

Digital Wellbeing in Practice: Designing for Digital Self-Control

Ulrik Lyngs

Human Centred Computing,
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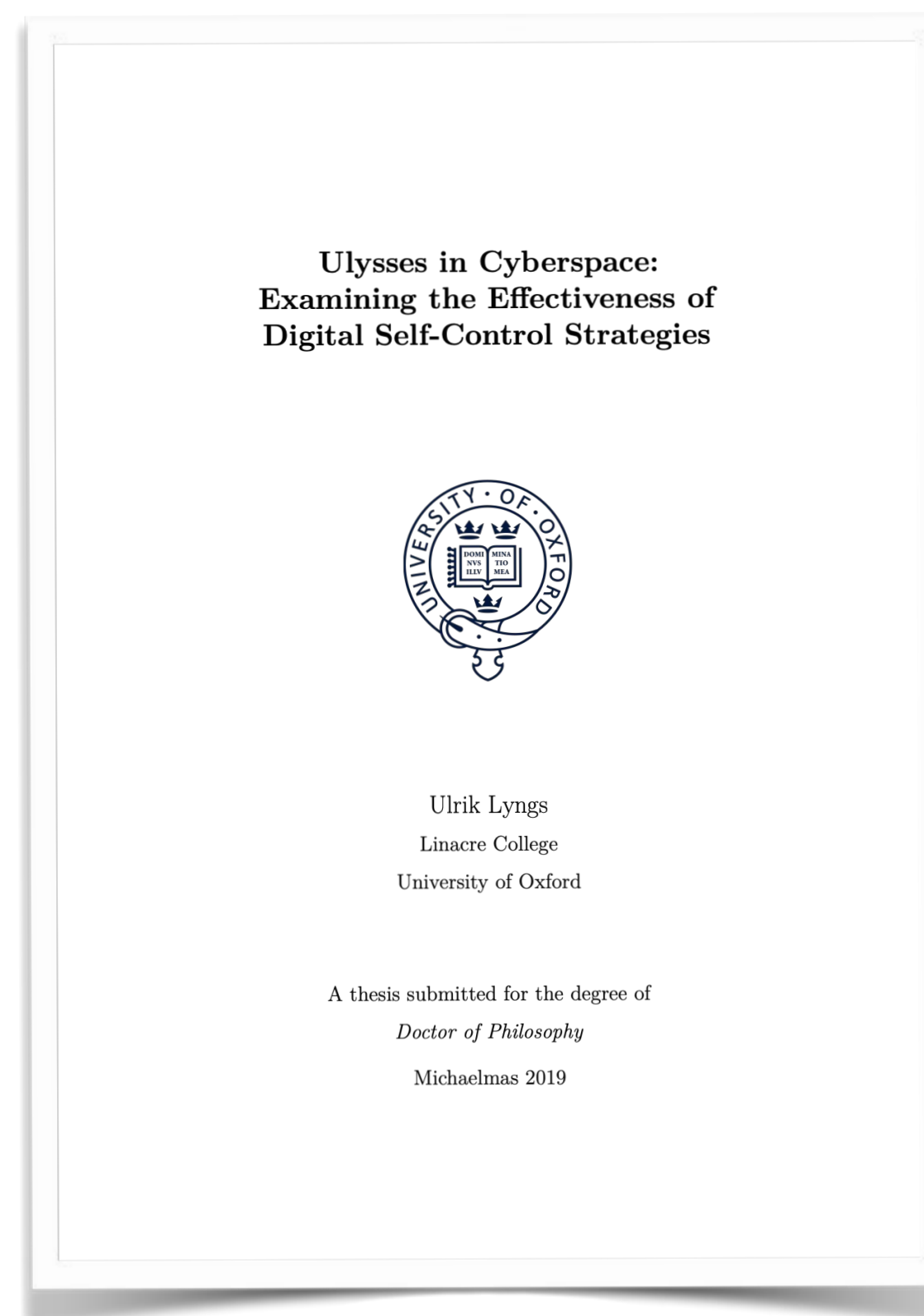
22 April 2020

Google Digital Wellbeing



DEPARTMENT OF
**COMPUTER
SCIENCE**

EPSRC
Engineering and Physical Sciences
Research Council



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Human Centered Computing, University of Oxford



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(supervisor)



Max Van Kleek



Reuben Binns



Jun Zhao



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Human Centered
Design & Engineering,
University of Washington
Seattle



Kai
Lukoff

Agenda

- State of the research
- Implications for product design

Digital self-control

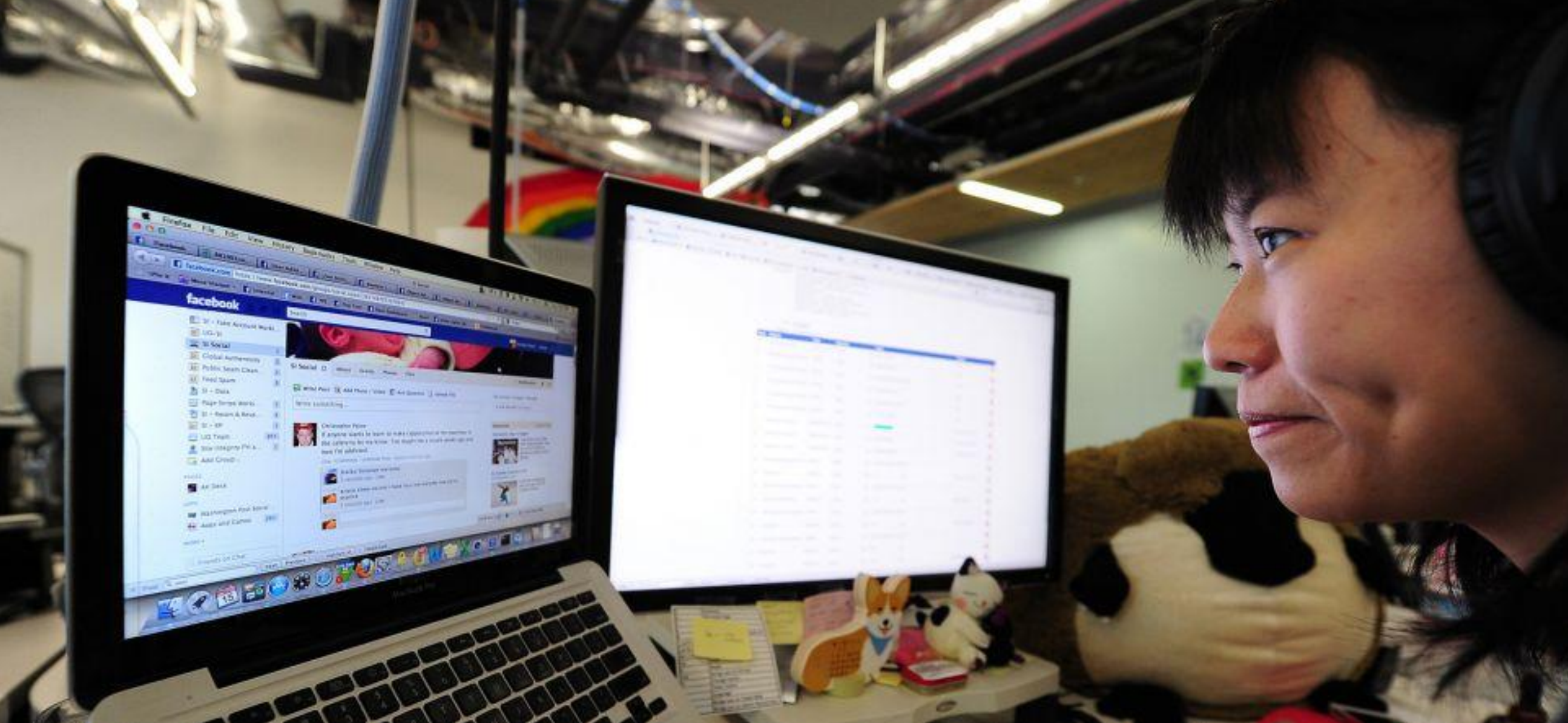
People's ability to align digital device use with their own valued, longer-term goals

“Find a balance with technology that feels right for you.”

“We’re committed to giving everyone the tools they need to develop their own sense of digital wellbeing.”

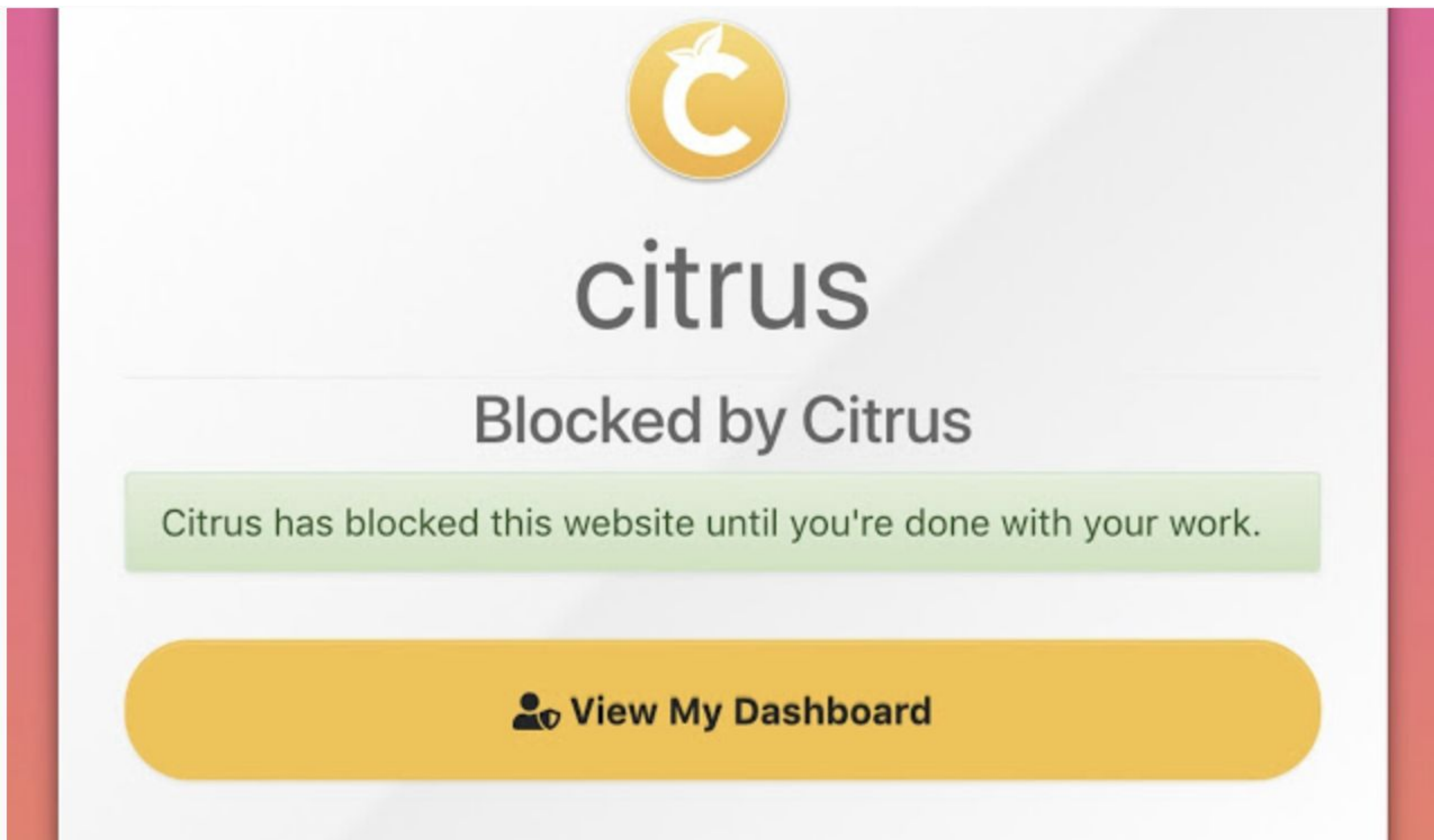
<https://wellbeing.google>







Block/removal



block distracting websites



remove Facebook's newsfeed

Self-tracking



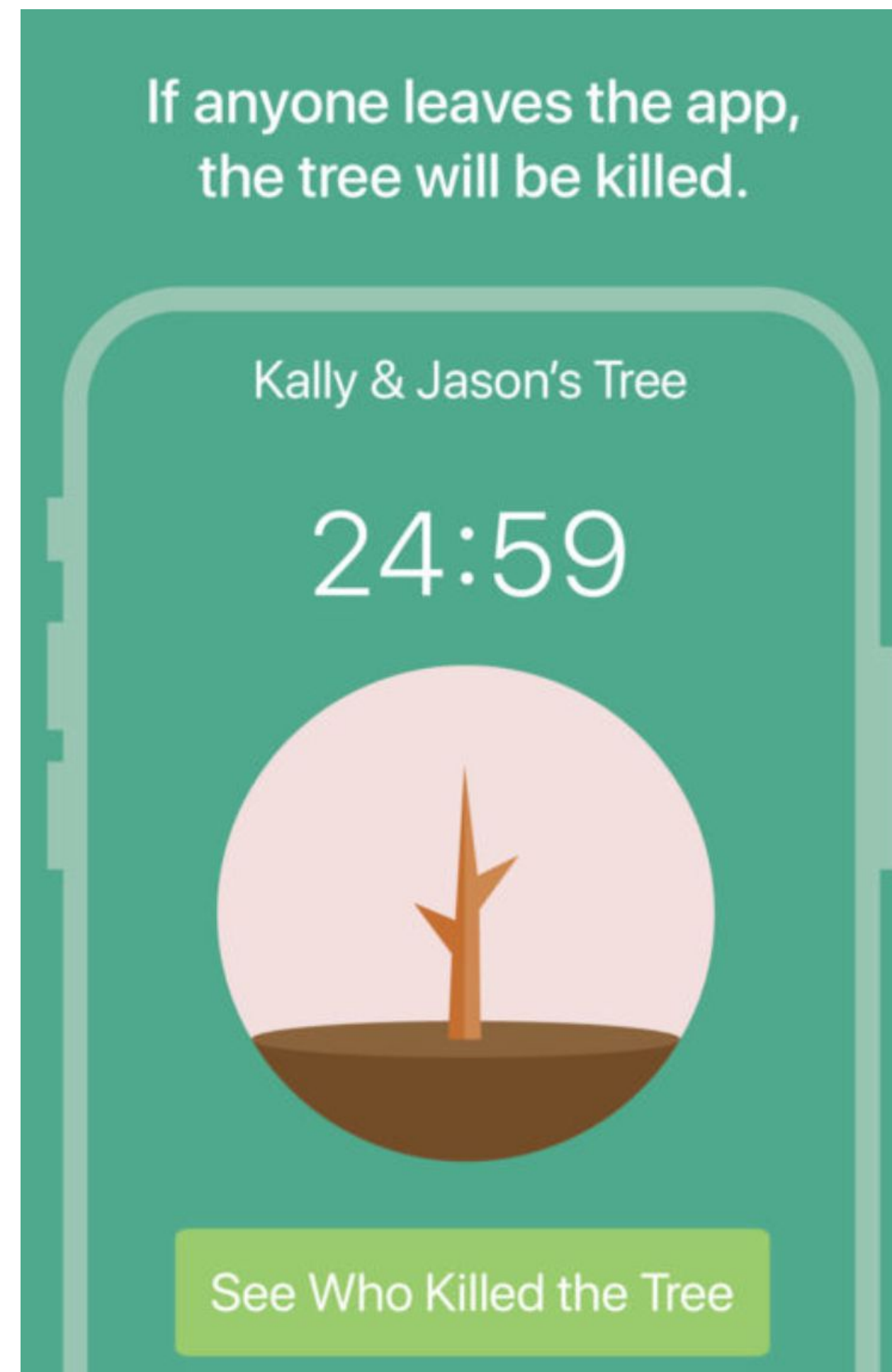
track and visualise laptop usage

Goal advancement

The image shows a Facebook interface with a user profile for 'Ulrik Lyngs'. The main content area features a 'Todobook' app widget. The widget has a header with the 'Todobook' logo and a subtitle 'Get something done before looking at News Feed.' Below this is a list of tasks, each with a 'DONE' button and a close icon. The tasks are: 'Create CHI presentation' (a day ago), 'Do laundry' (2 hours ago), 'Do topic modelling of user reviews' (an hour ago), 'Buy a hot air balloon' (16 minutes ago), and 'Coordinate Roskilde tickets' (just now). Below the list is a text input field with the placeholder 'What would you like to accomplish today?' and a 'Quitter.' button. At the bottom of the widget, there is a message: 'Psst!...We've added support for LinkedIn, YouTube, Reddit, and others. Enable?' followed by buttons for 'Say \'hi\'', 'Review', and 'Donate'. Below these buttons is a link: 'Like Todobook? Send the link to a friend!'. The right sidebar contains a 'Stories' section with an 'Add to Your Story' button, a post by 'Rasmus Nicolas and 2 others' with '6 event invites', and a 'Sponsored' ad for 'asana.com' titled 'Plan better projects'.

