

CSE4461 Hypermedia and Multimedia Technology
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USING SMART PHONE APPS WITH PRESBYOPIA

Objectives

- ④ Test two read-it-later apps for users with presbyopia
- ④ Which functions and design qualities are important?
- ④ 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



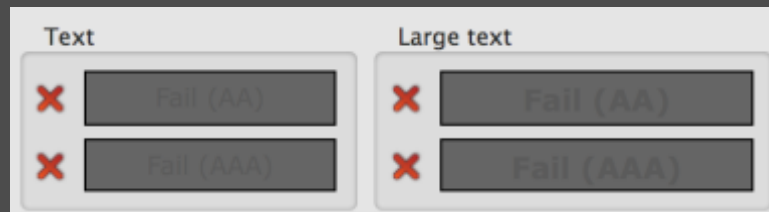
WCAG Text Contrast

- 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



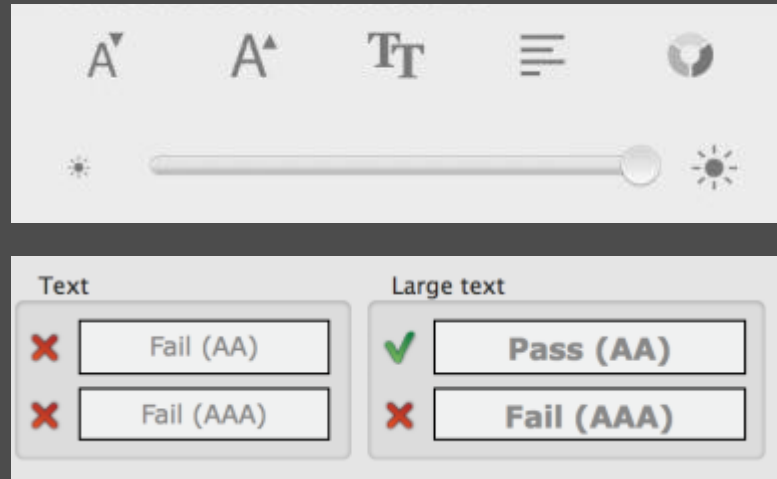
Worst Contrast
1.16:1



Pocket Contrast Ratio

