

# Anchored Customization

Anchoring Settings to the Application Interface  
To Afford Customization

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# OUTLINE

Motivation

Surveys

Design

Experiments

Discussion

# OUTLINE

## > Motivation

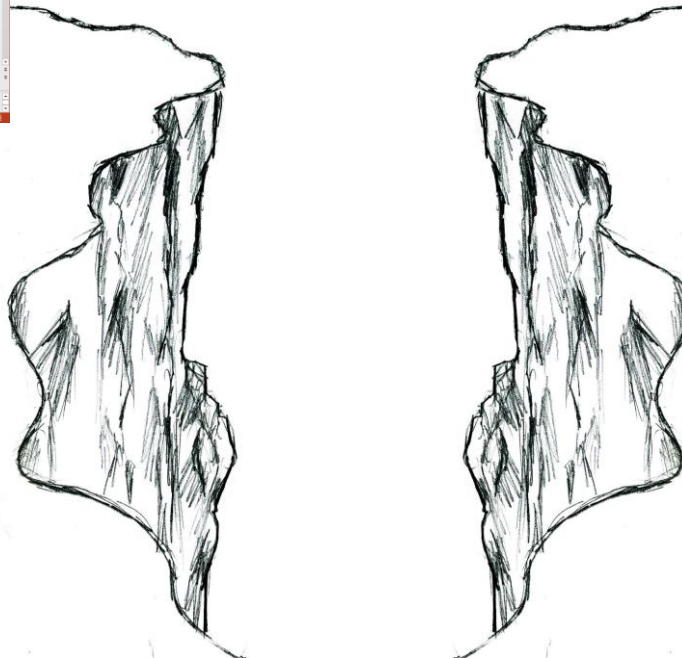
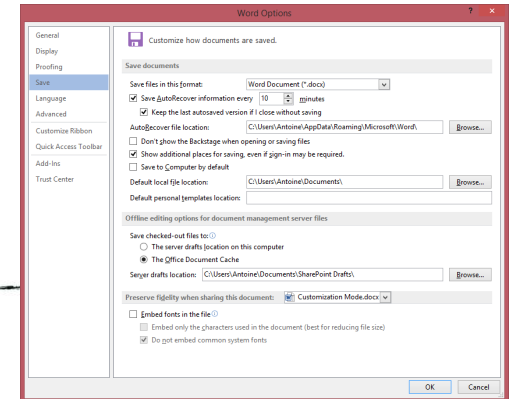
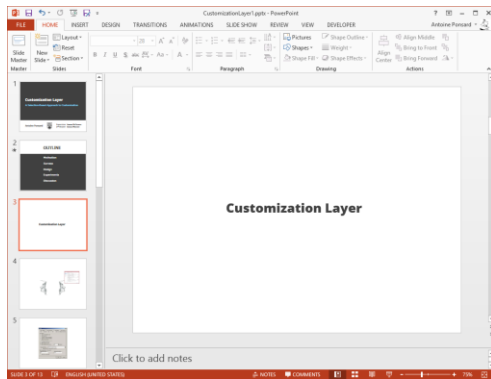
Surveys

Design

Experiments

Discussion

# Gulf of execution



**Options** ? X

Track Changes | User Information | Compatibility | File Locations  
View | General | Edit | Print | Save | Spelling & Grammar

Save options

- ☐ Always create backup copy
- ☐ Allow fast saves
- ☐ Prompt for document properties
- ☐ Prompt to save Normal template
- ☐ Embed TrueType fonts
  - ☐ Embed characters in use only
- ☐ Save data only for forms
- ☒ Allow background saves
- ☒ Save AutoRecover info every: 10 minutes

Save Word files as: Word Document (\*.doc)

☐ Disable features not supported by Word 97

File sharing options for "Document1"

Password to open: \*\*\* Password to modify: \*\*\*

☐ Read-only recommended

OK Cancel

Options

User Information   Compatibility   File Locations

View   General   Edit   Print   Save

Security   Spelling & Grammar   Track Changes

Spelling

- ☒ Check spelling as you type
- ☐ Hide spelling errors in this document
- ☒ Always suggest corrections
- ☐ Suggest from main dictionary only
- ☒ Ignore words in UPPERCASE
- ☒ Ignore words with numbers
- ☒ Ignore Internet and file addresses

Custom Dictionaries...

Grammar

- ☒ Check grammar as you type
- ☐ Hide grammatical errors in this document
- ☒ Check grammar with spelling
- ☐ Show readability statistics

Writing style:  
Grammar Only

Settings...


Proofing Tools

Recheck Document

OK   Close

Word Options

General  
Display  
Proofing  
Save  
Language  
Advanced  
Customize Ribbon  
Quick Access Toolbar  
Add-Ins  
Trust Center

 Customize how documents are saved.

Save documents

Save files in this format: Word Document (\*.docx)

☒ Save AutoRecover information every 10 minutes

☒ Keep the last autosaved version if I close without saving

AutoRecover file location: C:\Users\Antoine\AppData\Roaming\Microsoft\Word\ Browse...

☐ Don't show the Backstage when opening or saving files

☒ Show additional places for saving, even if sign-in may be required.

☐ Save to Computer by default

Default local file location: C:\Users\Antoine\Documents\ Browse...

Default personal templates location:


Offline editing options for document management server files

Save checked-out files to:

☐ The server drafts location on this computer

☒ The Office Document Cache

Server drafts location: C:\Users\Antoine\Documents\SharePoint Drafts\ Browse...