add todo list to Facebook

Reward/punish



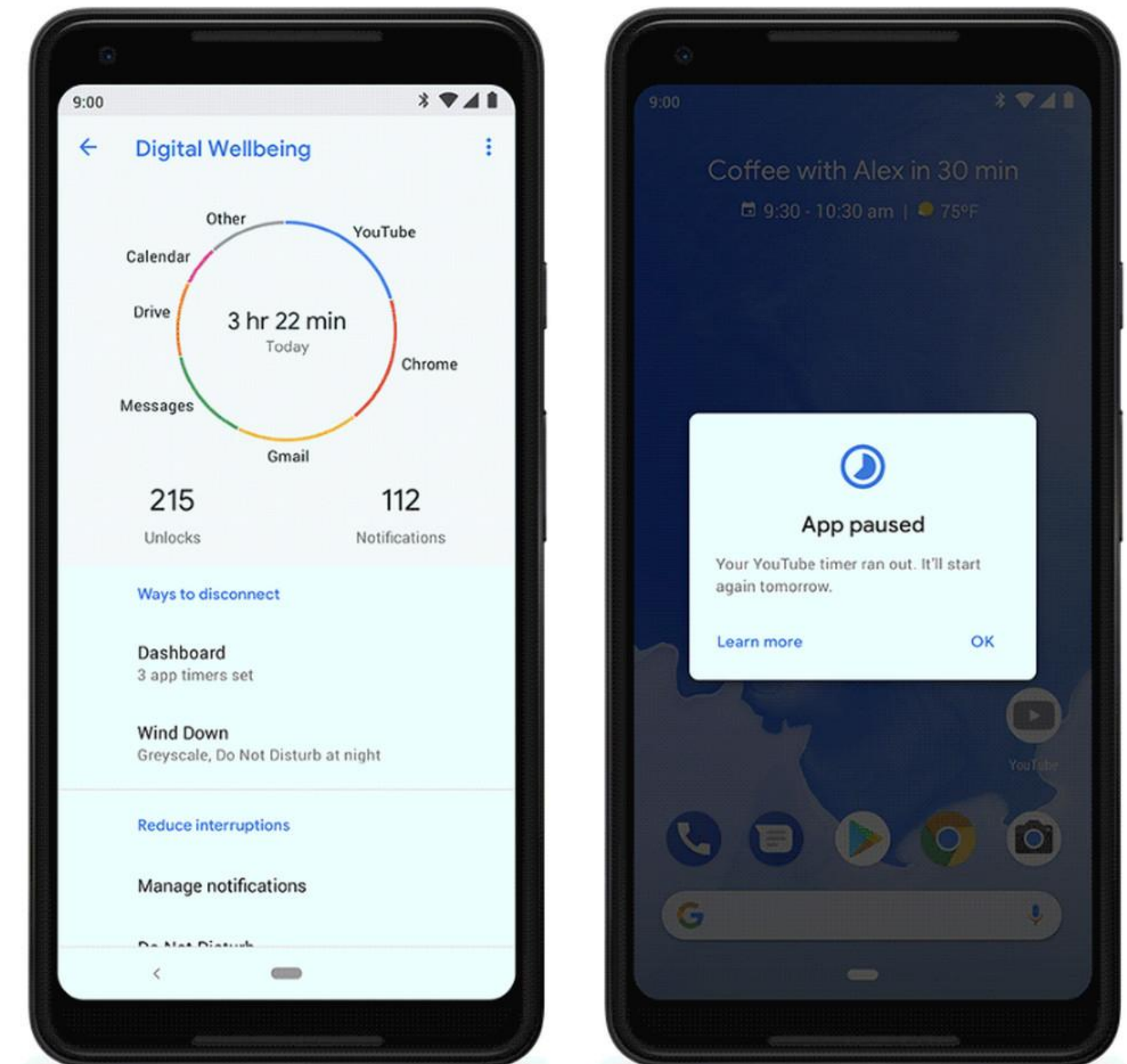
cut down tree if phone is used during focus session



Screen Time



Digital Wellbeing



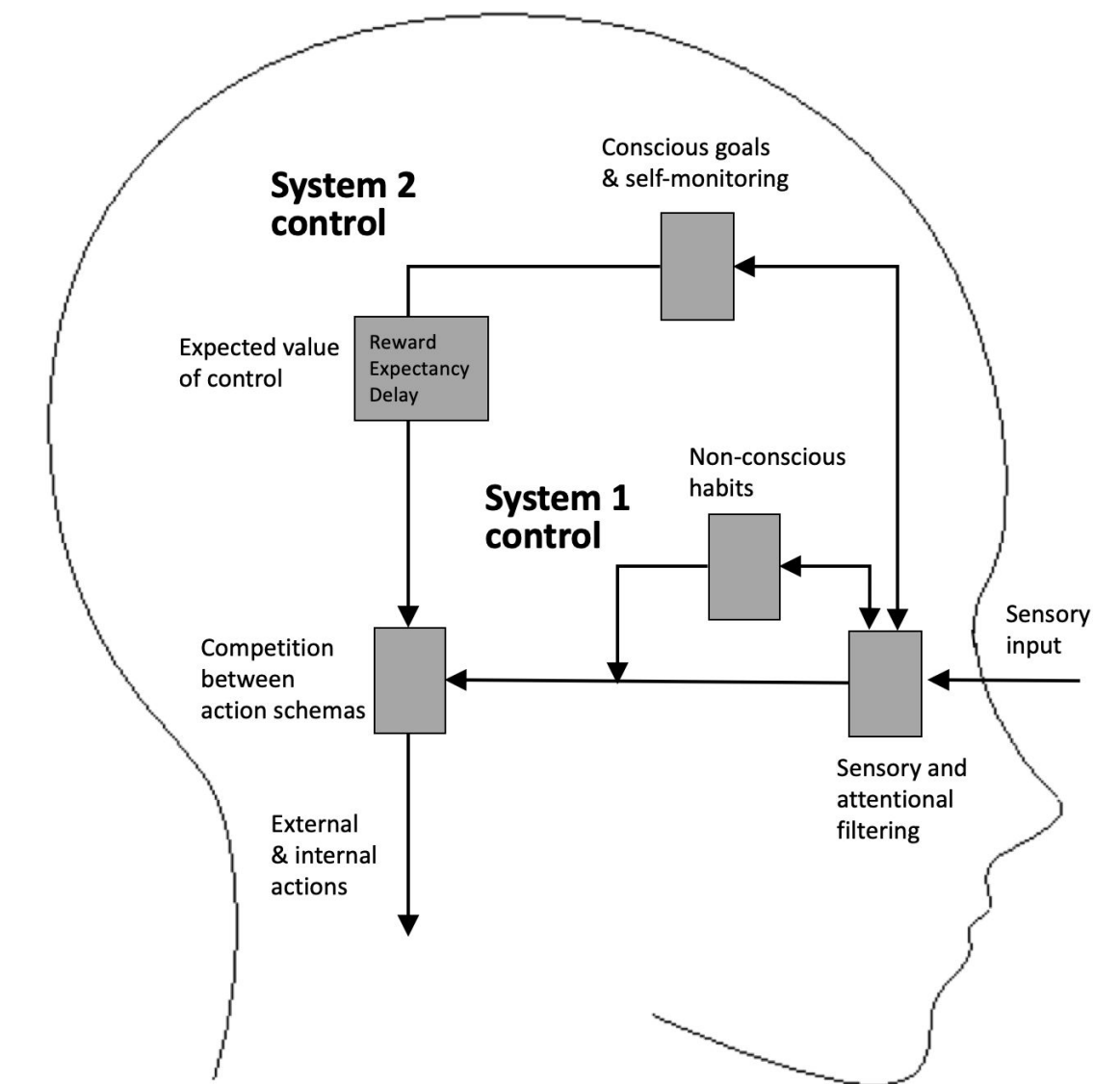
My research



Current tools on online stores

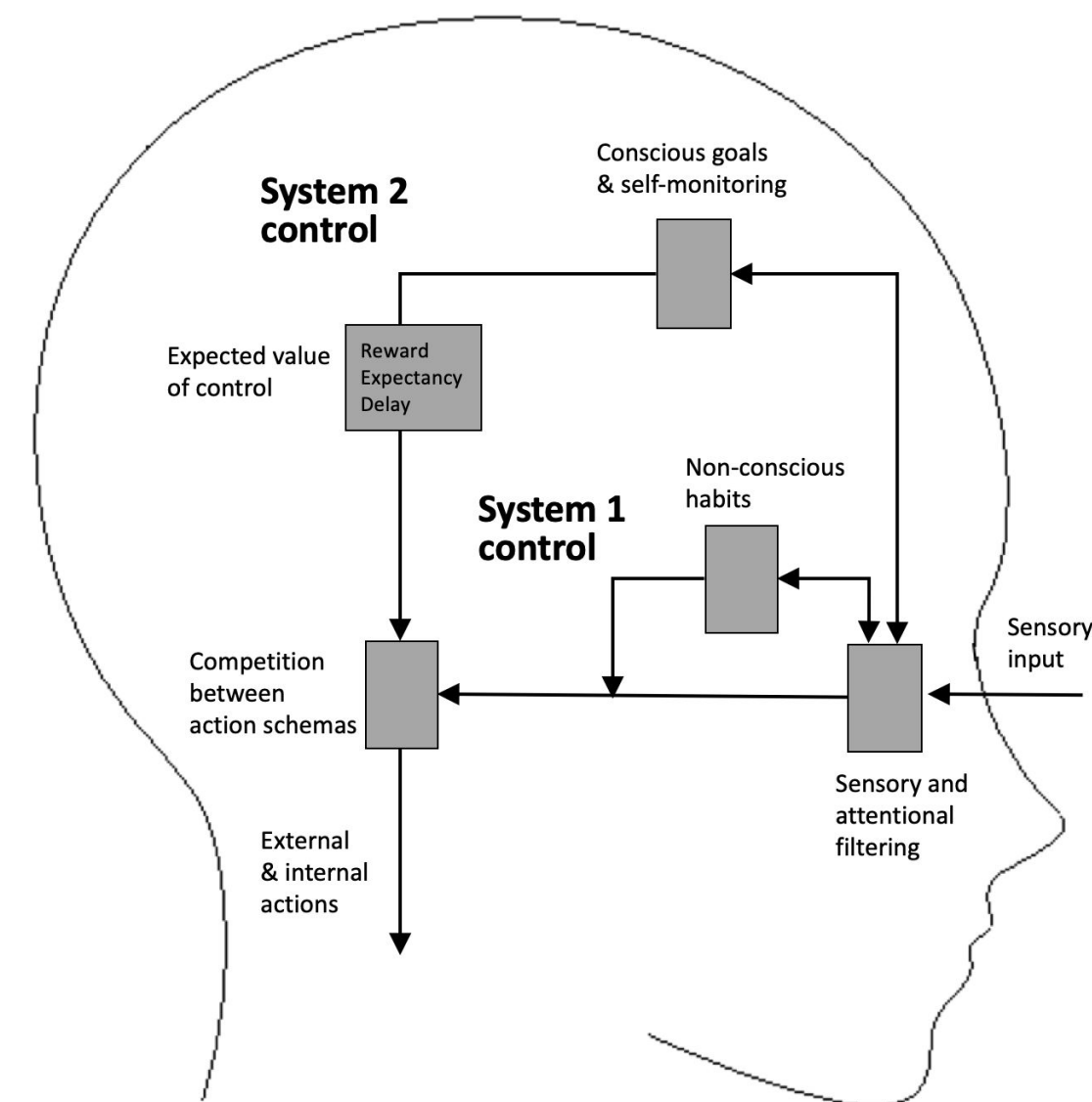


Living lab w/ qual & quant data collection



Dual systems lens

My research



the
ReDD
workshop

CHI'19: *Self-Control in Cyberspace: Applying Dual Systems Theory to a Review of Digital Self-Control Tools*

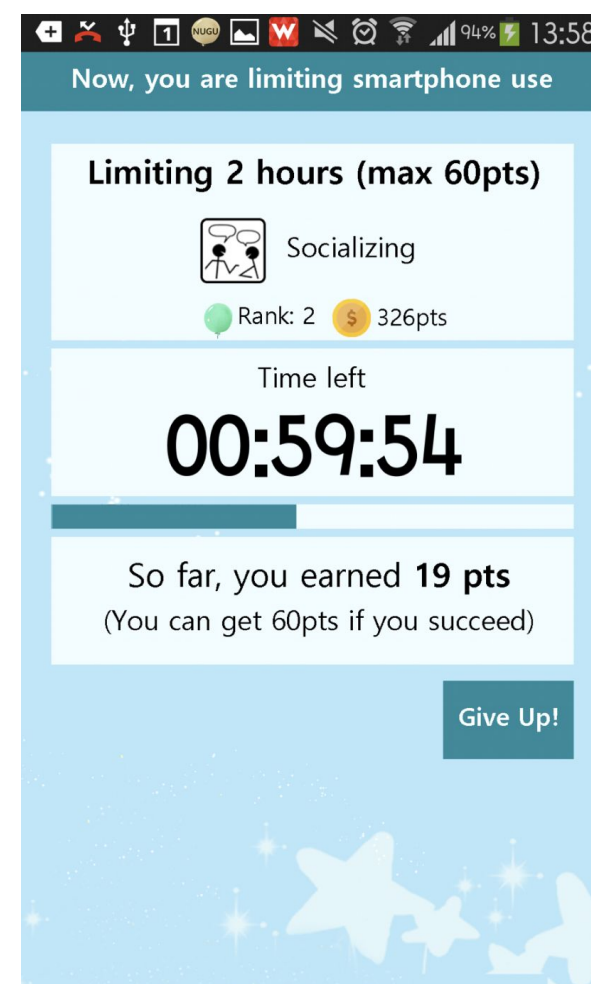
CHI'20: *'I Just Want to Hack Myself to Not Get Distracted': Evaluating Design Interventions for Self-Control on Facebook*

CHI'20 Rethinking Mental Health Resources
workshop: *The ReDD Workshop: A Template
for Supporting People in Regaining Control
Over Digital Device Use*
CHI'21...

Year	Paper	Title	Focus			Evaluation	Control group?	Open science?
			new	existing	review	type		
2012	Lottridge et al.	Browser Design Impacts Multitasking	√			experimental	no	no
2013	Lochtefeld et al.	AppDetox: Helping Users with Mobile App Addiction	√			observational		no
2014	Collins et al.	Barriers to Engagement with a Personal Informatics Productivity Tool		√		experimental + observational	yes (study 2)	no
2014	Lee et al.	The SAMS: Smartphone Addiction Management System and Verification	√			experimental	no	no
2015	Ko et al.	NUGU: A Group-based Intervention App for Improving Self-Regulation of Limiting Smartphone Use	√		(√)	experimental	no	no
2016	Biskjær et al.	Taking Action on Distraction			√	review		no
2016	Foulonneau et al.	Stop Procrastinating: TILT, Time Is Life Time, a Persuasive Application	√			experimental	no	no
2016	Andone et al.	Menthal: Quantifying Smartphone Usage	√			none		no
2016	Hiniker et al.	MyTime: Designing and Evaluating an Intervention for Smartphone Non-Use	√			experimental	no	no
2016	Kim et al.	TimeAware: Leveraging Framing Effects to Enhance Personal Productivity	√			experimental	no	no
2016	Ko et al.	Lock n’ LoL: Group-based Limiting Assistance App to Mitigate Smartphone Distractions in Group Activities	√			observational		no
2016	Ruan et al.	PreventDark: Automatic Smartphone Dark Mode Activation				none		no
2016	Whittaker et al.	Don’t Waste My Time’: Using a Smartphone App to Reduce Time Wasting				experimental	no	no
2017	Kim et al.	Let’s FOCUS: Mitigating Smartphone Distractions in the Workplace				observational		no
2017	Park et al.	“Don’t Bother Me. I’m Scrolling”: A Smartphone App to Reduce Distractions	√			experimental	no	no
2017	Kim et al.	Technology Supported Behavior Restriction for Mitigating Self-Interruptions in Multi-device Environments	√			experimental	no	no
2017	Marotta et al.	Online Distractions, Website Blockers, and Economic Productivity: A Randomized Field Experiment		√		experimental	yes	no
2018	Velthoven et al.	Problematic smartphone use: Digital approaches to an emerging public health problem			√	review		no
2018	Kovacs et al.	Rotating Online Behavior Change Interventions Increases Effectiveness But Also Increases Attrition	√			experimental	yes	yes
2018	Mark et al.	Effects of Individual Differences in Blocking Workplace Distractions		√		experimental	no	no
2018	Okeke et al.	Good Vibrations: Can a Digital Nudge Reduce Digital Overload?	√			experimental	yes	no
2018	Borghouts et al.	Looking Up Information in Email: Feedback on Visit Durations Discourages Distractions	√			experimental	yes	no
2018	Kim et al.	Exploring Context-aware Proactive Blocking for Distraction Management	√			user study		no
2019	Kovacs et al.	Conservation of Procrastination: Do Productivity Interventions Save Time or Just Redistribute It?	√			experimental	yes	yes
2019	Roffarello & De Russis	The Race Towards Digital Wellbeing: Issues and Opportunities	√		√	review + experimental	no	no
2019	Kim et al.	GoalKeeper: Exploring Interaction Lockout Mechanisms for Regulating Smartphone Use	√			experimental	yes	no
2019	Tseng et al.	Overcoming Distractions during Transitions from Break to Work using a Conversational Website-Blocking System	√			experimental	yes	no
2019	Kim et al.	LocknType: Lockout Task Intervention for Discouraging Smartphone App Use	√			experimental	yes	no