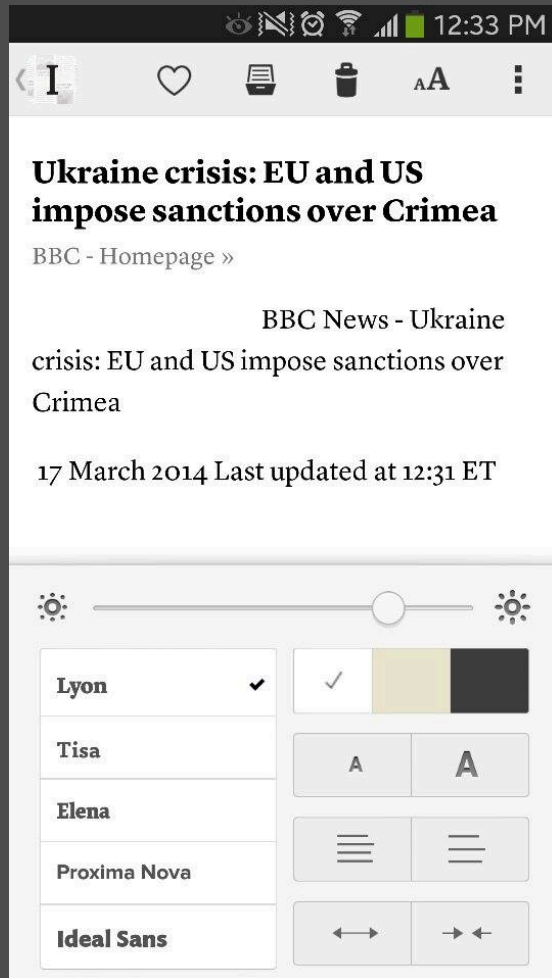


Text Contrast

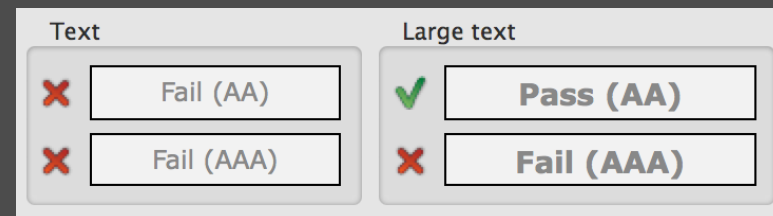
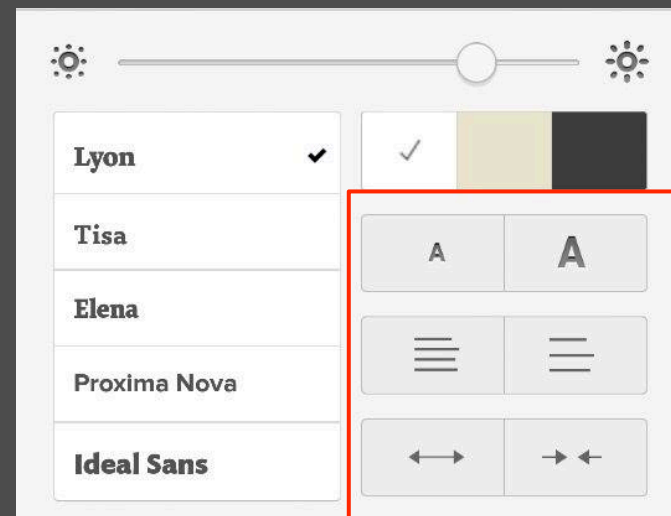


Ratio: 3.90:1

Instapaper Contrast Ratio



Text Contrast



Ratio: 4.01:1

Test Process



Test Tasks

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

Initial Results & Trends

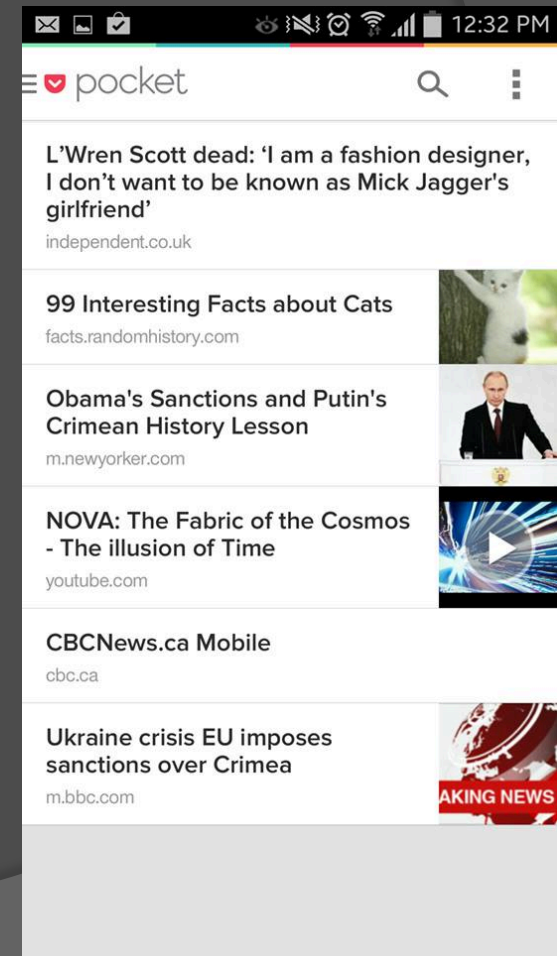
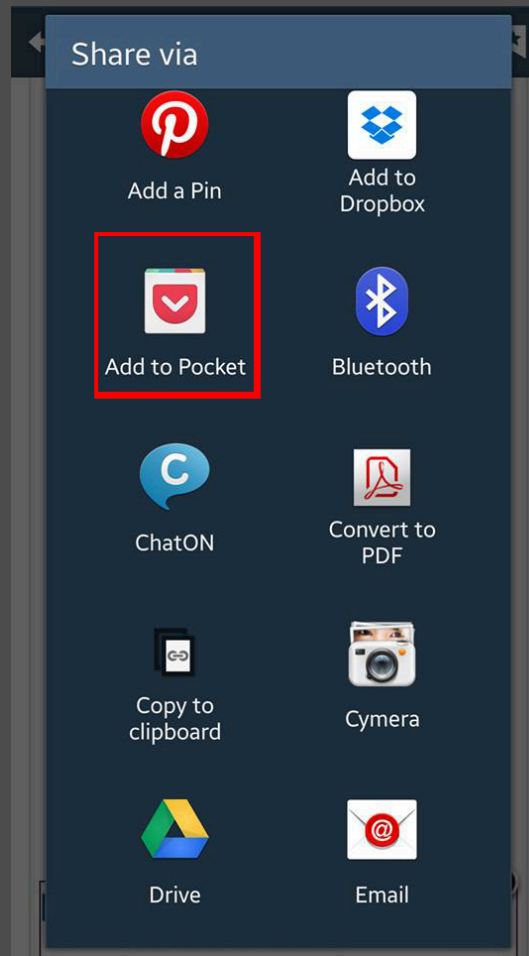
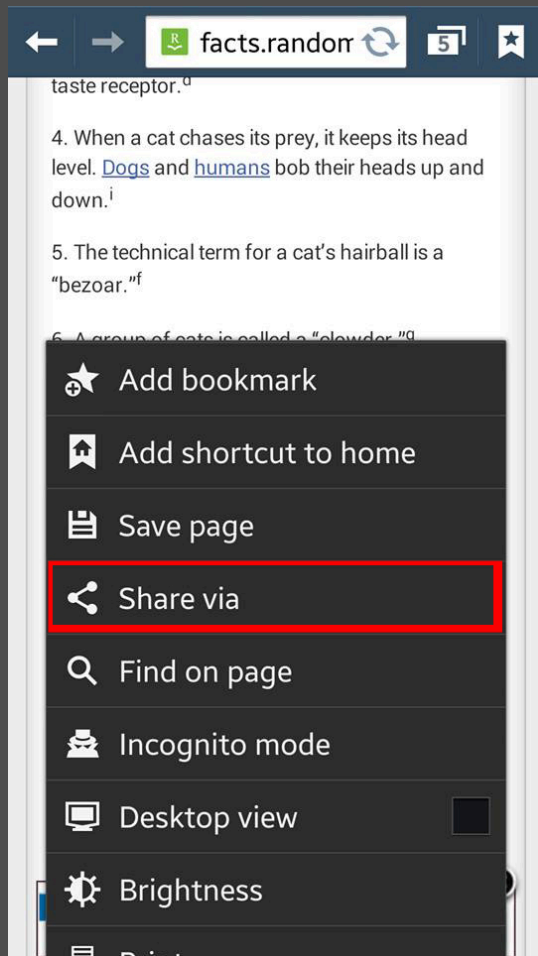
- ⦿ Improvement over time (speed)
- ⦿ Common errors
 - “Misclicks”
 - Instapaper’s archive
 - Pocket’s background colour