Preserve fidelity when sharing this document:  Customization Mode.docx

☐ Embed fonts in the file

☐ Embed only the characters used in the document (best for reducing file size)

☒ Do not embed common system fonts

OK Cancel

```

19 // "directwrite" (Windows only)
20 "font_options": [],
21
22 // Characters that are considered to separate words
23 "word_separators": ". / \\ ( ) \\' \" - : , . ; < > ~ ! @ # $ % ^ & * | + = [ ] { } ` ~ ? ",
24
25 // Set to false to prevent line numbers being drawn in the gutter
26 "line_numbers": true,
27
28 // Set to false to hide the gutter altogether
29 "gutter": true,
30
31 // Spacing between the gutter and the text
32 "margin": 4,
33
34 // Fold buttons are the triangles shown in the gutter to fold regions of text
35 "fold_buttons": true,
36
37 // Hides the fold buttons unless the mouse is over the gutter
38 "fade_fold_buttons": true,
39
40 // Columns in which to display vertical rulers
41 "rulers": [],
42
43 // Set to true to turn spell checking on by default
44 "spell_check": false,
45
46 // The number of spaces a tab is considered equal to
47 "tab_size": 4,
48
49 // Set to true to insert spaces when tab is pressed
50 "translate_tabs_to_spaces": false,
51
52 // If translate_tabs_to_spaces is true, use_tab_stops will make tab and
53 // backspace insert/delete up to the next tabstop
54 "use_tab_stops": true,
55

```



A new **customization mechanism**  
designed from the **user's point of view**

## **Direct Activation** [Wolf & Golombek, 2001]

Put the access points of tailoring functions next to the functions they tailor.

- help find tailoring functions

Tailor Producer's Filter

☐ When you use data from your mailbox, in case of a
 

button bar  gets a message
 

☒ your filter is accessible
 

Explore

document template  gets a message
 

☒ your filter is accessible
 

Cancel

☐ When you delete data from your mailbox, in case of a
 

button bar  gets a message
 

☒ your filter is accessible
 

Save

document template  gets a message
 

☒ your filter is accessible

☒ When you delete data from your private workspace, in case of a
 

button bar  gets a message
 

☒ your filter is accessible

document template  gets a message
 

☒ your filter is accessible

☐ When you copy data from the public workspace, in case of a
 

button bar  gets a message
 

☒ your filter is accessible

document template  gets a message
 

☒ your filter is accessible

☐ When you use data from your private workspace, in case of a
 

button bar  gets a message
 

☒ your filter is accessible

document template  gets a message
 

☒ your filter is accessible

☐ When you use data from the public workspace, in case of a
 

button bar  gets a message
 

☒ your filter is accessible

document template  gets a message
 

☒ your filter is accessible

Help

11

# LemonAid [Chilana et al., CHI 2012]

The screenshot shows the Bank of America Online Banking interface. The top navigation bar includes the Bank of America logo, the text "Online Banking", and links for "Locations", "Mail", "Help", and "Sign Off". A "Help!" button is located in the top right corner, annotated with a red circle containing the number 1. Below the navigation bar, a sidebar on the left contains links for "Accounts Overview", "Transactions", "Interest", "Bill Payer" (highlighted with a yellow background and annotated with a red circle containing the number 2), "Text Banking", and "Customer Service". The main content area features a "Questions asked by other users..." section. This section contains a list of questions with their respective counts in brackets: "What do I have to do to cancel a bill payment? : [1]" (annotated with a red circle containing the number 3), "how to set up a recurring bill payment? : [2]", "Can I set up my credit card payment here? : [0]", "How do I configure my bill payments? : [0]", and "My bill payment got denied. Who should I contact? : [0]". Below this list is a text input field (annotated with a red circle containing the number 4) and an "Ask" button. To the right of the main content area, a "You are currently in help mode. Press the Help button again to exit the help mode." message is displayed. A pop-up window titled "how to set up a recurring bill payment?" (annotated with a red circle containing the number 5) is open, showing "Answer #2:" and "Answer #1:". The "I have an answer." link (annotated with a red circle containing the number 6) is visible at the bottom of the pop-up. A mouse cursor is pointing at the "Bill Payer" link in the sidebar.

Bank of America Online Banking

Locations • Mail • Help • Sign Off

Help!

You are currently in help mode. Press the Help button again to exit the help mode.

Questions asked by other users...

What do I have to do to cancel a bill payment? : [1]

how to set up a recurring bill payment? : [2]

Can I set up my credit card payment here? : [0]

How do I configure my bill payments? : [0]

My bill payment got denied. Who should I contact? : [0]

Provide keywords to see new results, or ask your own question below.

Ask

how to set up a recurring bill payment?

Answer #2:

To set up recurring payments, you have to do this, and that, and the other thing.