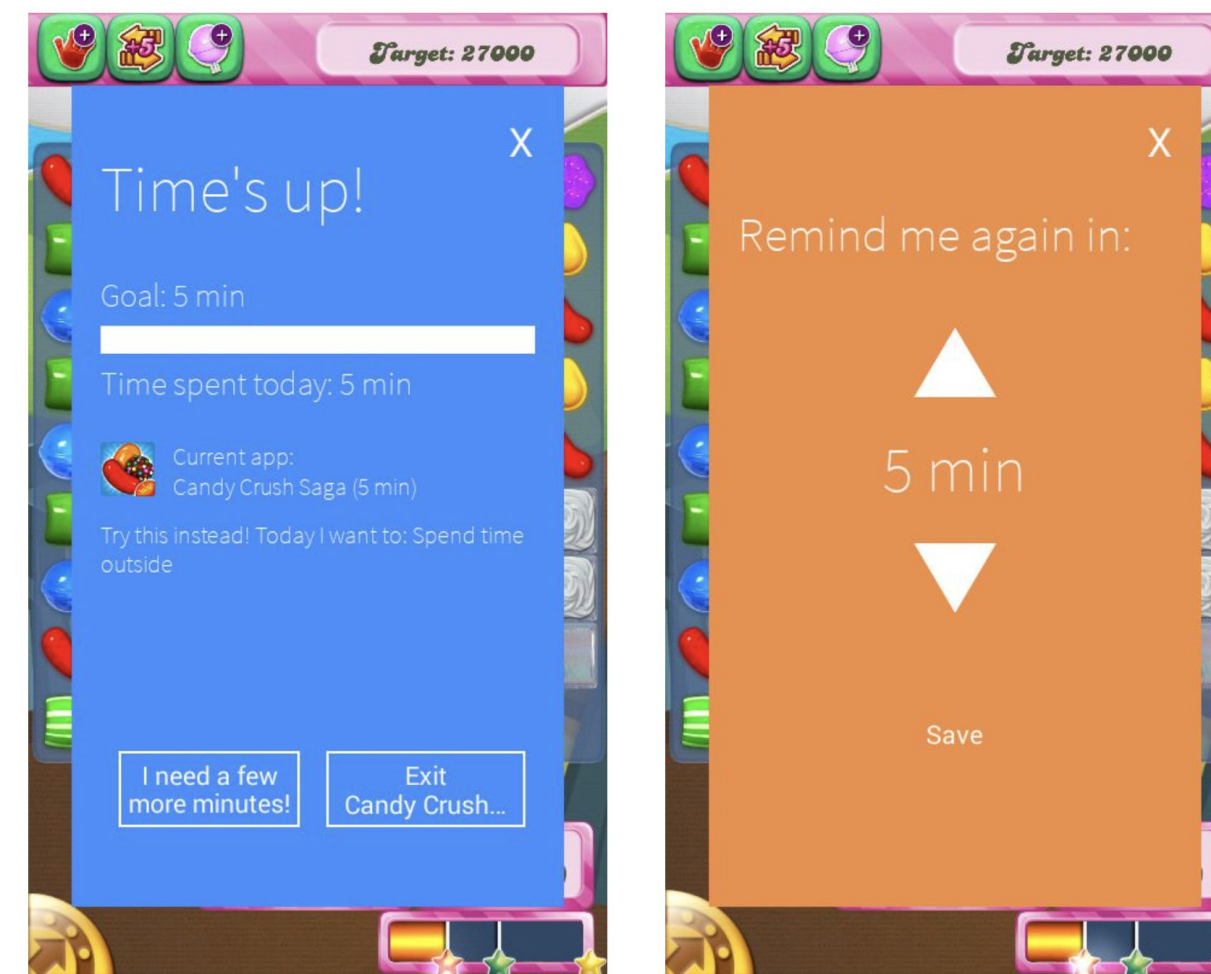
State of the research

1st wave research (-2016): early prototypes



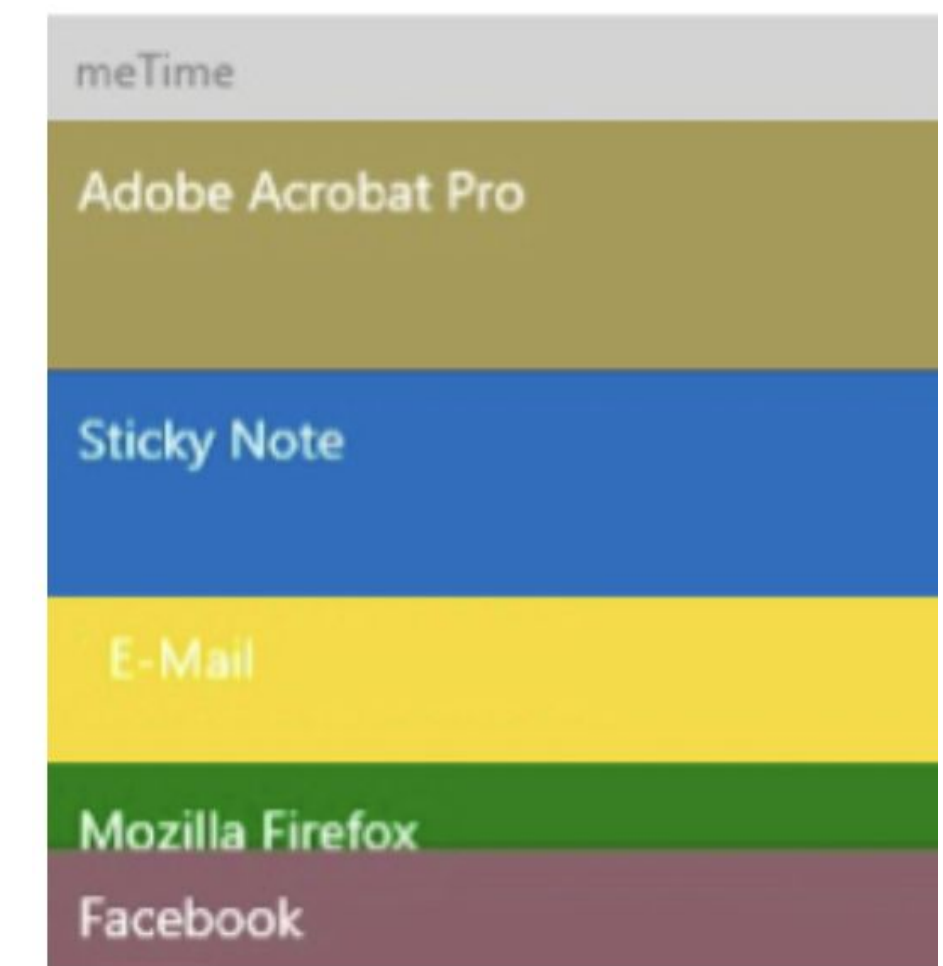
group-based limiting
of smartphone use

Ko et al. 2015



setting goals for time
spent on smartphone

Hiniker et al. 2016



floating window of
time spent on laptop

Whittaker et al. 2016

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2016	Ruan et al.	PreventDark: Automatically Detecting and Preventing Problematic Use of Smartphones in Darkness	√			none
2016	Whittaker et al.	Don’t Waste My Time’: Use of Time Information Improves Focus	√			experimental

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2017	Park et al.	“Don’t Bother Me. I’m Socializing!”: A Breakpoint-Based Smartphone Notification System	√				
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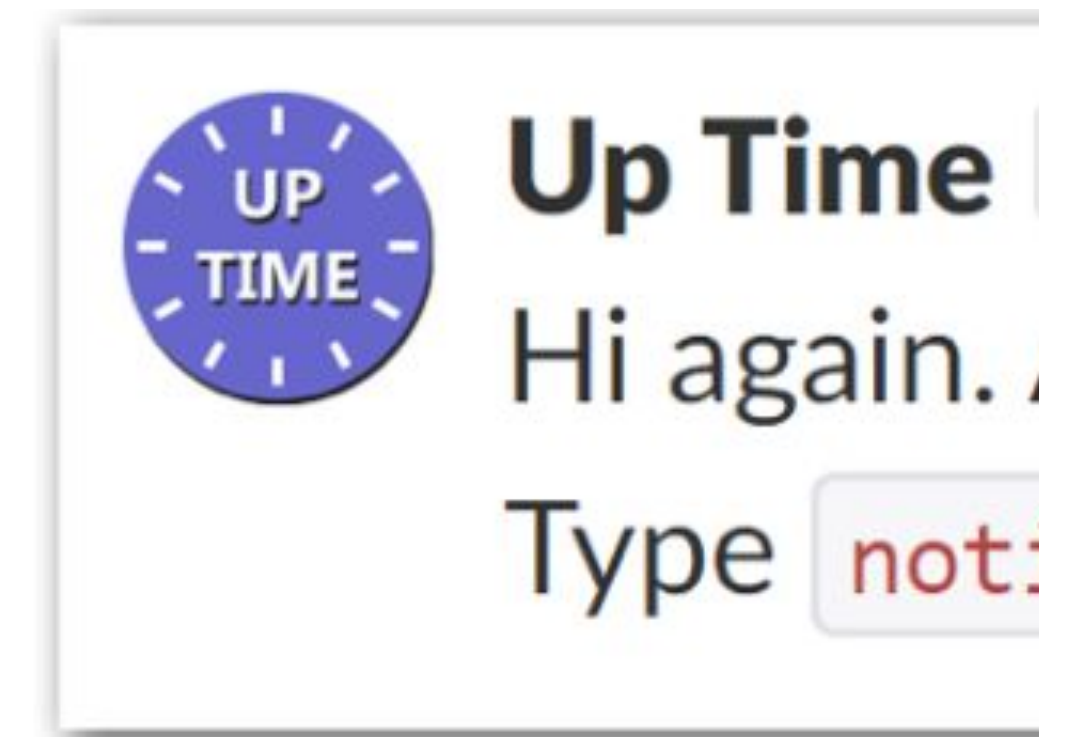
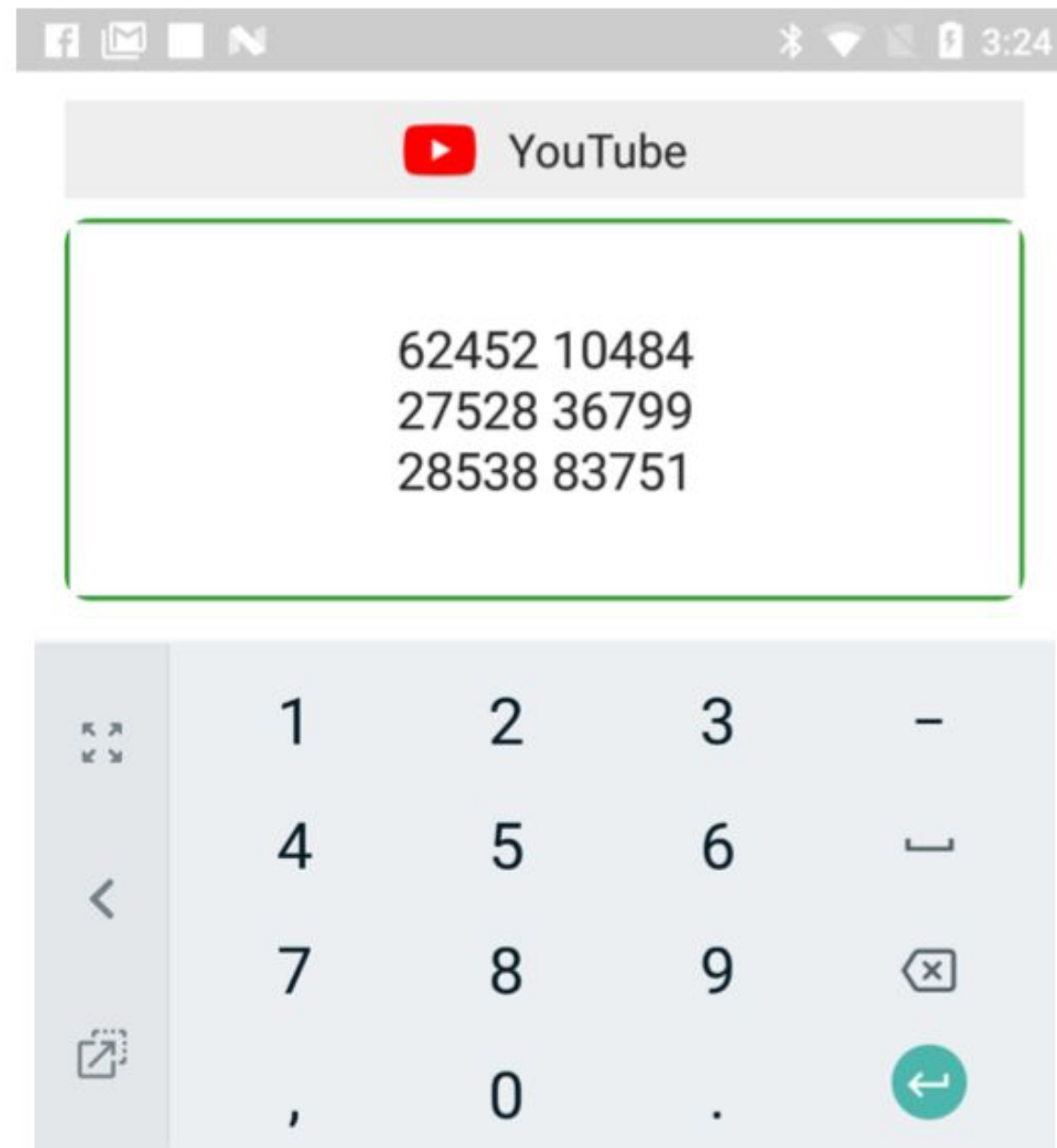
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2nd wave research (2017-): towards 'usable evidence'

- what design components makes a difference?
- for whom?
- in which contexts?

2nd wave research (2017-): towards 'usable evidence'



What components?

Varying amount
of friction to access
distractions

Kim et al. 2019

For whom?

Correlating baseline
self-control w/
effectiveness of blocking

Mark et al. 2018

Which contexts?

Blocking distractions
at break-work
transitions

Kim et al. 2019

Implications for product design

A woman with brown hair is looking over a table. On the table, there is a white bowl of green salad on the left and a white plate with a slice of chocolate cake on the right. The woman's expression is one of temptation or conflict, looking from the healthy salad to the indulgent cake.

People who are better at self-regulation:

- set up distraction-free environments
- develop habits aligned with their goals

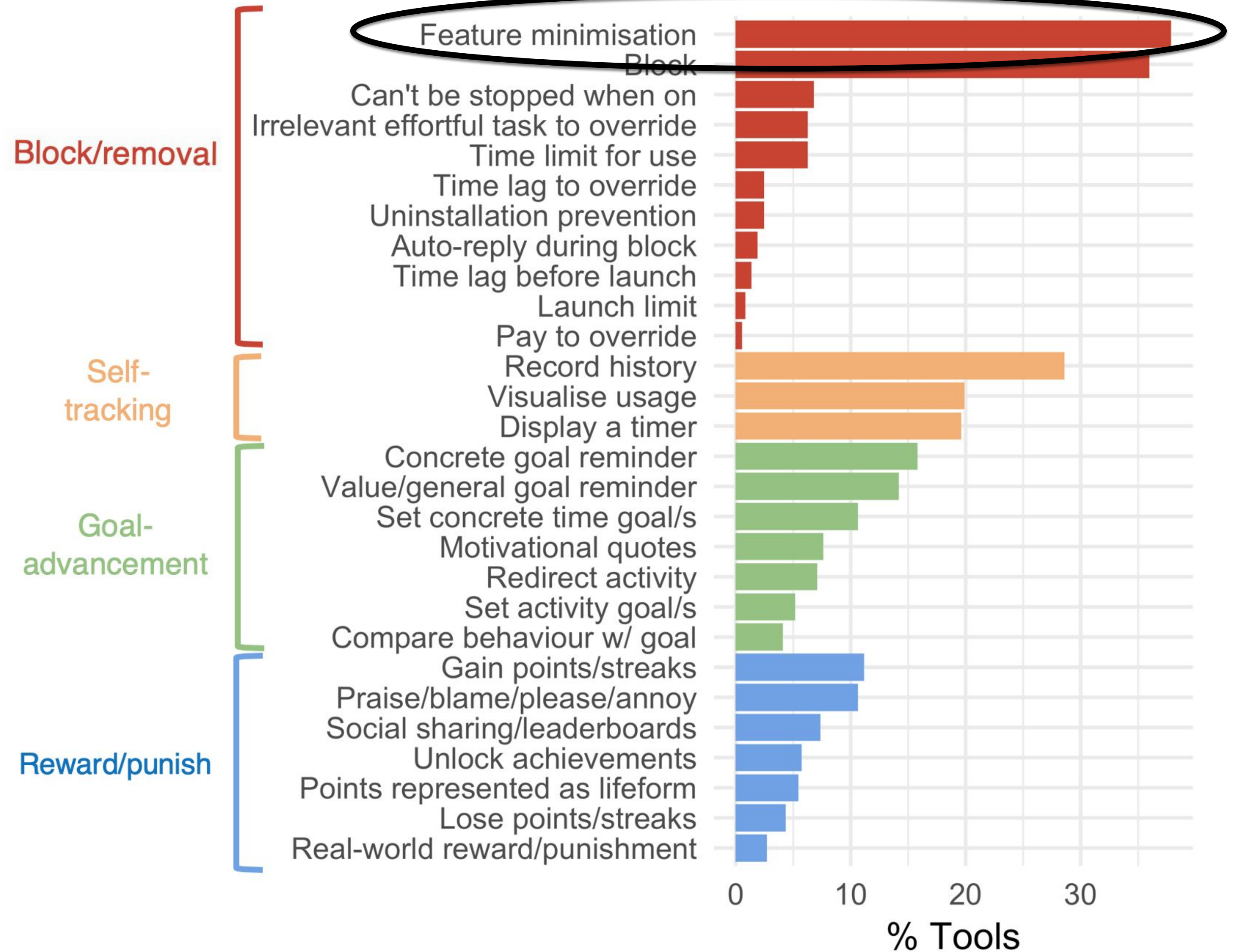
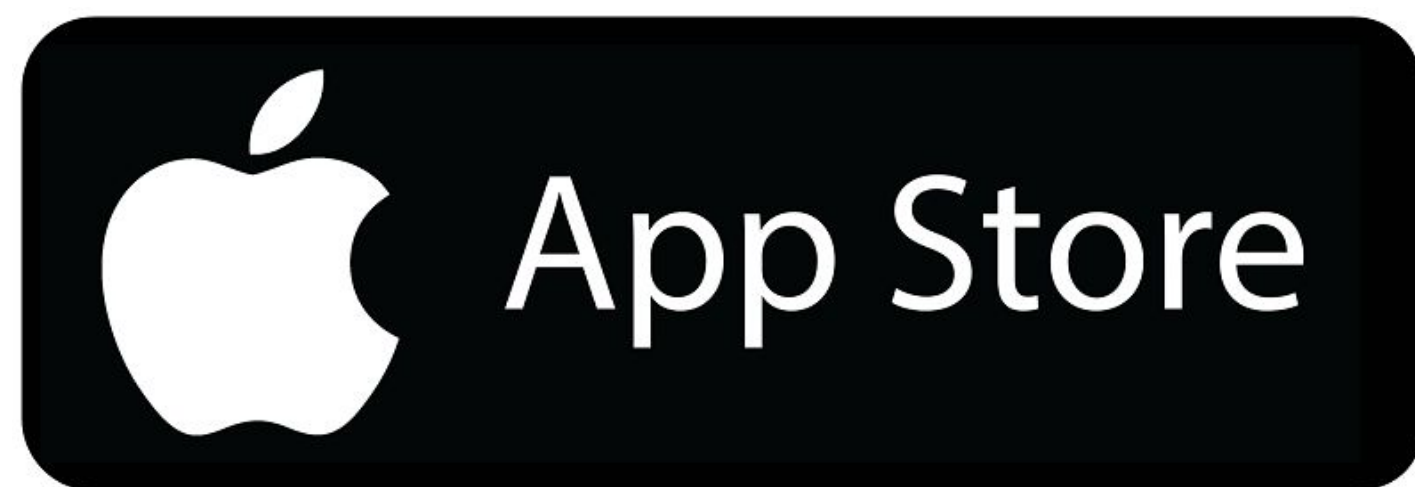
Duckworth et al. 2018, "Beyond Willpower: Strategies for Reducing Failures of Self-Control",
Duckworth et al. 2016, "A Stitch in Time: Strategic Self-Control in High School and College Students",
Galla & Duckworth 2015, "More than Resisting Temptation: Beneficial Habits Mediate the Relationship Between Self-Control and Positive Life Outcomes"