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

user.xmission

Cat Facts and Trivia

(compiled by Glenda Moore)

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Physiology

- Both humans and cats have identical regions in the brain responsible for emotion.
- A cat's brain is more similar to a man's brain than that of a dog.
- A cat has more bones than a human; humans have 206, but the cat has 230 (some cites list 245 bones, and state that bones may fuse together as the cat ages).
- Cats have 30 vertebrae (humans have 33 vertebrae during early development; 26 after the sacral and coccygeal regions fuse).
- The cat's clavicle, or collarbone, does not connect with other bones but is buried in the muscles of the shoulder region. This lack of a functioning collarbone allows them to fit through any opening the size of their head.
- The cat has 500 skeletal muscles (humans have 650).
- Cats have 32 muscles that control the outer ear (compared to human's 6 muscles each). A cat can rotate its ears independently 180 degrees, and can turn in the direction of sound 10 times faster than those of the best watchdog.
- Cats' hearing is much more sensitive than humans and dogs.
- Cats' hearing stops at 65 kHz (kilohertz); humans' hearing stops at 20 kHz.
- A cat sees about 6 times better than a human at night, and needs 1/16 the amount of light that a human does - it has a layer of extra reflecting cells which absorb light.
- Recent studies have shown that cats can see blue and green. There is disagreement as to whether they can see red.
- A cat's field of vision is about 200 degrees.
- Unlike humans, cats do not need to blink their eyes on a regular basis to keep their eyes lubricated.
- Blue-eyed, pure white cats are frequently deaf.
- It may take as long as 2 weeks for a kitten to be able to hear well. Their eyes usually open between 7 and 10 days, but sometimes it happens in as little as 2 days.
- Cats can judge within 3 inches the precise location of a sound being made 1 yard away.
- Cats can be right-pawed or left-pawed.
- A cat cannot see directly up or down.
- Almost 10% of a cat's bones are in the tail.
- The domestic cat is the only species able to twist its tail vertically while walking. You can also learn about your cat's present state of mind by observing the posture of his tail.
- If a cat is frightened, the hair stands up fairly evenly all over the body, when the cat is threatened or is ready to attack, the hair stands up only in a narrow band along the spine and tail.
- A cat has approximately 60 to 80 million olfactory cells (a human has between 5 and 20 million).
- Cats have a special scent organ located in the roof of their mouth, called the Jacobson's organ. It analyzes smells - and is the reason why you will sometimes see your cat "sneer" (called the flehmen response or flehming) when they encounter a strong odor.
- Cats dislike citrus scent.
- A cat has a total of 24 whiskers, 4 rows of whiskers on each side. The upper two rows can move independently of the bottom two rows.
- Cats have 30 teeth (12 incisors, 10 premolars, 4 canines, and 4 molars), while dogs have 42. Kittens have baby teeth, which are replaced by permanent teeth around the age of 7 months.
- A cat's jaw has only up and down motion; it does not have any lateral, side to side motion, like dogs and humans.
- A cat's tongue has tiny barbs on it.
- Cats lap liquid from the underside of their tongue, not from the top.
- Cats purr at the same frequency as an idling diesel engine, about 26 cycles per second.
- Domestic cats purr both when inhaling and when exhaling.
- The cat's front paw has 5 toes, but the back paws have 4. Some cats are born with as many as 7 front toes and extra back toes (polydactyl).
- Cats walk on their toes.
- A domestic cat can sprint at about 31 miles per hour.
- A kitten will typically weigh about 3 ounces at birth. The typical male housecat will weigh between 7 and 9 pounds, slightly less for female housecats.
- Cats take between 20-40 breaths per minute.
- Normal body temperature for a cat is 102 degrees F.
- A cat's normal pulse is 140-240 beats per minute, with an average of 150.
- Cats blink under a black light.
- Cats have a special gland in the skin around the mouth which produces a fluid in the saliva while grooming themselves as they do through urination.
- A cat has two vocal chords, and can make over 100 sounds.