Answer #1:

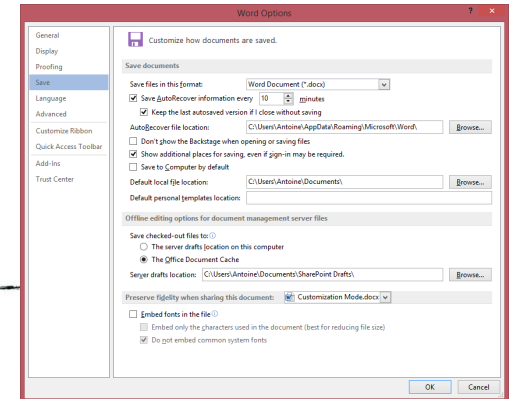
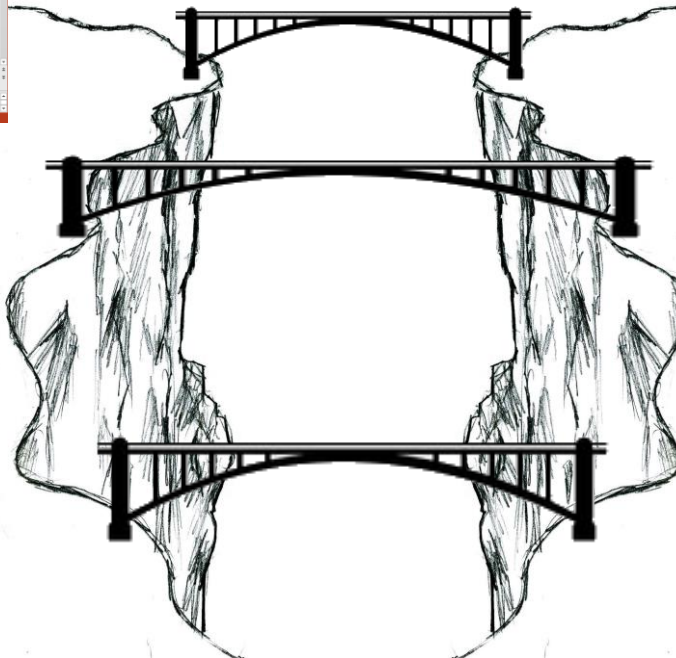
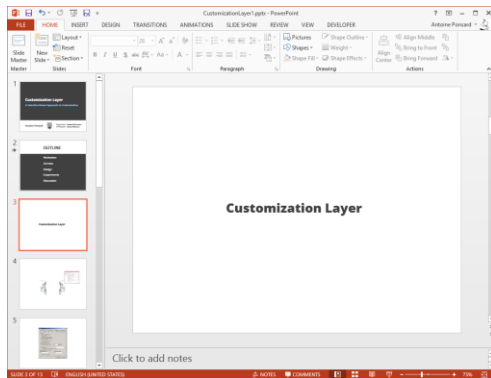
To set up recurring payments, first select a merchant and then you can create a schedule for payments. You can select a specific date for which you want your payment to be recieved every week or month, etc. You can set up recurring payments up to an year in advance.

I have an answer.

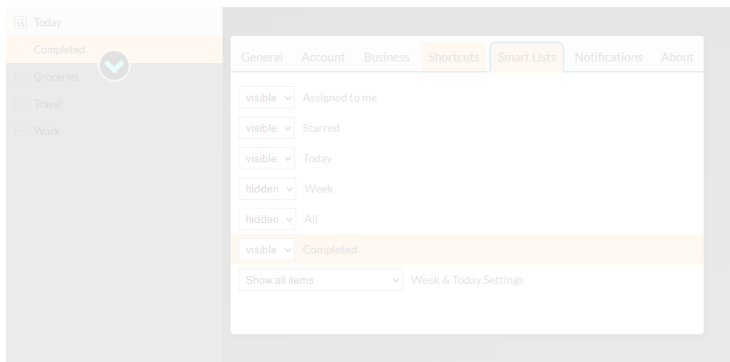
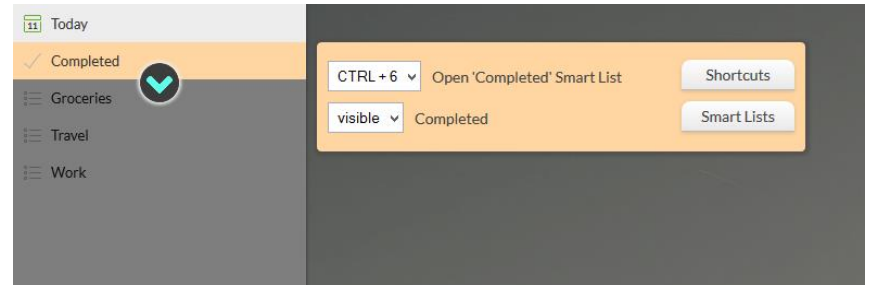
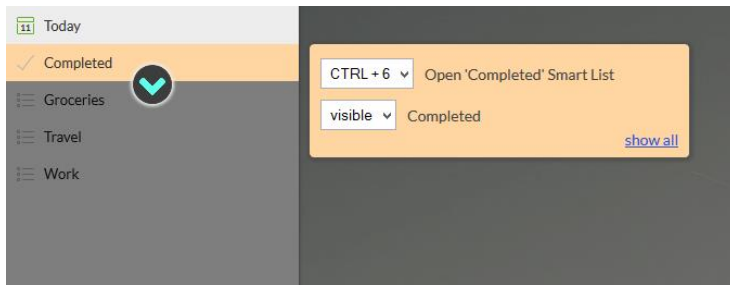
4. Enter your account number with that merchant as it appears on your statement, then click the submit request button. The new merchant