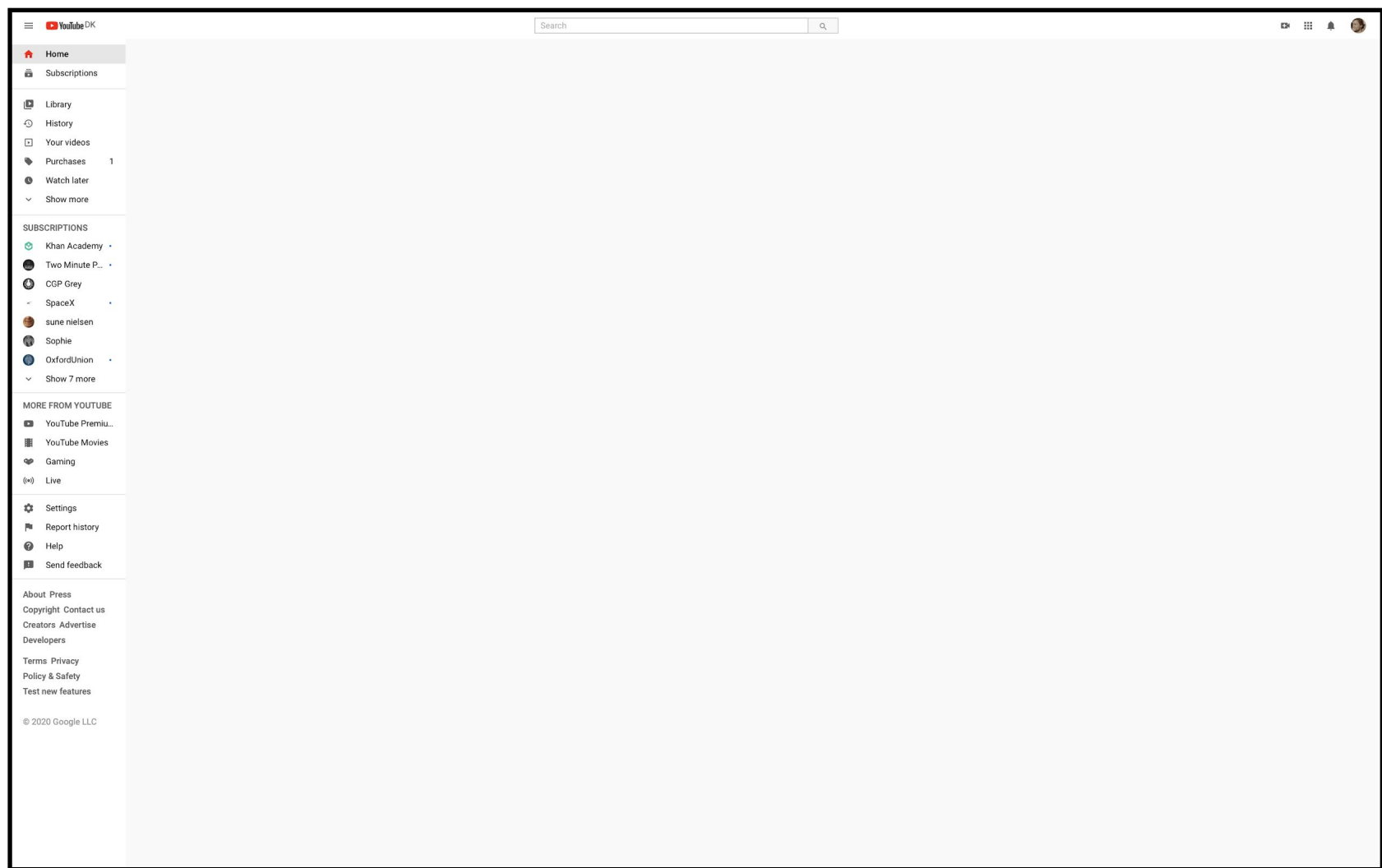
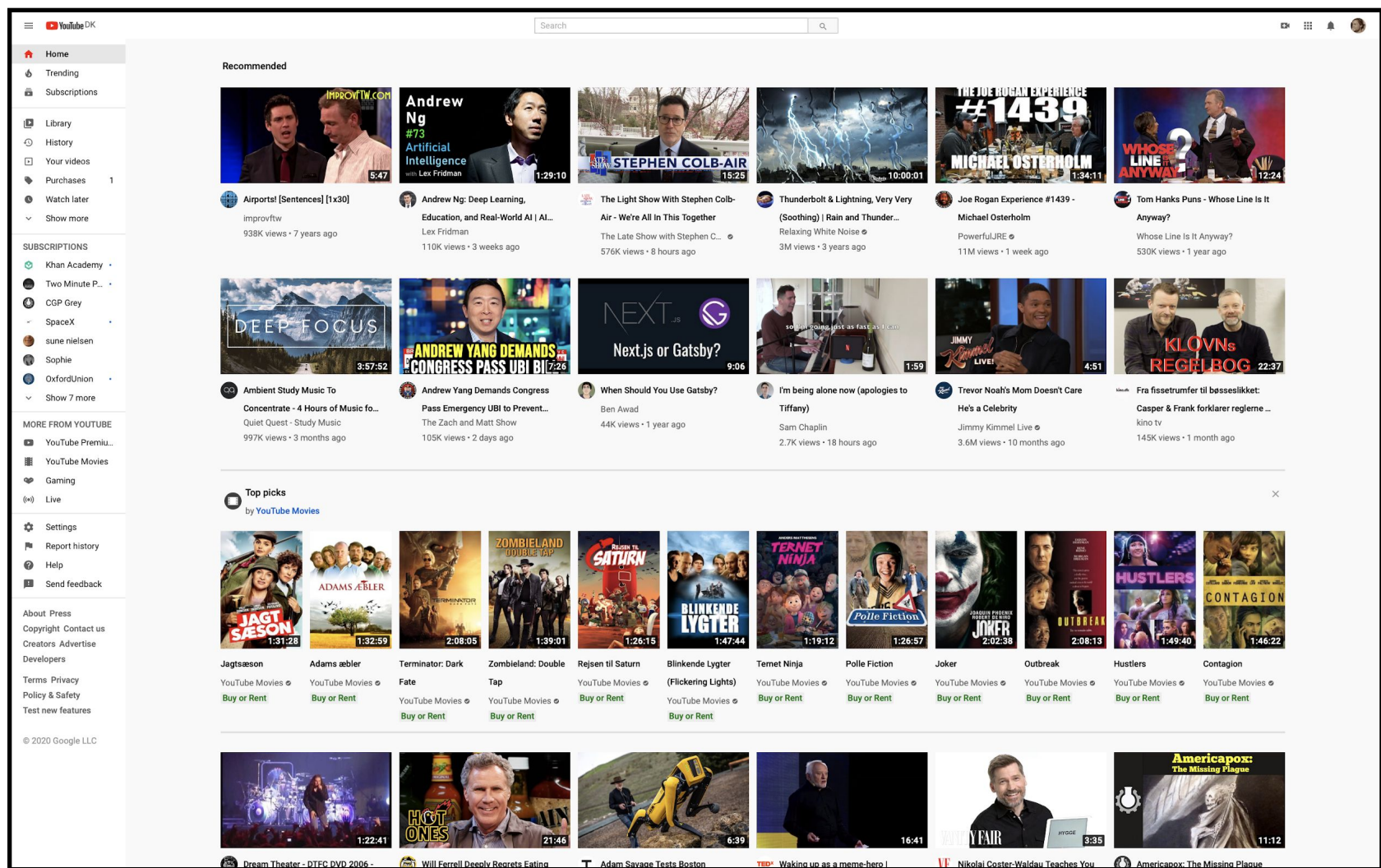
... yet most discussion
focuses on 'screen time'

“[social media] have *useful* attributes that we go to them for, like events, groups, erm direct messaging but in going to them for those things we end up getting distracted”

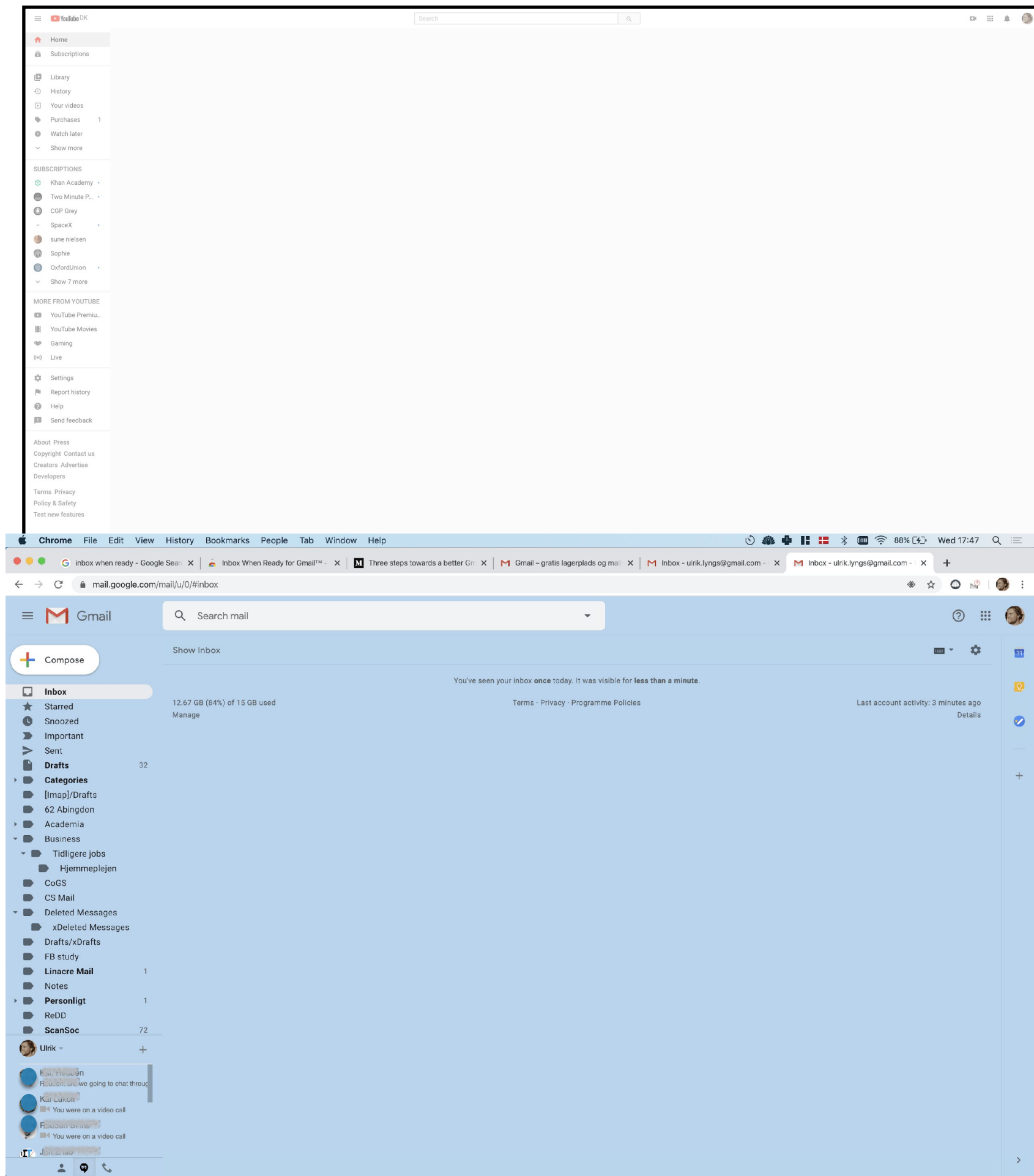
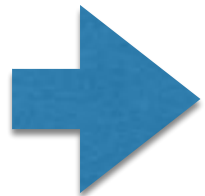
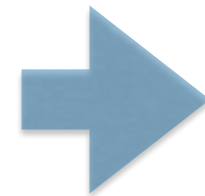
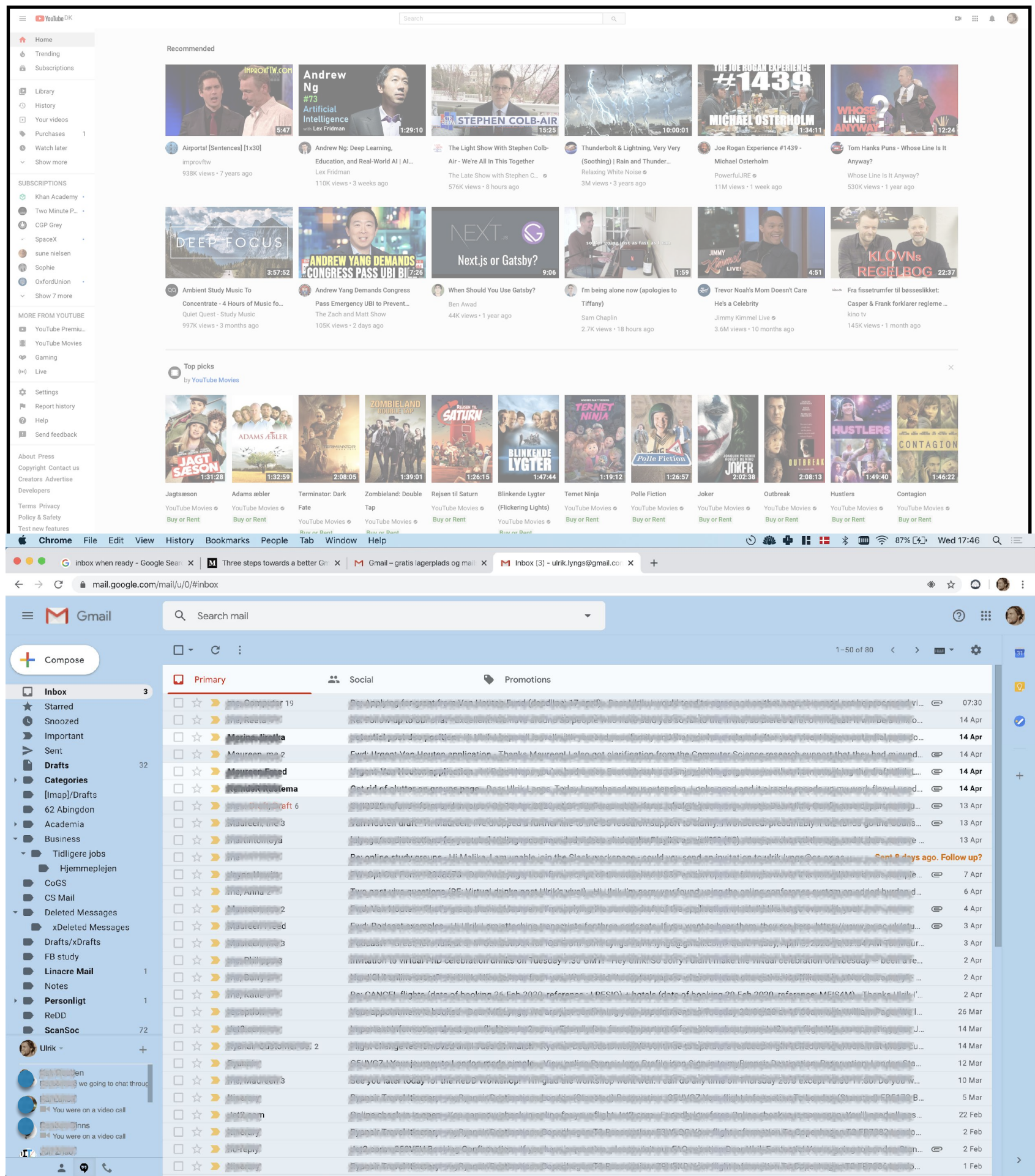
Top concern:
task diversion

“I just lose a lot of time picking up my phone for one thing and then doing other things”

