

- Font list
- Spacing

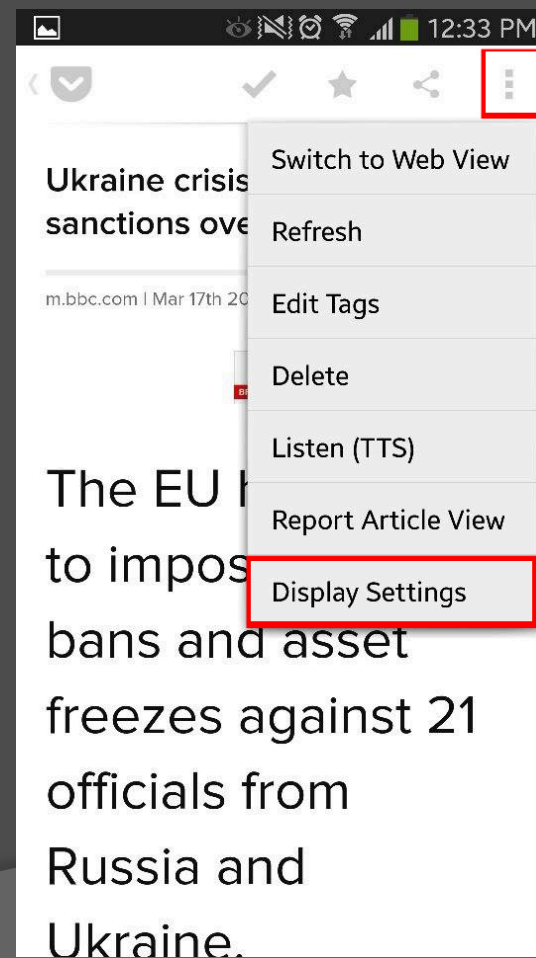# Instapaper – Overly Sensitive
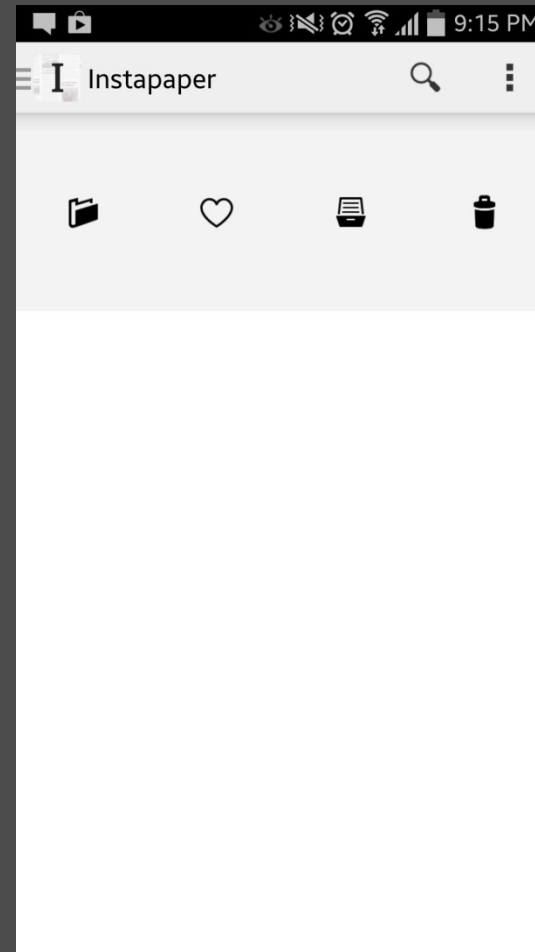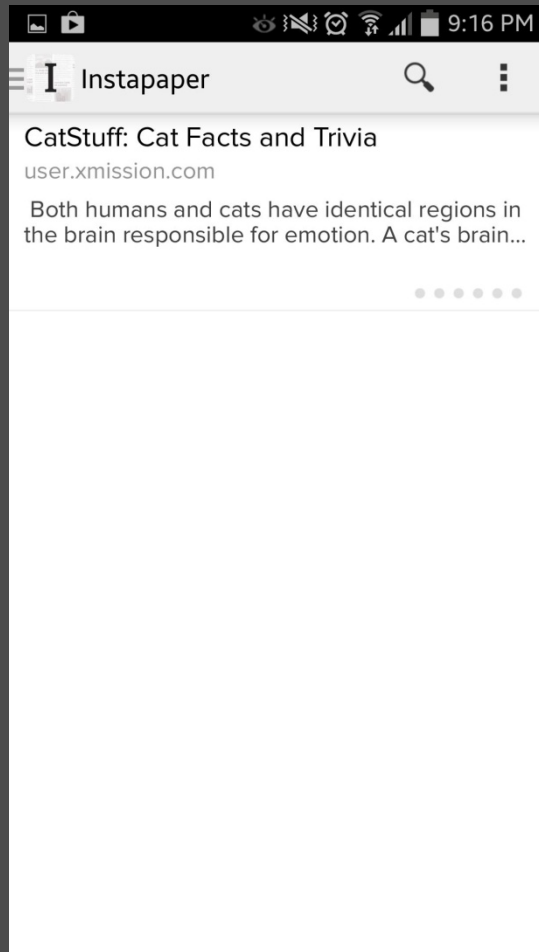
Getting to Options

- Instapaper: 1 step

- Pocket: 2 Steps

Brightness Slider - Pocket

Hit box is too small

Proposed Change

Proposed Layout

- Larger Buttons
- Only most necessary options
- One button to get to options
- Layout Contrast

Conclusions

- Opinions on smartphones and read-it-later apps changed post-test

- Errors mostly occurred due to button size

- Participants preferred displays that involved the least amount of work for them