[+] Share website feedback

# Anchor settings to UI elements



# Customization Layer



35% faster

# OUTLINE

Motivation

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## **Survey 1**

### **Existing Customization Mechanisms**

Desktop: 8

Mobile: 12

All but one use a settings panel

Mobile ~ Desktop

## Survey 2

### Feasibility of anchoring settings to UI

Desktop: 5

Mobile: 3

386 settings reviewed

52% directly anchorable

32% indirectly anchorable

16% not anchorable

# OUTLINE

Motivation

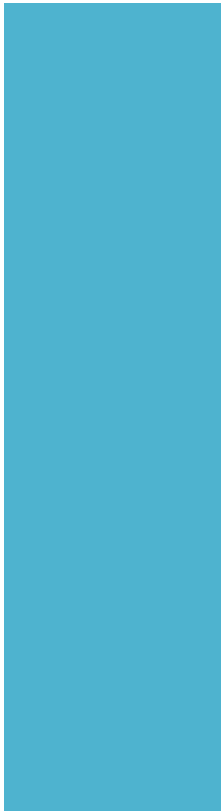
Surveys

> Design

Experiments

Discussion

# Settings



config file

Settings

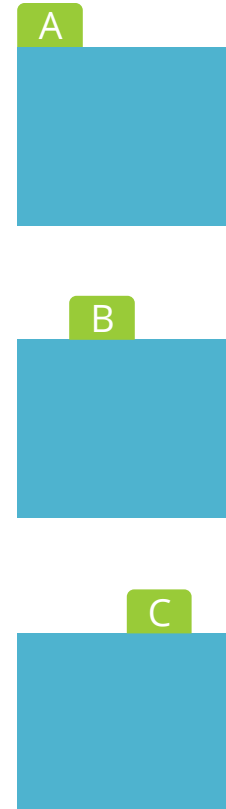


split



**static  
abstract  
partition**

Settings panel



## Settings

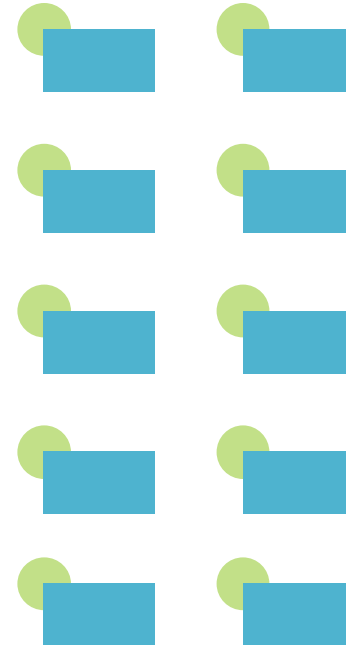


map



**anchored  
many-to-many  
mapping**

## Customization Layer



Create a **structure** on the space of settings

Provide ways to **navigate** this structure

split in tabs:

Abstract

Conceptual

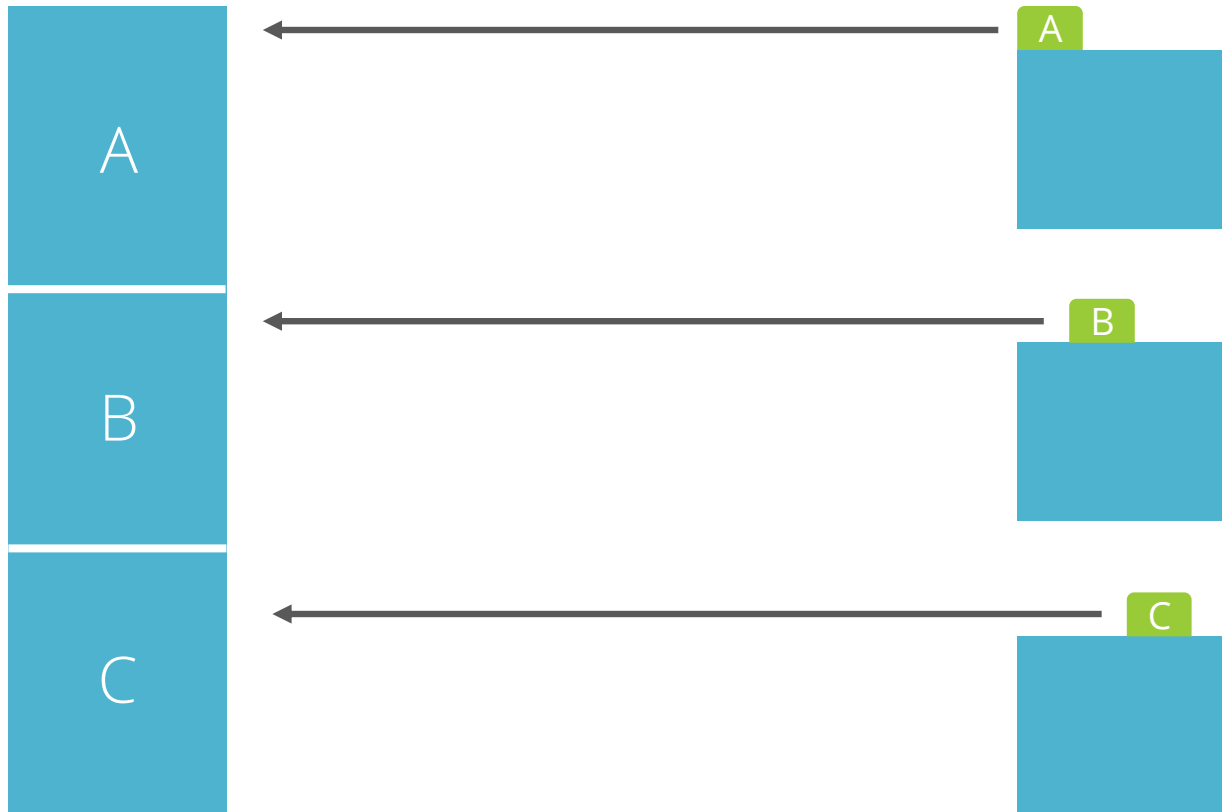
map to UI:

Concrete

Contextual

Settings

Settings panel

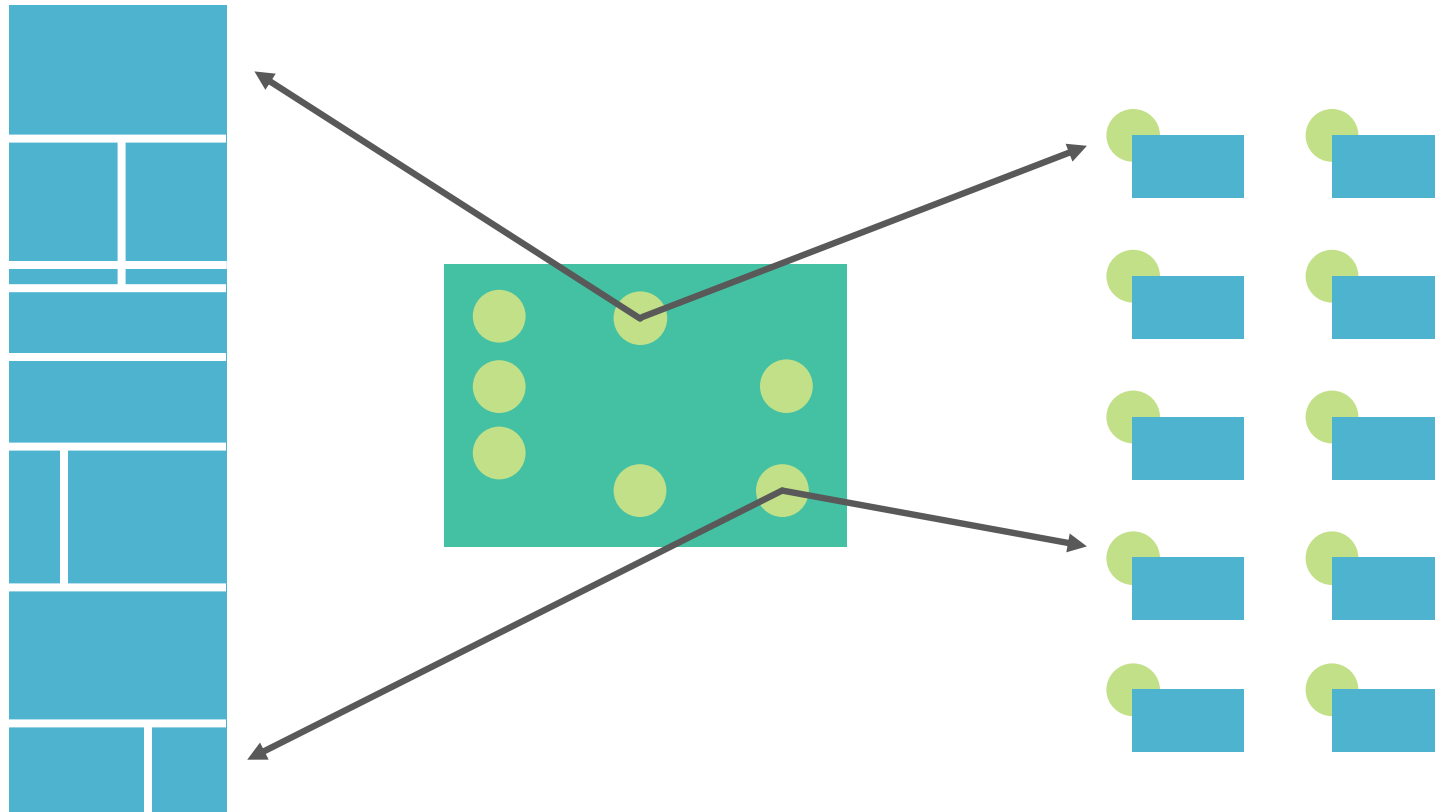




Settings

Application UI

Customization Layer



Demo

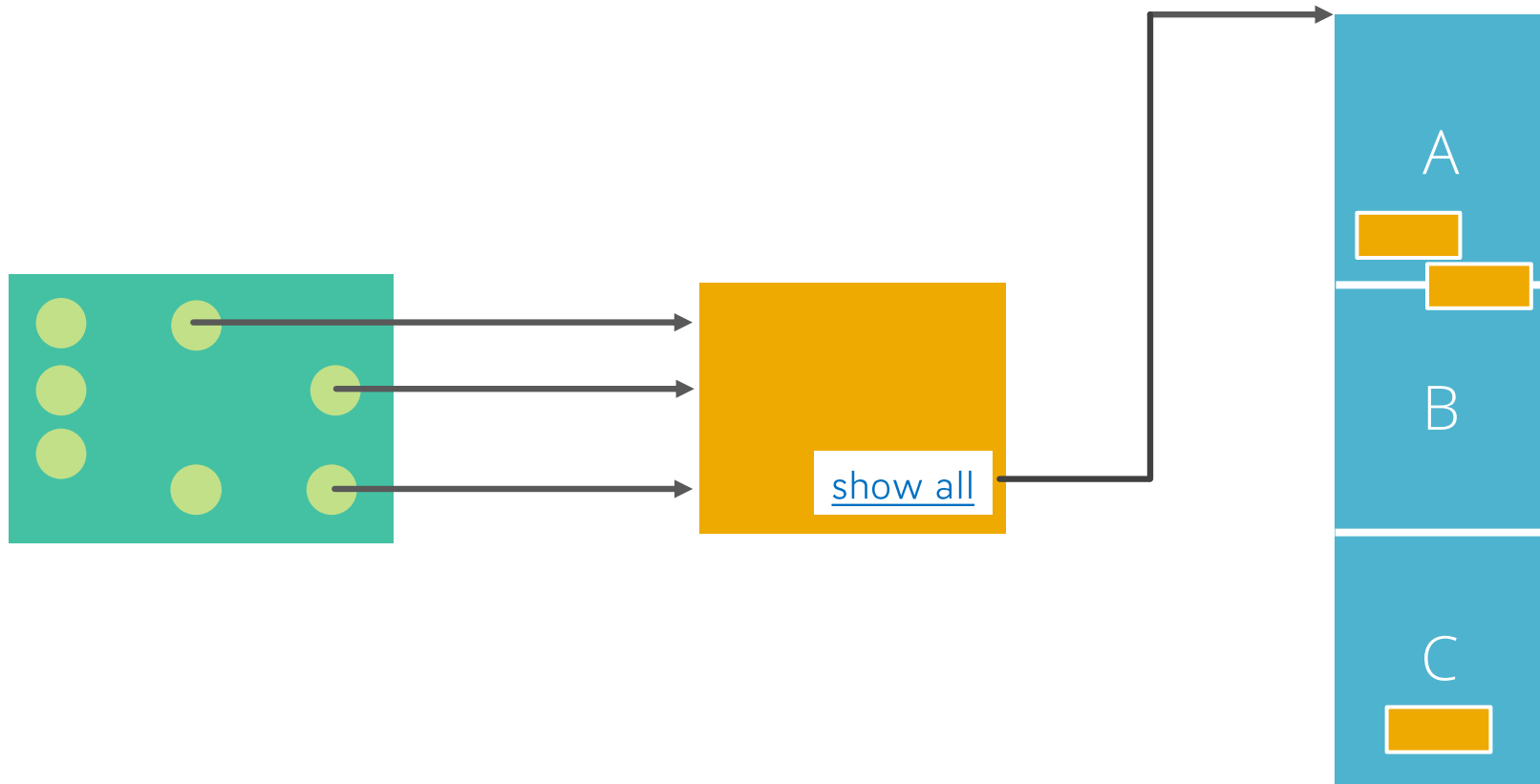
variants =

different **trade-offs** between tabs & UI anchors