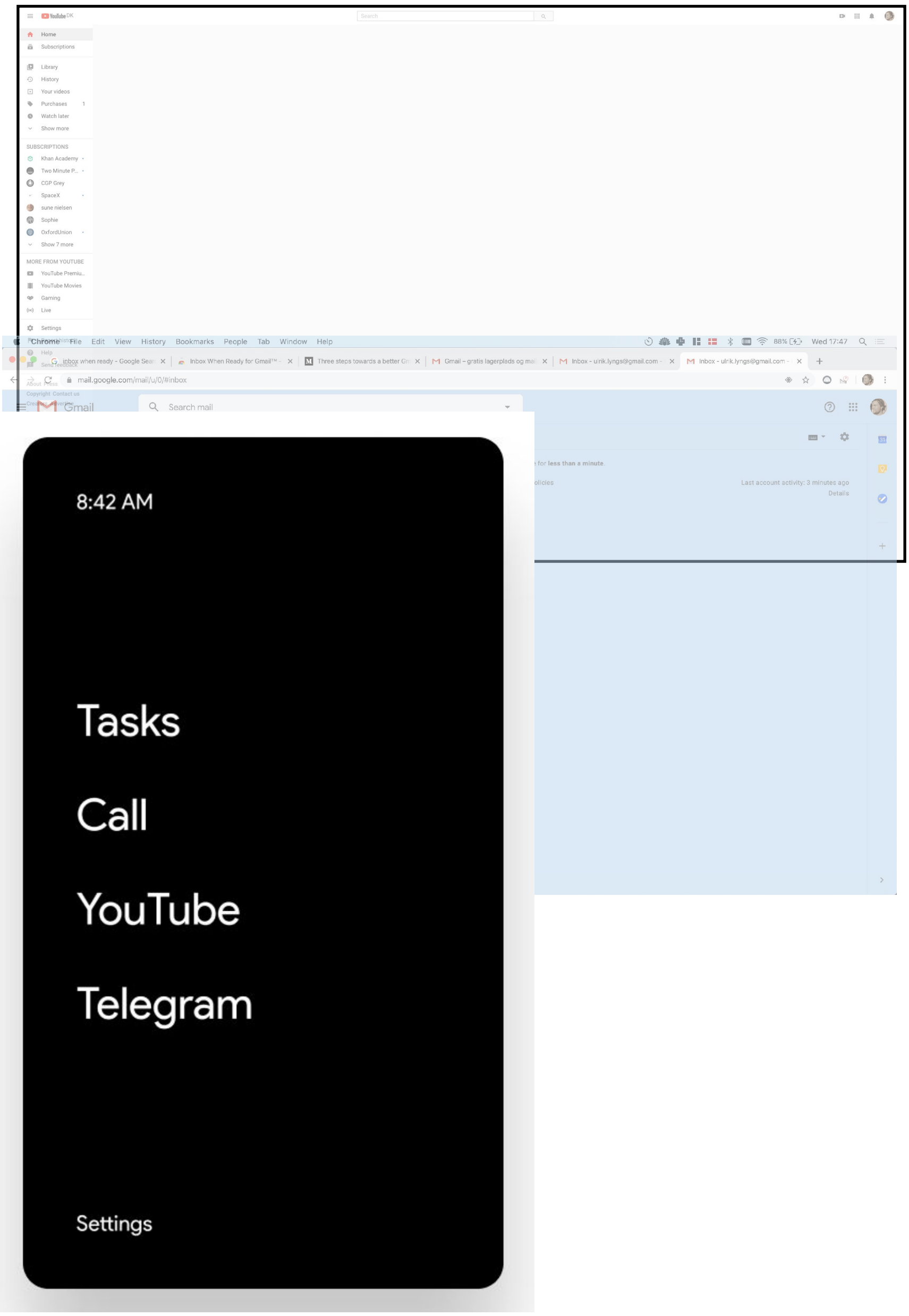
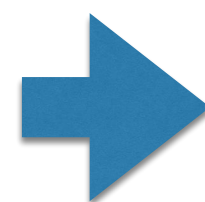
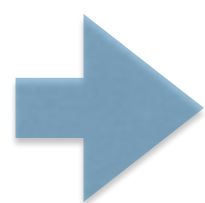
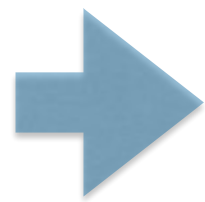
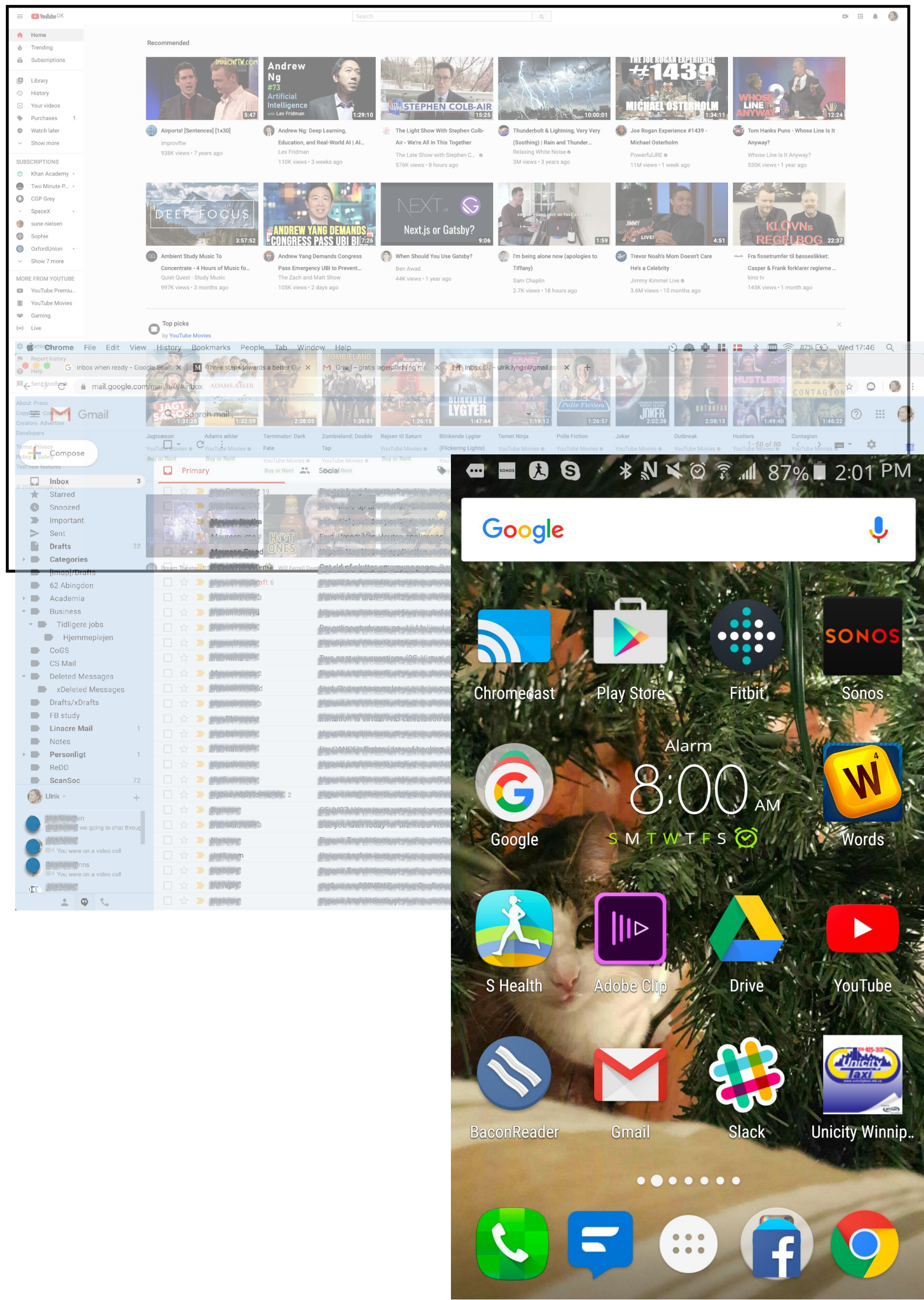




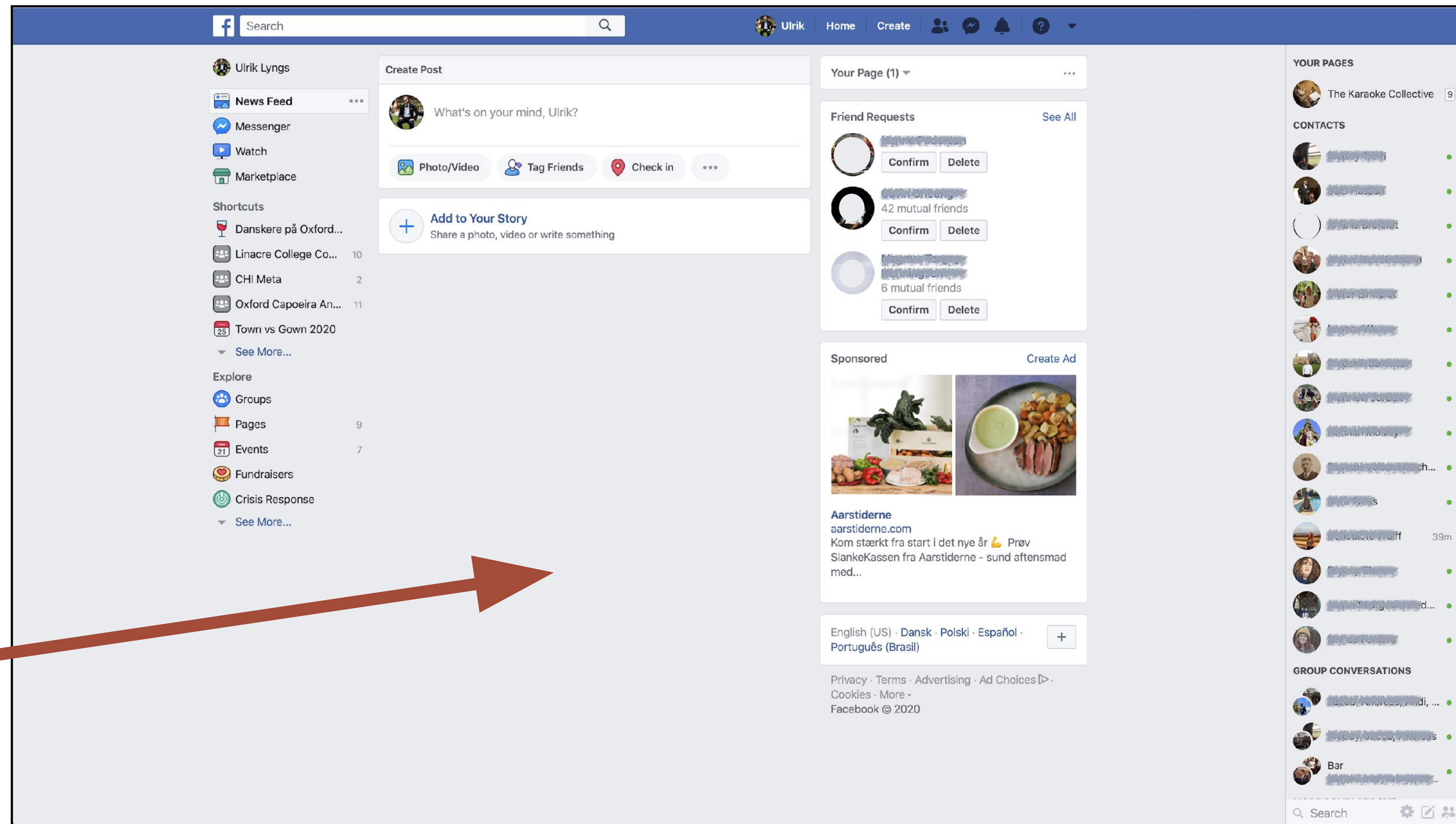
DF Tube
(Distraction Free for YouTube)



Inbox When Ready for Gmail



removed
newsfeed



Lyngs et al. 2020 (CHI'20) *'I Just Want to Hack Myself to Not Get Distracted': Evaluating Design Interventions for Self-Control on Facebook*

“I went and contacted the person or looked at the specific thing that I wanted, not what I saw and kinda wanted at the moment”, P56

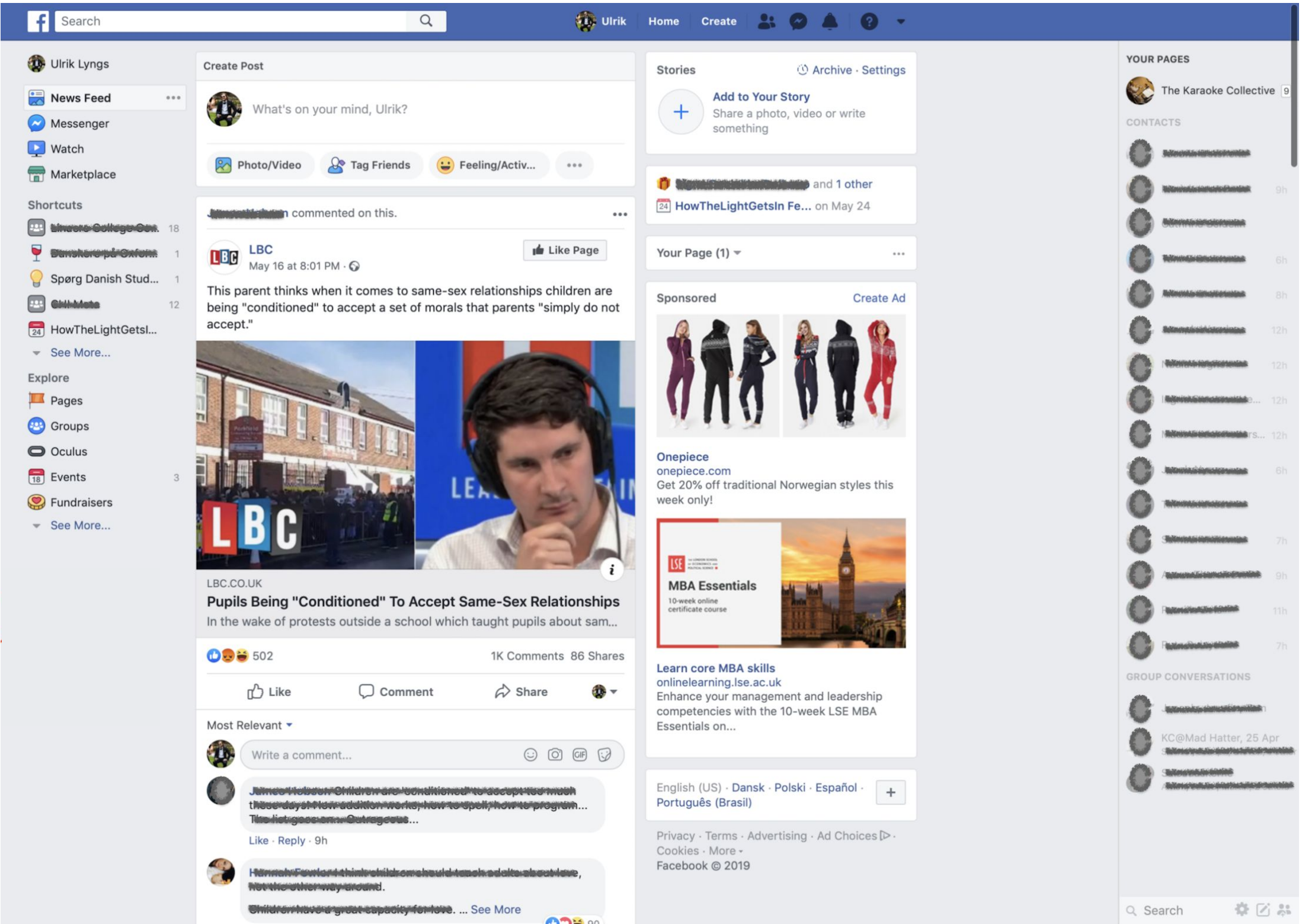
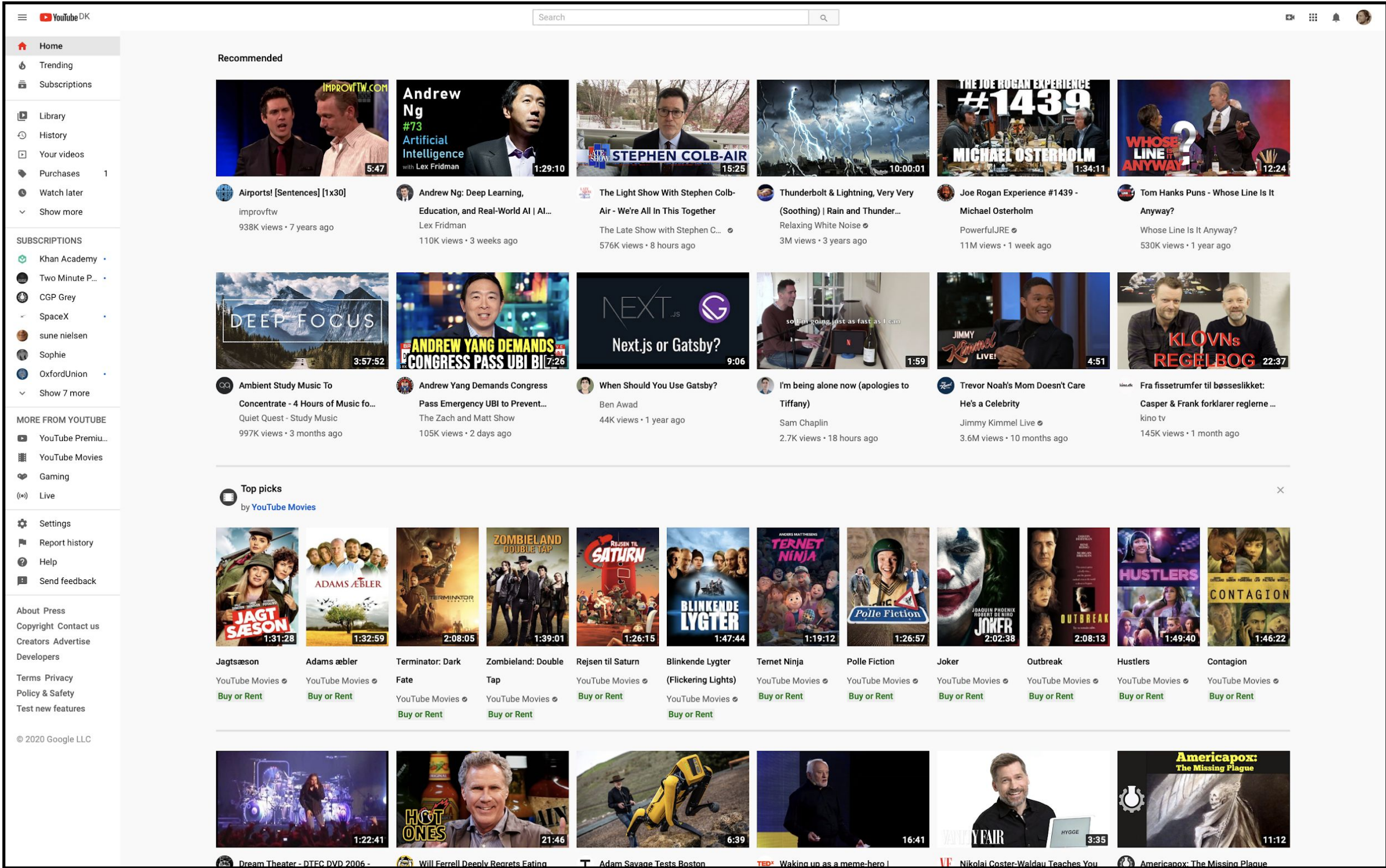
Findings

Condition	Subjective benefits	Subjective downsides	Behavioural effects	
Removed newsfeed	Less triggering of unintended use	FOMO	Scrolling Visit length Liking	 -73% -22%

Lyngs et al. 2020 (CHI'20) *'I Just Want to Hack Myself to Not Get Distracted': Evaluating Design Interventions for Self-Control on Facebook*

Controlling amount and motivational
pull of information in users' digital
environments

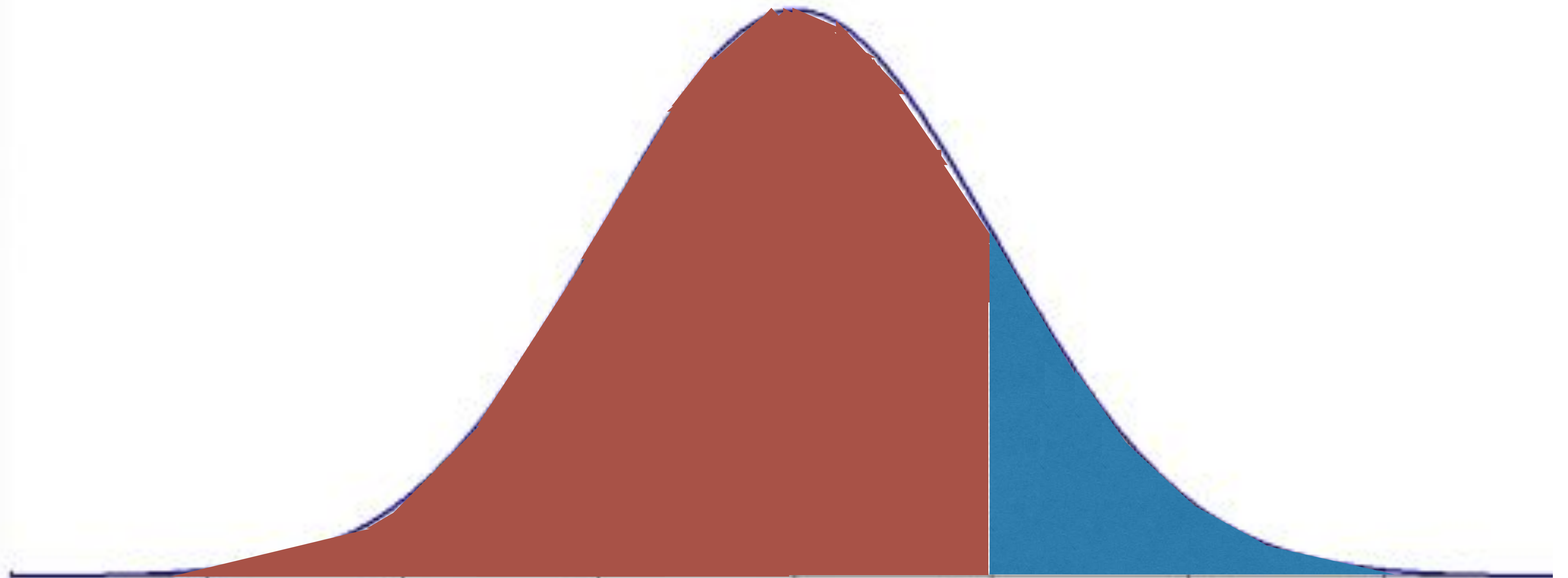
High information density & information pull in basic tools