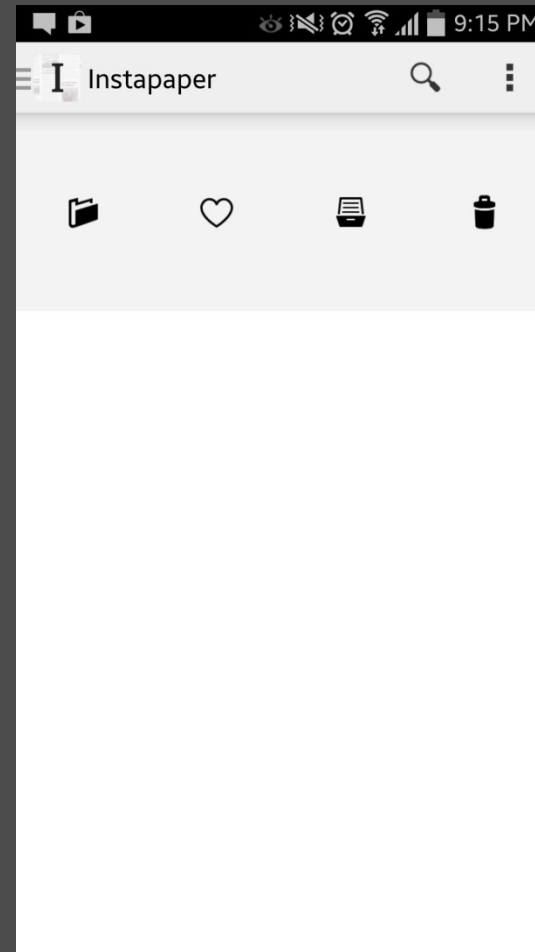
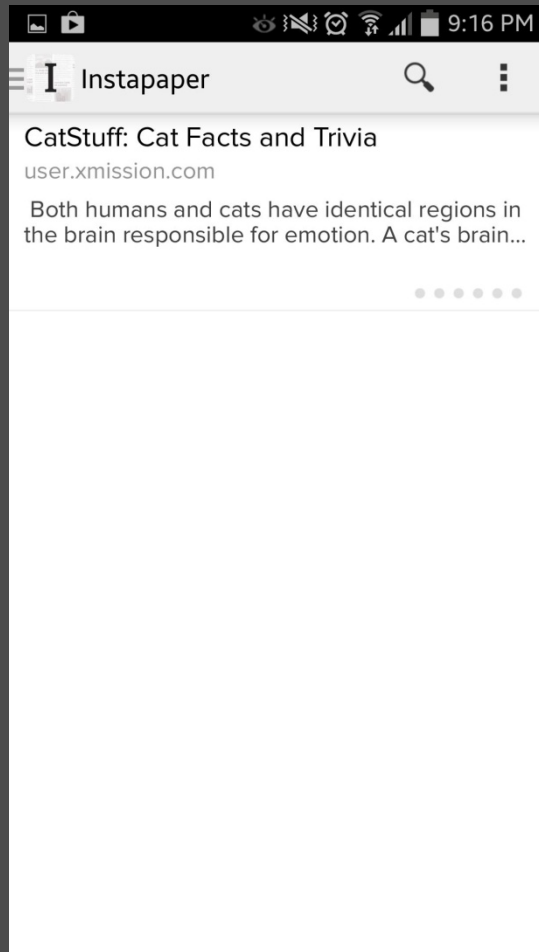
- Miacis, the primitive ancestor of cats, was a small, tree-living creature of the late Eocene period, some 45 to 50 million years ago.
- Phoenician cargo ships are thought to have brought the first domesticated cats to Europe in about 900 BC.
- The Egyptians were the first to introduce cats to North America.
- The first breeding pair of Siamese cats arrived in England in 1884.
- The first formal cat show was held in England in 1871; in