Application UI

Minimal

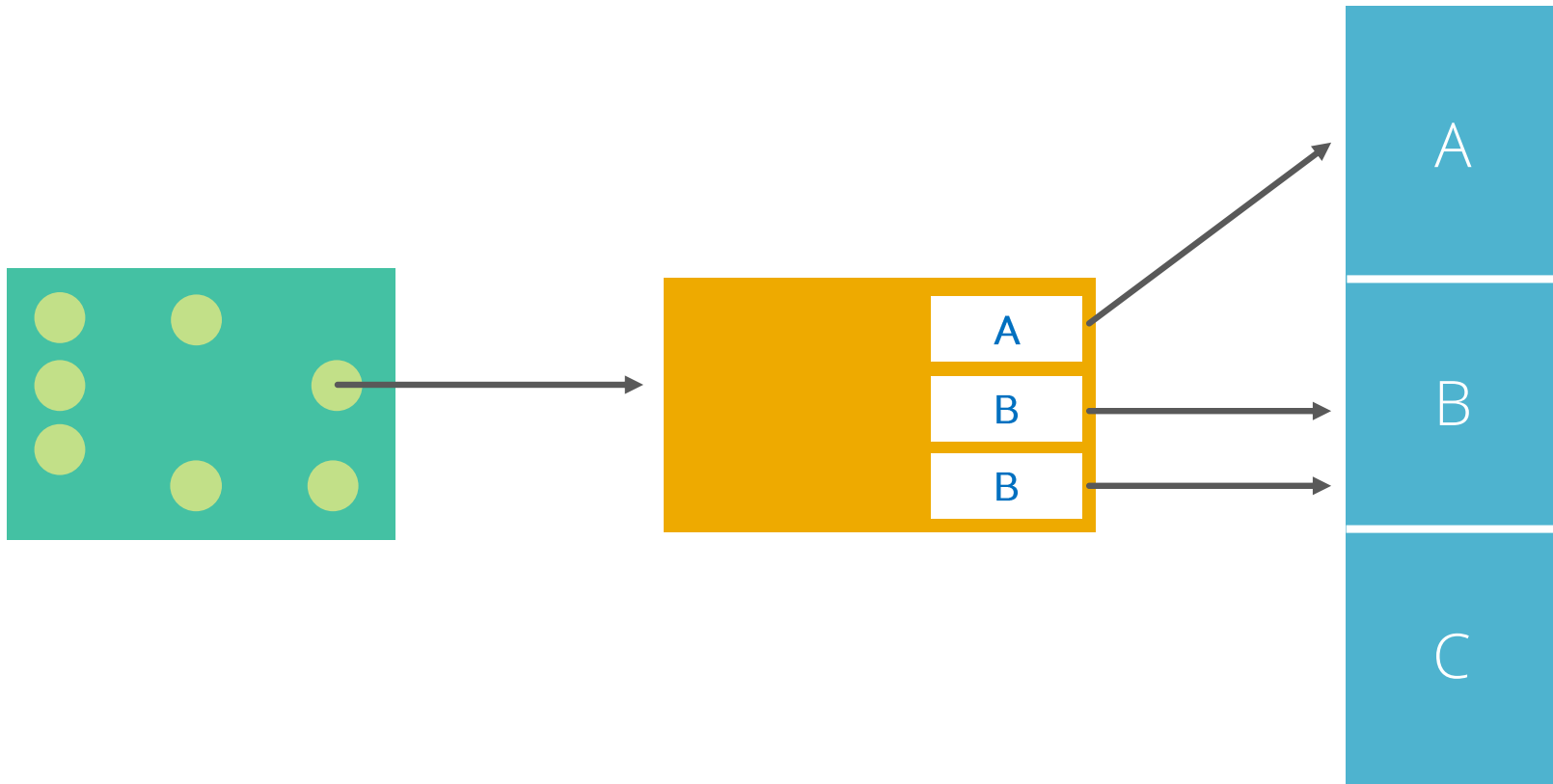
Settings



Application UI

Minimal+Context

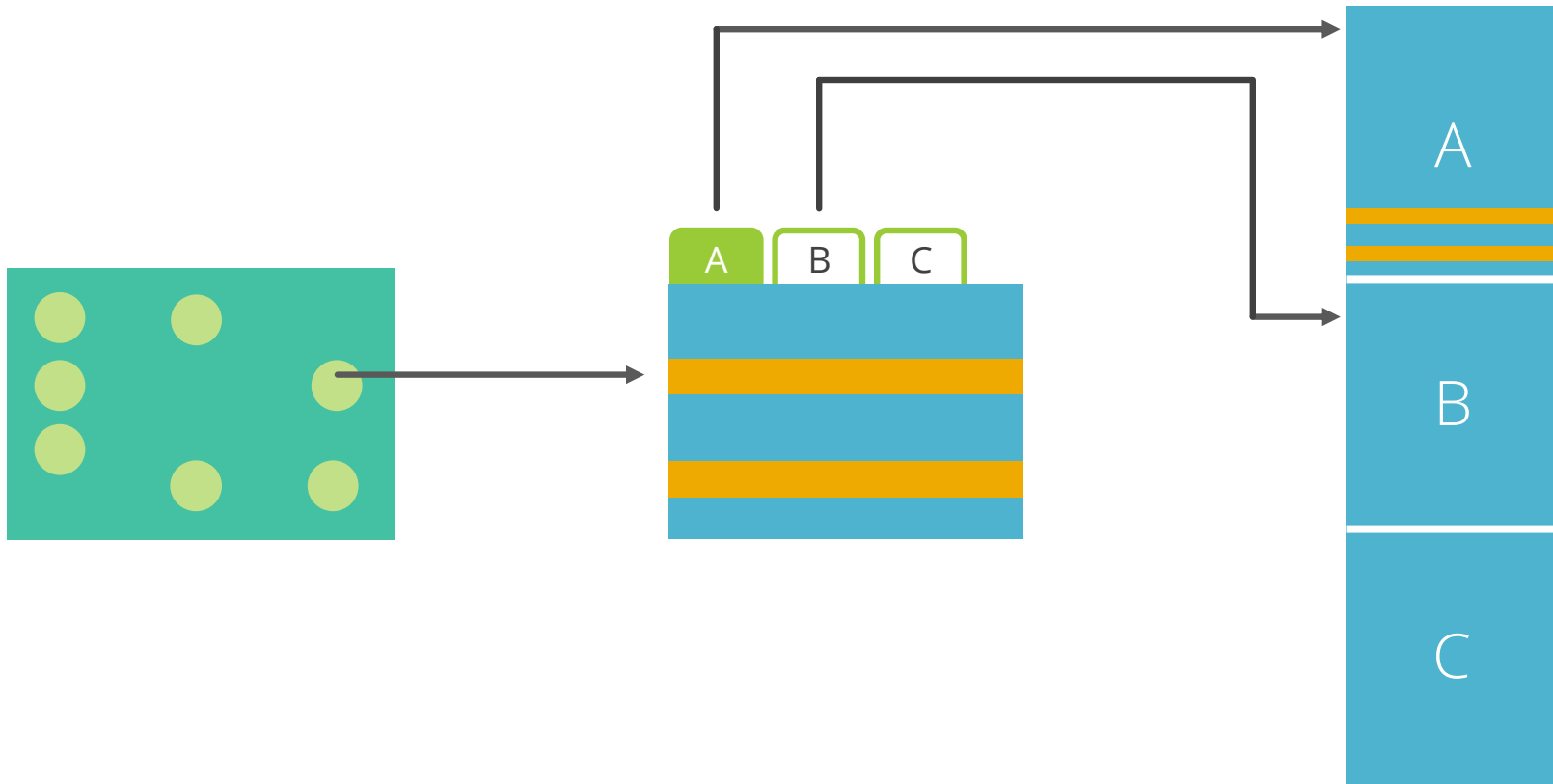
Settings



Application UI

Full

Settings



# Challenges

New mental model to convey

Good mapping

Ghost anchors

# OUTLINE

Motivation

Surveys

Design

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Discussion



**Usability** of customization mechanisms

**Ecological** validity





THE AUTOMATON CHESS PLAYER.