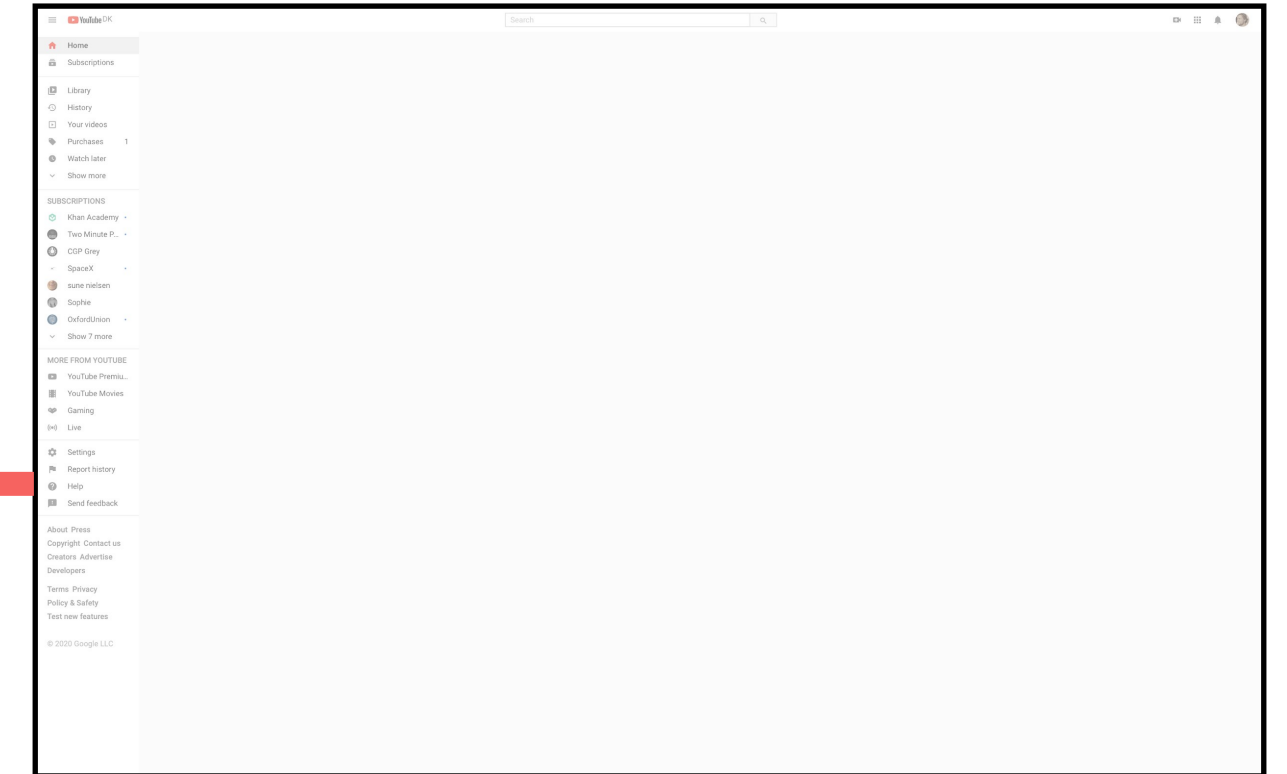
Small working memory capacity,
High impulsivity

Large working memory capacity,
Low impulsivity



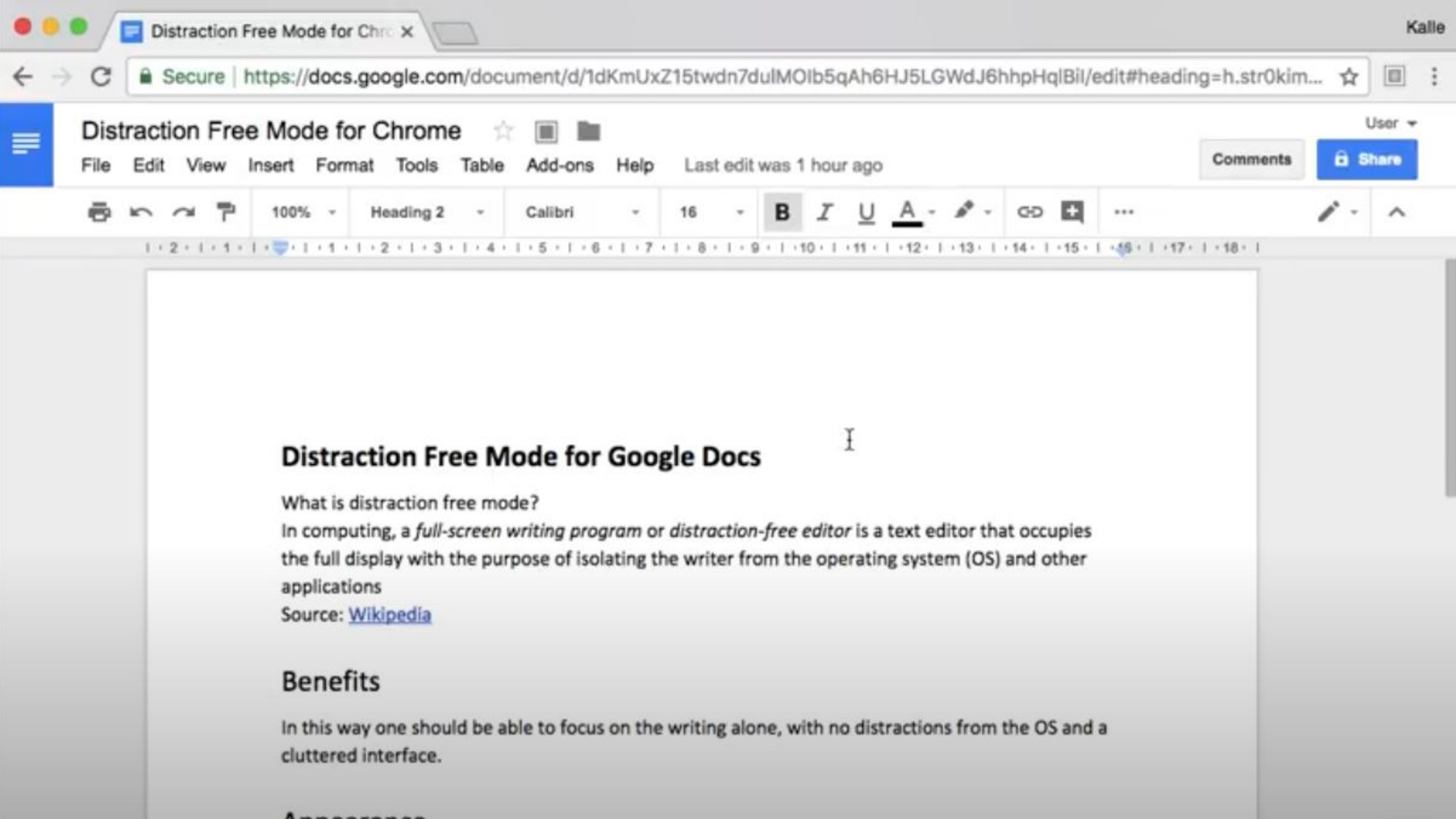
Small working memory capacity,
High impulsivity

Large working memory capacity,
Low impulsivity



Small working memory capacity,
High impulsivity

Large working memory capacity,
Low impulsivity



Distraction Free Mode for Chrome

File Edit View Insert Format Tools Table Add-ons Help Last edit was 1 hour ago

Comments

Share

100% Heading 2 Calibri 16 B I U A

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Distraction Free Mode for Google Docs

What is distraction free mode?

In computing, a *full-screen writing program* or *distraction-free editor* is a text editor that occupies the full display with the purpose of isolating the writer from the operating system (OS) and other applications

Source: [Wikipedia](#)

Benefits

In this way one should be able to focus on the writing alone, with no distractions from the OS and a cluttered interface.

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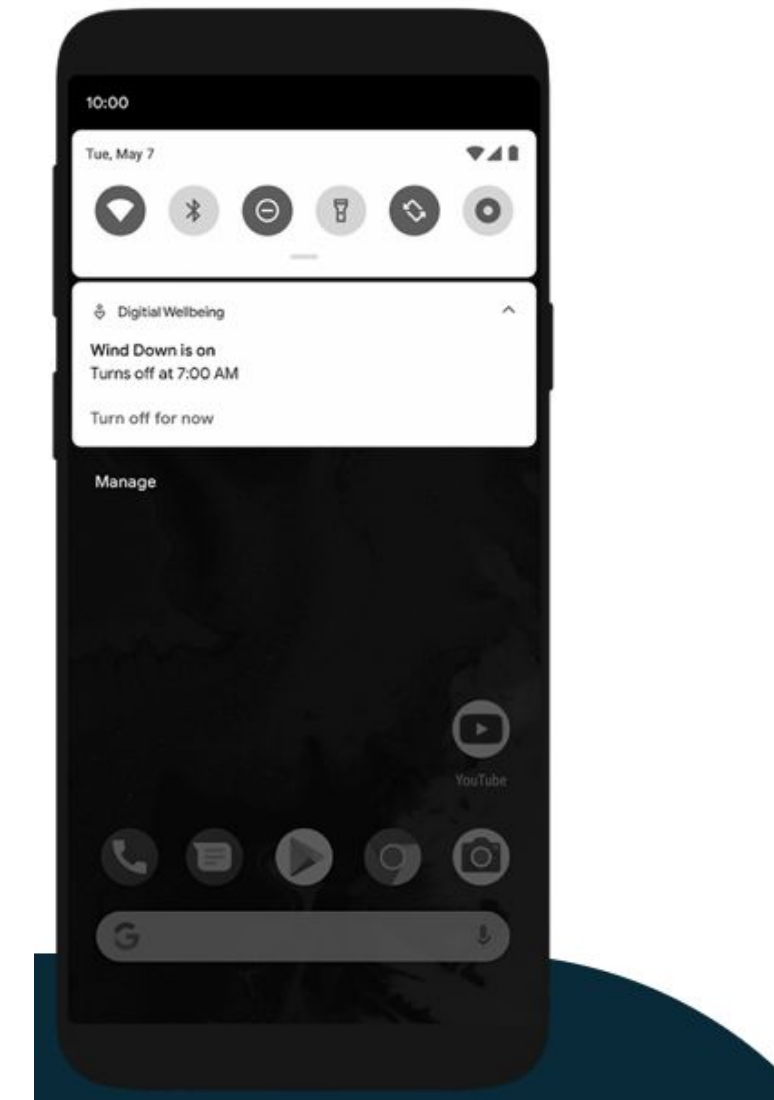
Benefits

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Appearance

Practical implications

Beta Digital Wellbeing features for Android allow control of distraction exposure at app-level



Wind Down

Disconnect for a better night's sleep.

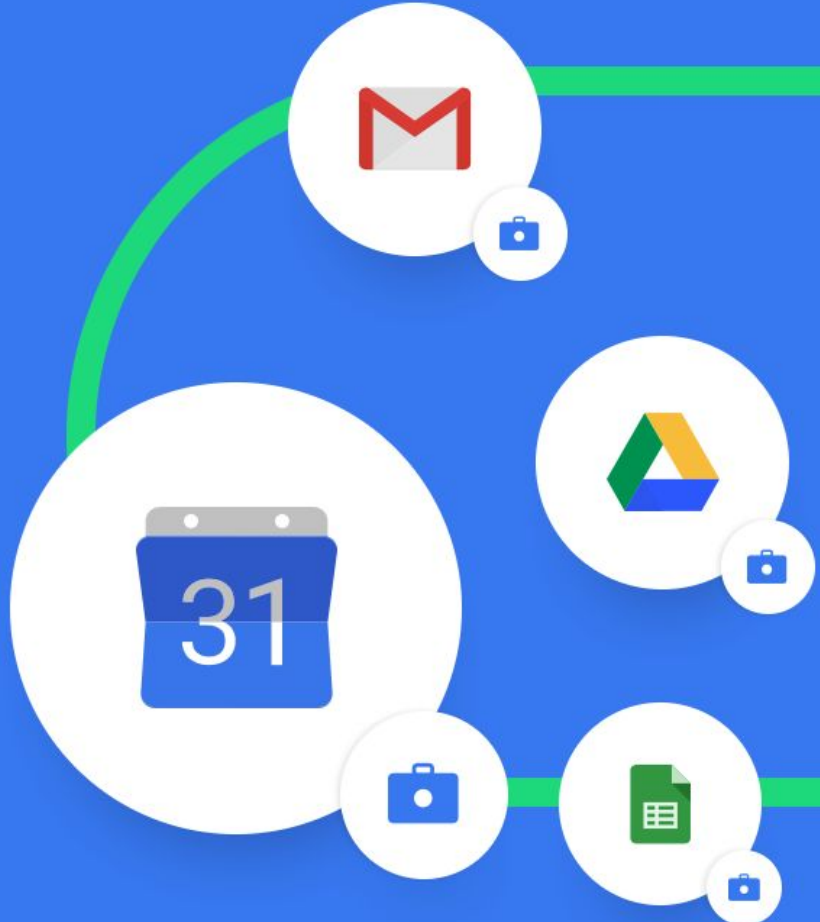
When it's time to go to bed, Wind Down helps you switch off. Just set a bedtime and it turns your screen to Grayscale and silences your notifications with Do Not Disturb. Which means you can get a full night's rest. No buzzing, beeping or endless scrolling to keep you up.



Work Profile

Leave work at the office.

With Android, you get two profiles on one phone: work and personal. When you switch to personal, all your work apps stay hidden. Like your calendar, your emails, your notifications. So, when you leave the office at the end of the day, you know you're not taking work home with you.



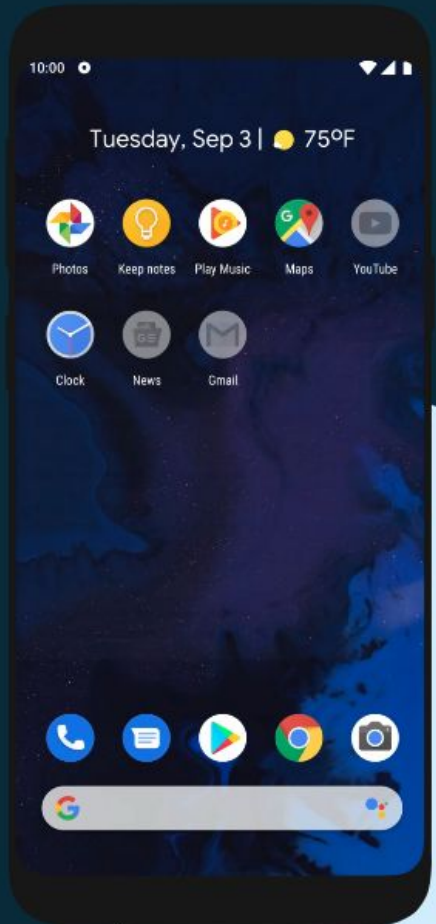


Focus mode

Focus on what's in front of you.

For getting in the zone and blocking out distractions, Focus mode lets you select apps to pause temporarily. So if you want to turn off a distracting app to get something done, all you have to do is tap.