Instapaper – Option Overload



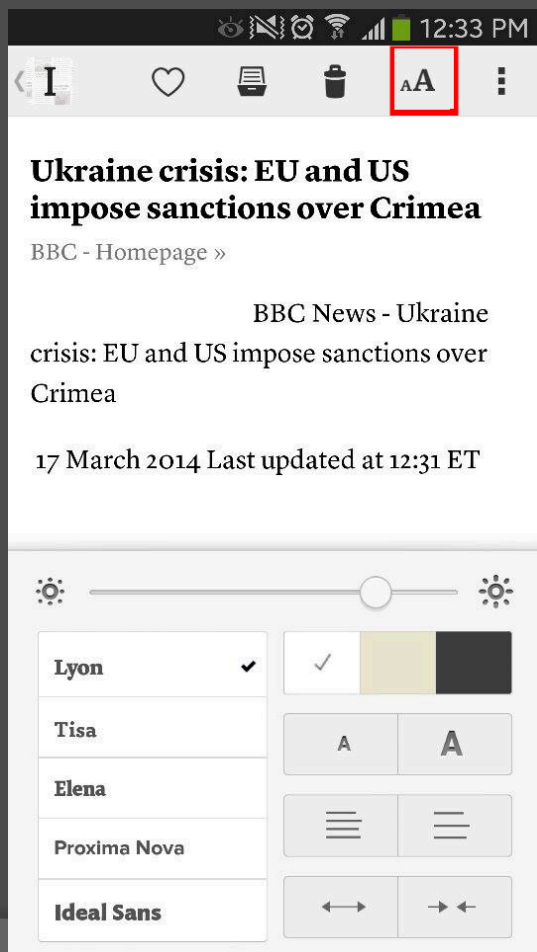
- Font list
- Spacing

Instapaper – Overly Sensitive

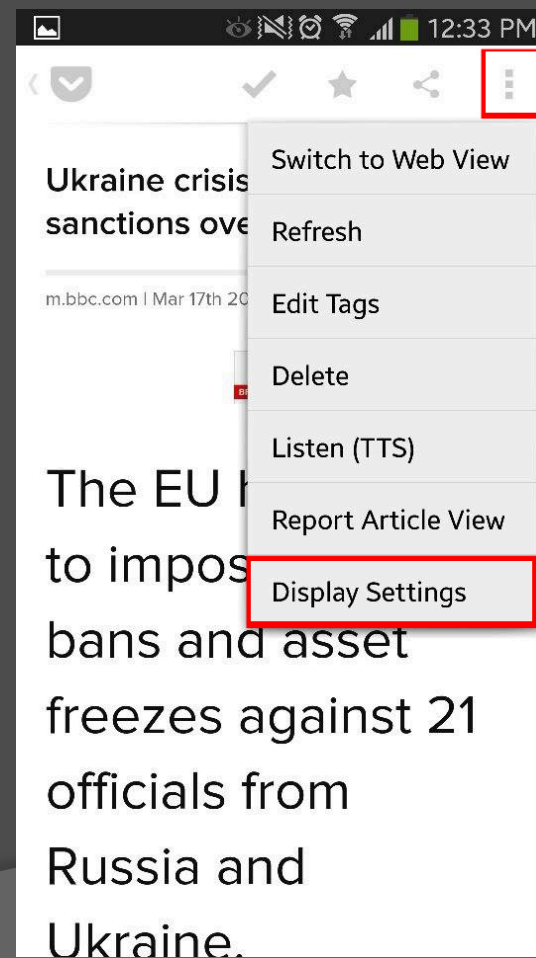


Getting to Options

- 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