- Select apps to pause
- Turn off distractions

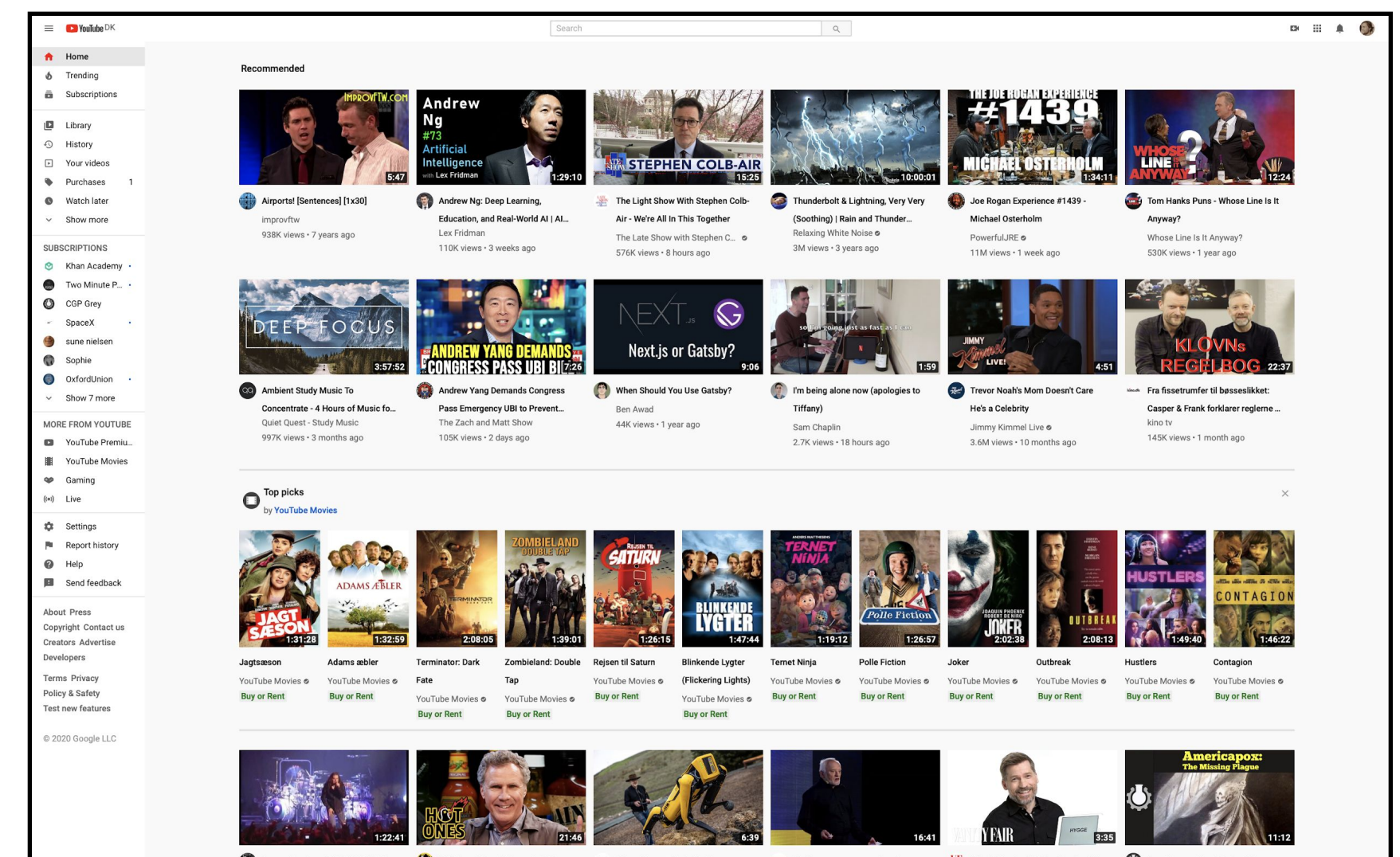
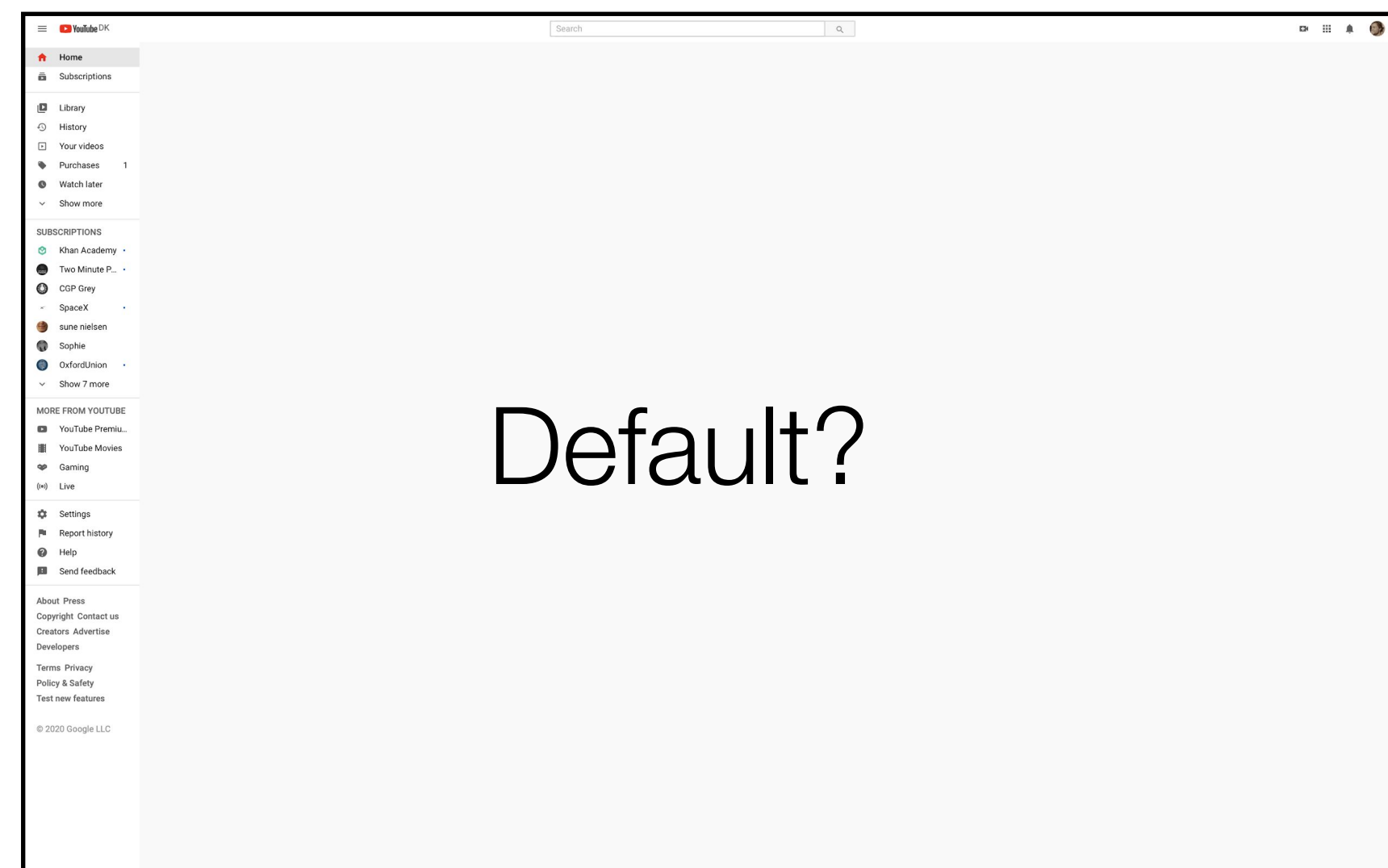
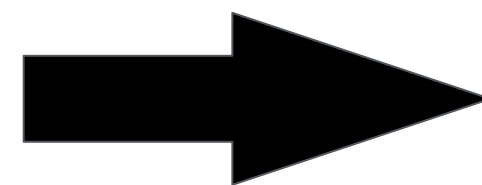


Practical implications

... but we also need to consider within-app/site features!

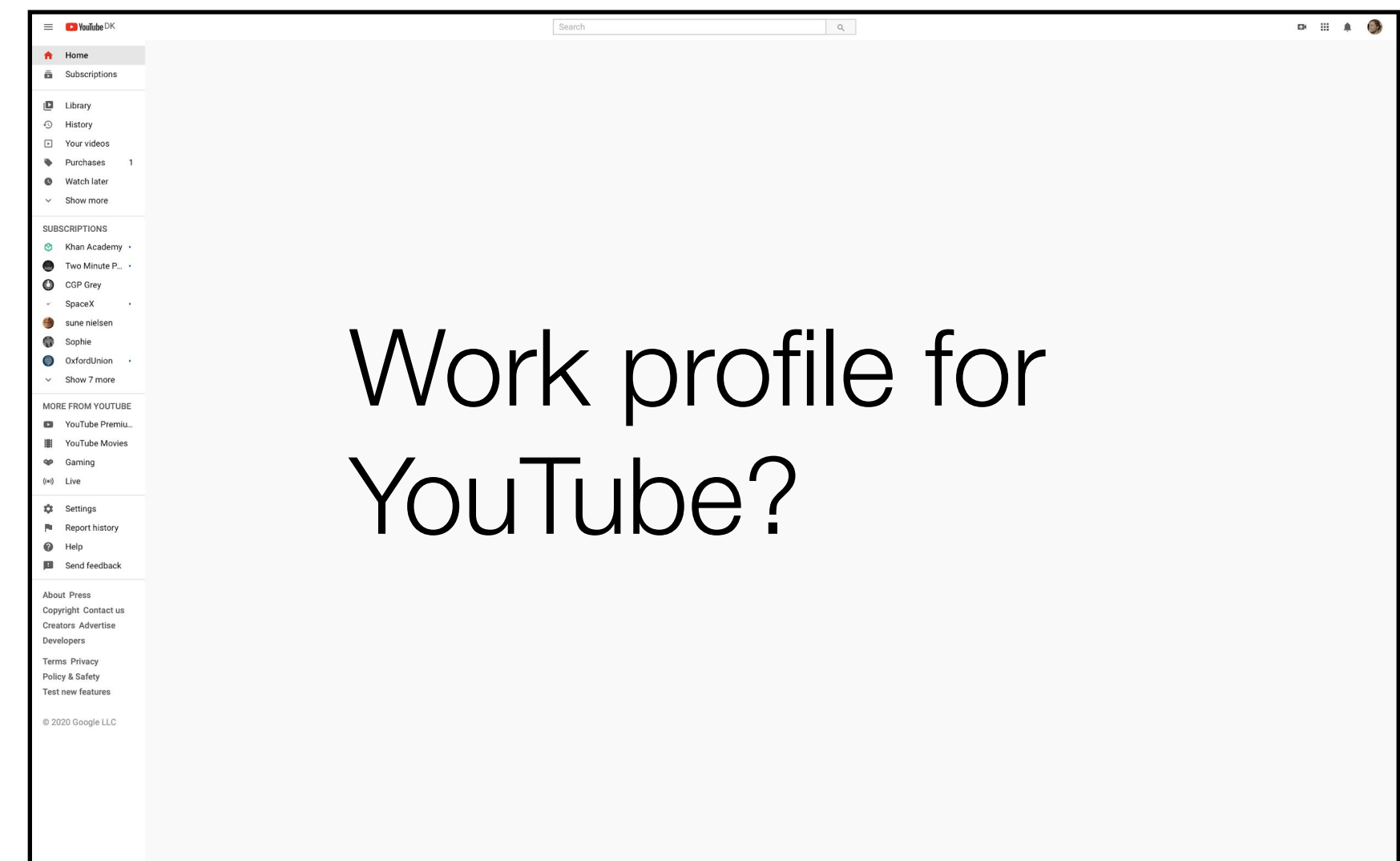
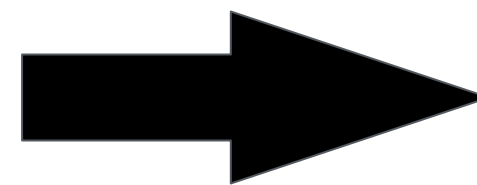
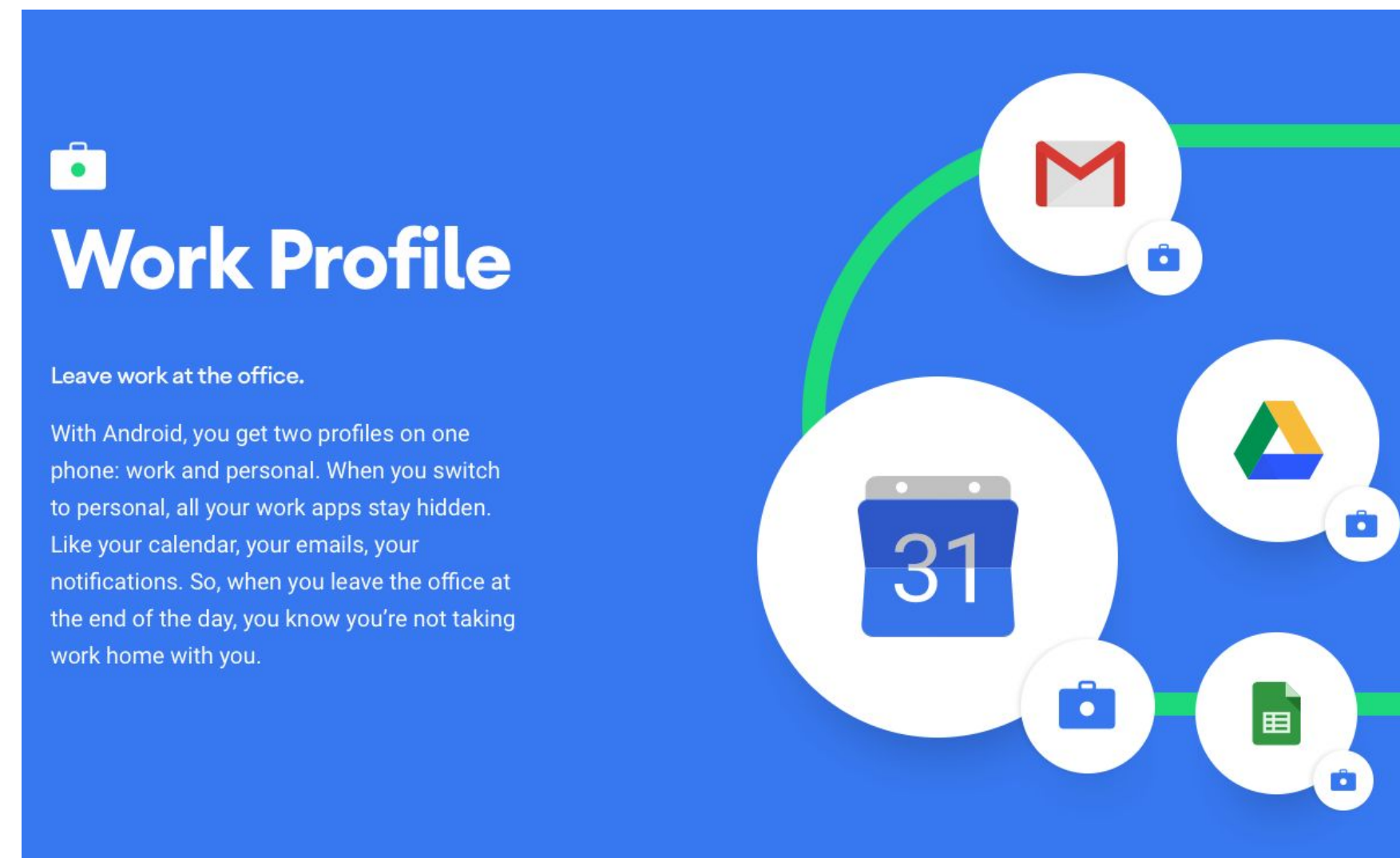
Default?

Opt-in?



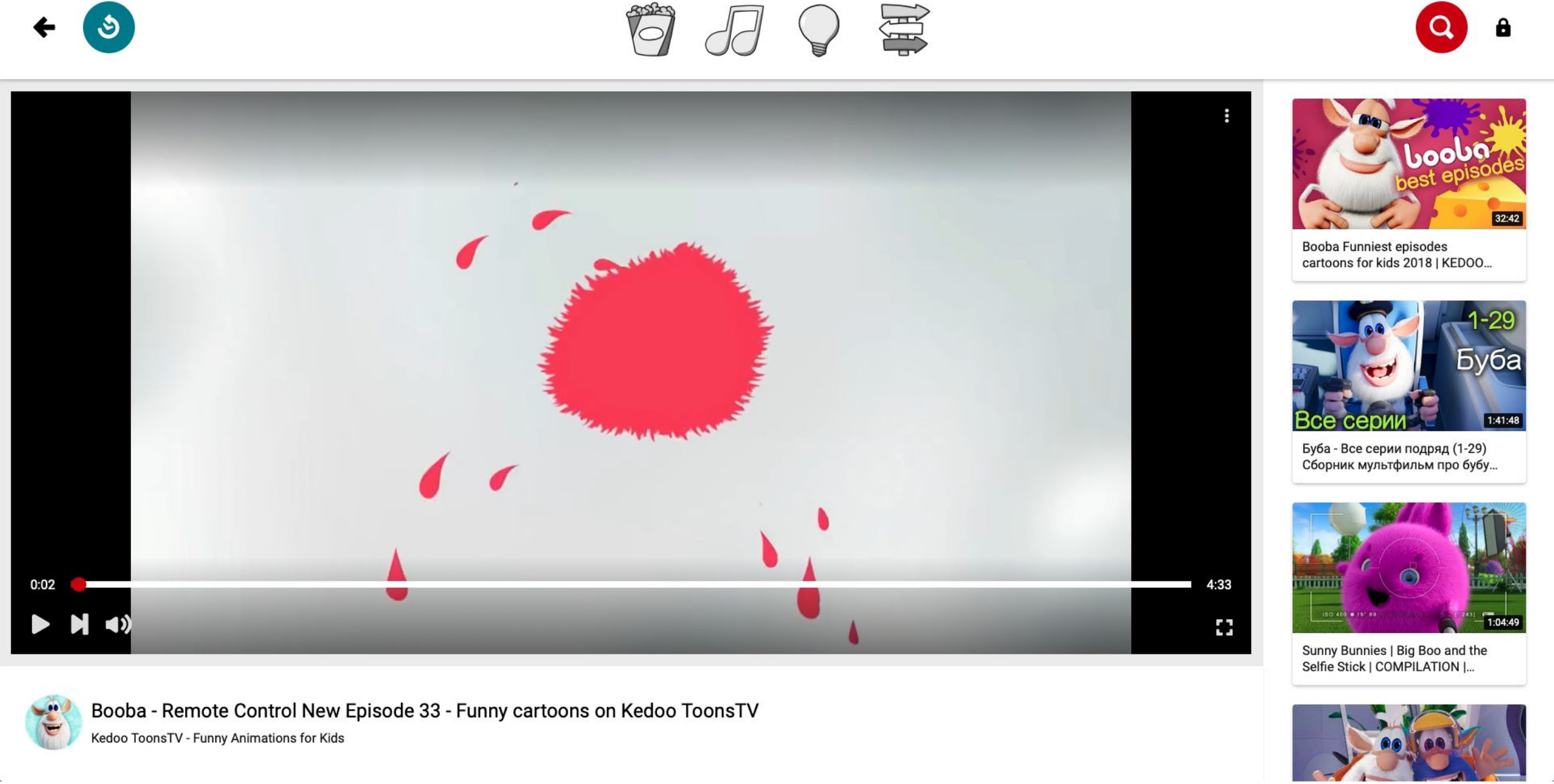
Practical implications

Adjusting interface to affordances
that match user's goal



Practical implications

Current approaches to supporting children: content and time limits

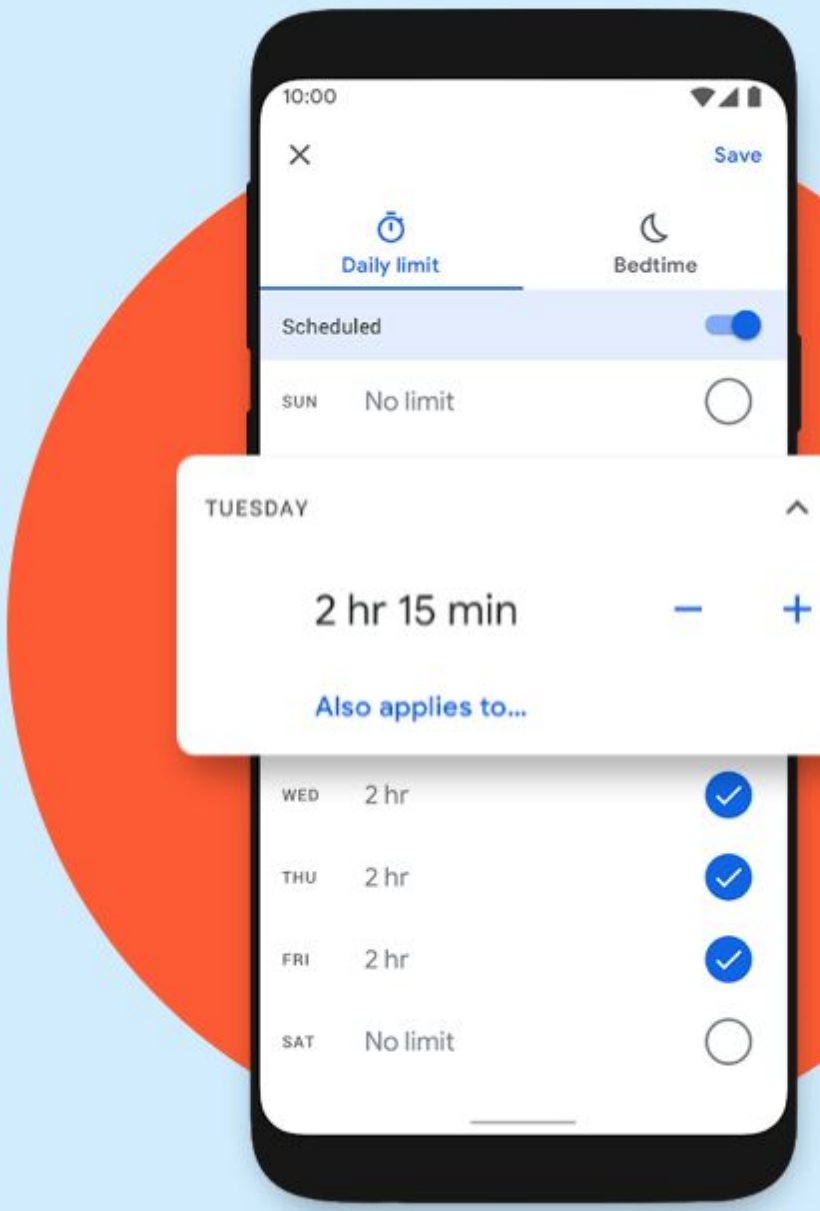




Set limits.

Keep an eye on screen time.

How much screen time is right for your child? That's up to you. Family Link lets you set screen time limits and a bedtime for their device. So you can help them find good balance.

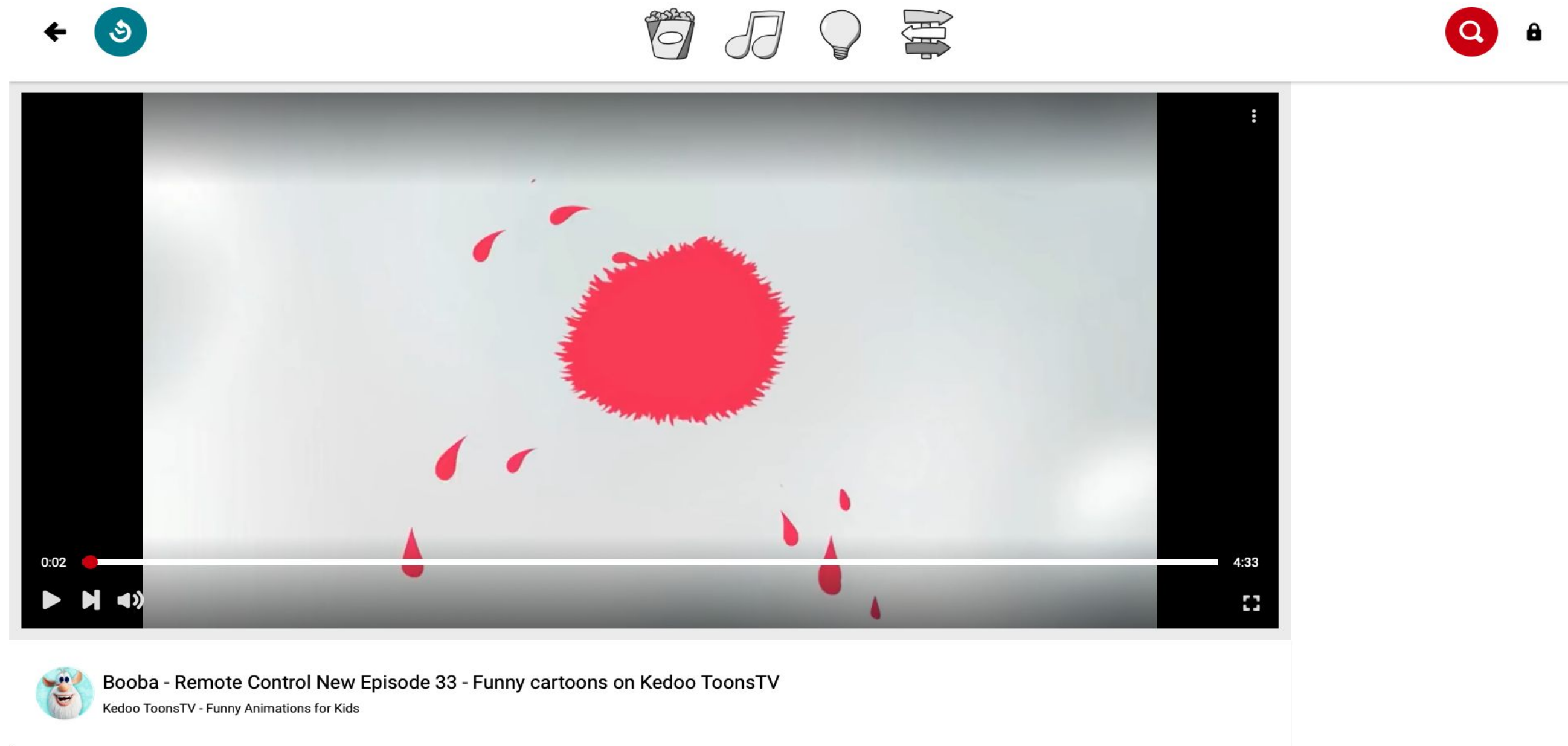


The smartphone screen displays the Family Link app interface. At the top, it shows the time 10:00 and a 'Save' button. Below, there are tabs for 'Daily limit' and 'Bedtime'. The 'Daily limit' tab is selected, showing a 'Scheduled' toggle switch. Below this, a table lists screen time limits for different days of the week:

Day	Limit	Status
SUN	No limit	☐
TUESDAY	2 hr 15 min	☒
WED	2 hr	☒
THU	2 hr	☒
FRI	2 hr	☒
SAT	No limit	☐

Practical implications

... focusing on information amount & pull could be more useful for supporting kids in developing autonomy

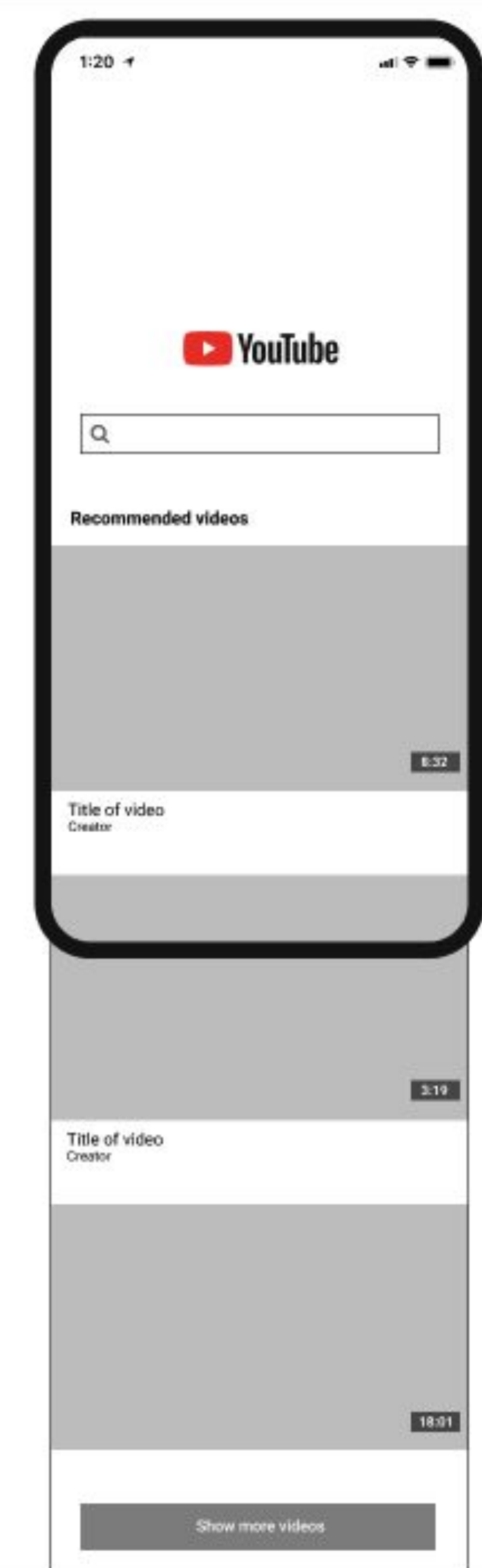


cf. Hiniker et al. 2018 “Coco’s Videos: An Empirical Investigation of Video-Player Design Features and Children's Media Use”

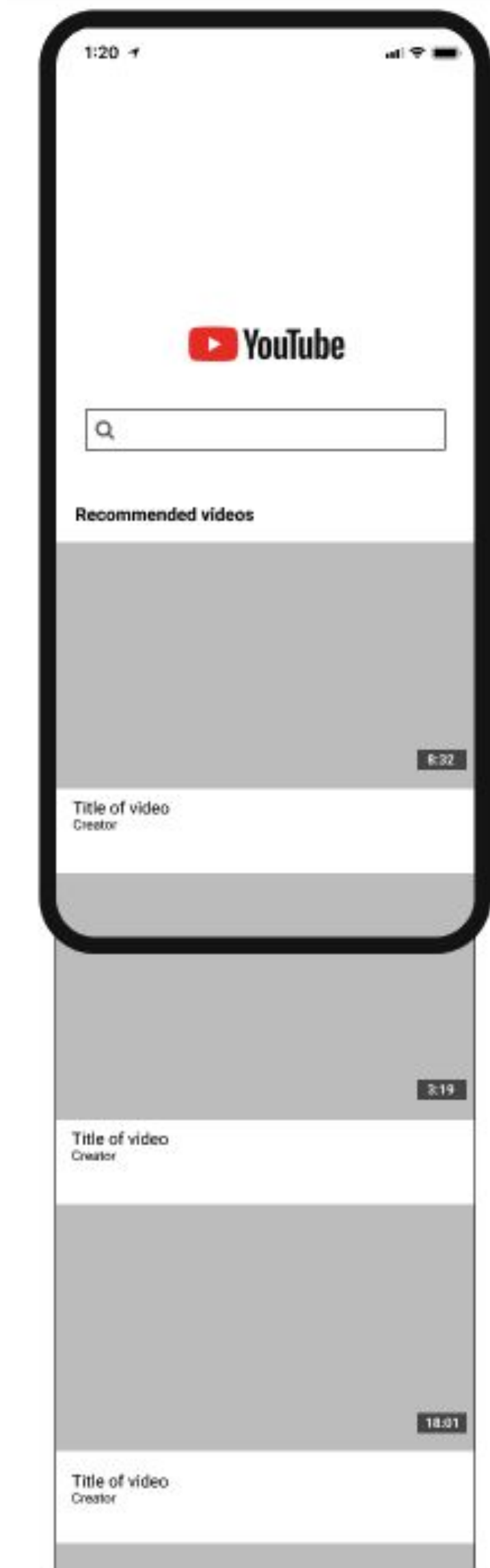
No recommended videos on homepage



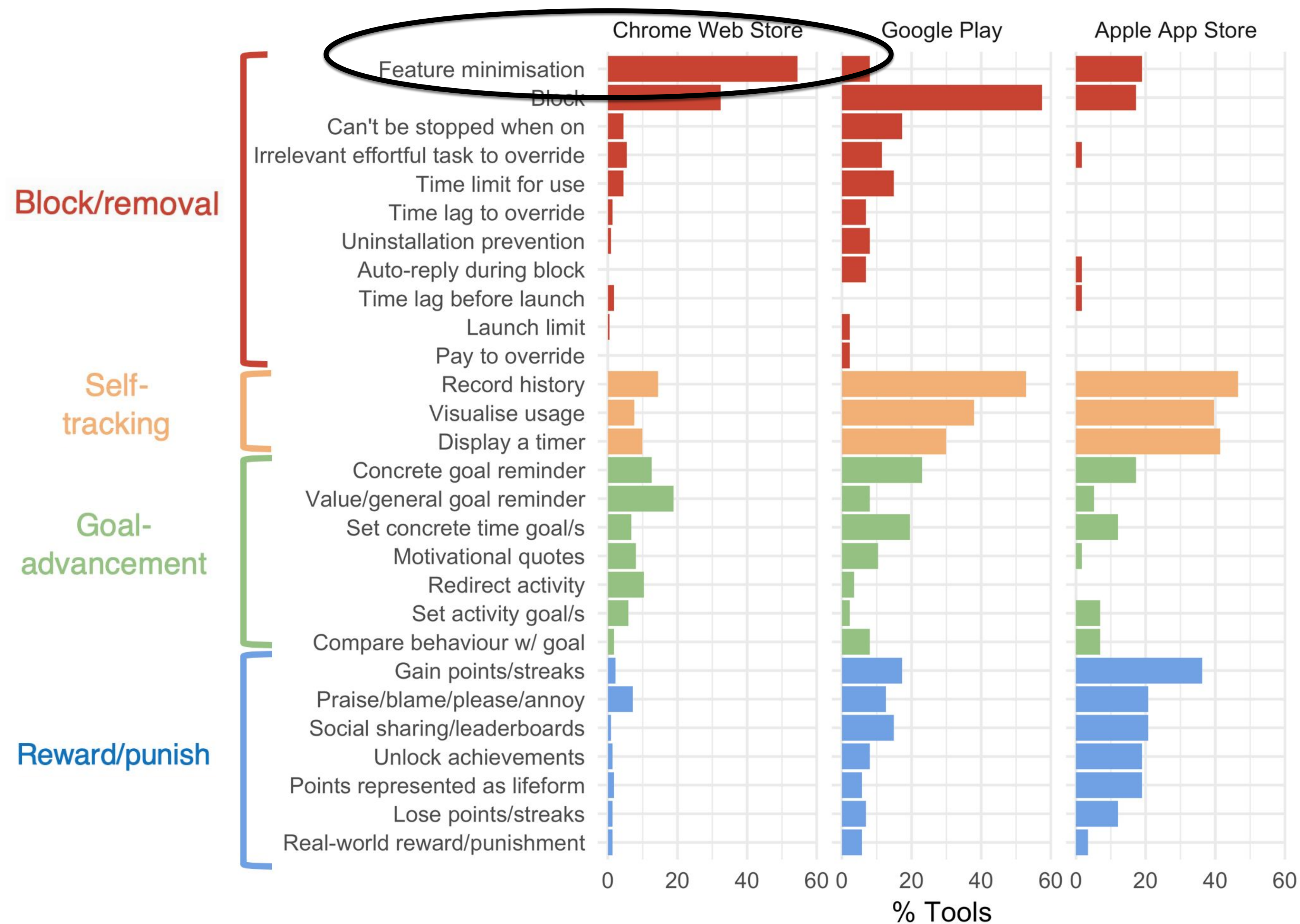
3 recommended videos, followed by “show more” button



Unlimited recommended videos, with infinite scroll



Blue-sky challenge: Empowering users to tinker with app UIs?



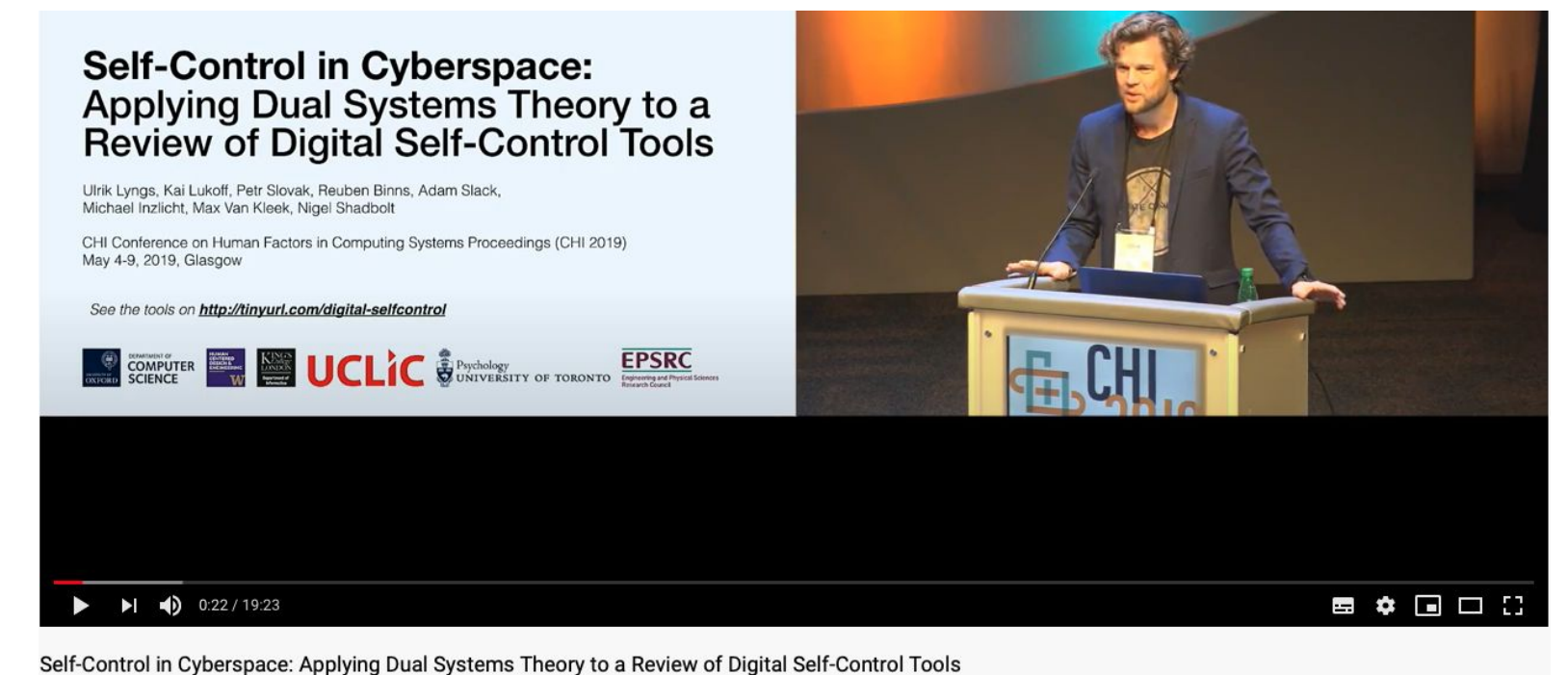
Summary

- Digital self-control interventions with biggest impact: **amount and motivational pull of information in digital environments**
- Empowering users to adjust within-app environments to fit their self-control ability and current goal is required for success

Additional resources

Dual systems & digital self-control tools on online stores

- Lyngs et al. 2019 *Self-Control in Cyberspace: Applying Dual Systems Theory to a Review of Digital Self-Control Tools*



Methods for studying ‘digital wellbeing’

- Philosophical challenges of digital wellbeing measures:
Lyngs et al. 2018 *So, Tell Me What Users Want, What They Really, Really Want!*
- Triangulating data in evaluation:
Lyngs et al. 2020 *‘I Just Want to Hack Myself to Not Get Distracted’: Evaluating Design Interventions for Self-Control on Facebook*