## **Experiment 1: Mechanical Turk**

48 participants

between-subjects

4 conditions: Minimal, Minimal+Context, Full, Control

2 sets of defaults

2 sets of 20 options

each participant did 20 options, twice

**Interface**

$p < .01$

ges = 0.17

**Block**

$p < .001$

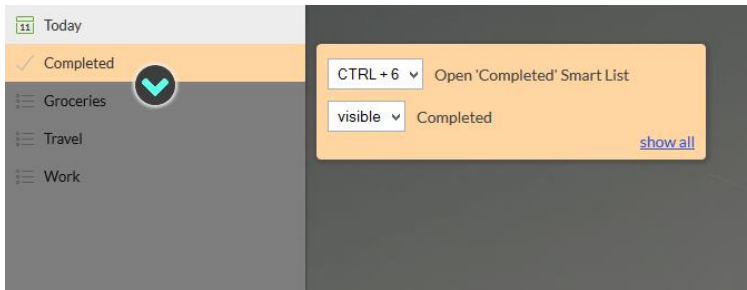
ges = 0.32

~~Interaction~~

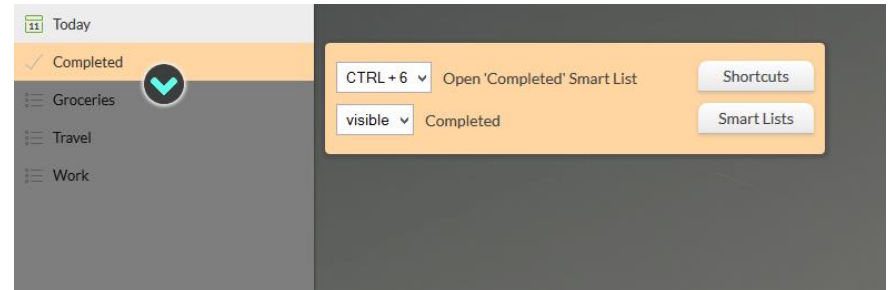
~~Defaults~~

~~Set of options~~

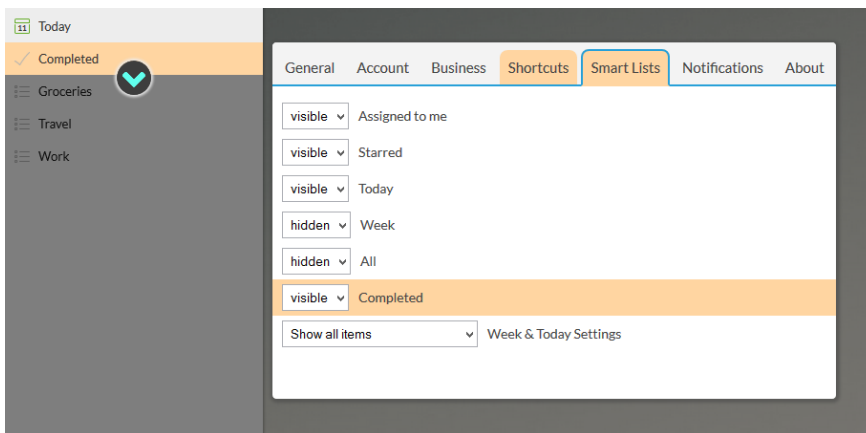
## Minimal



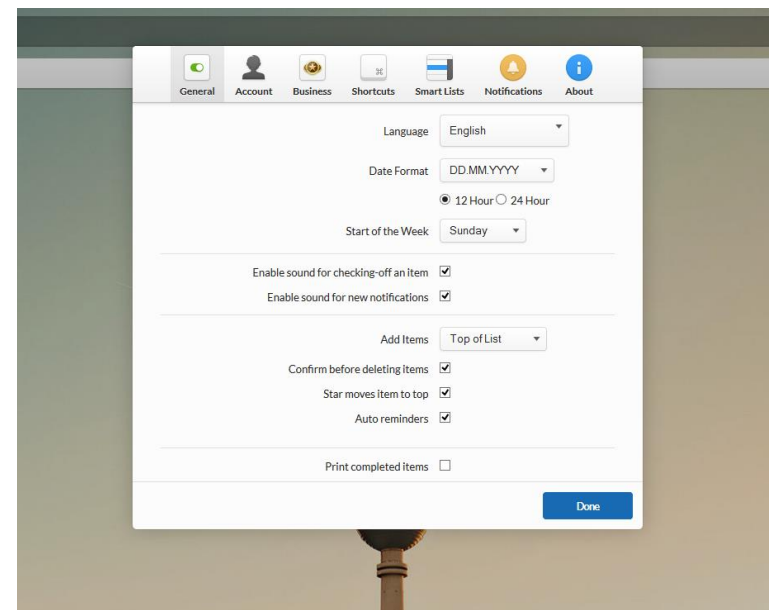
## Minimal+Context

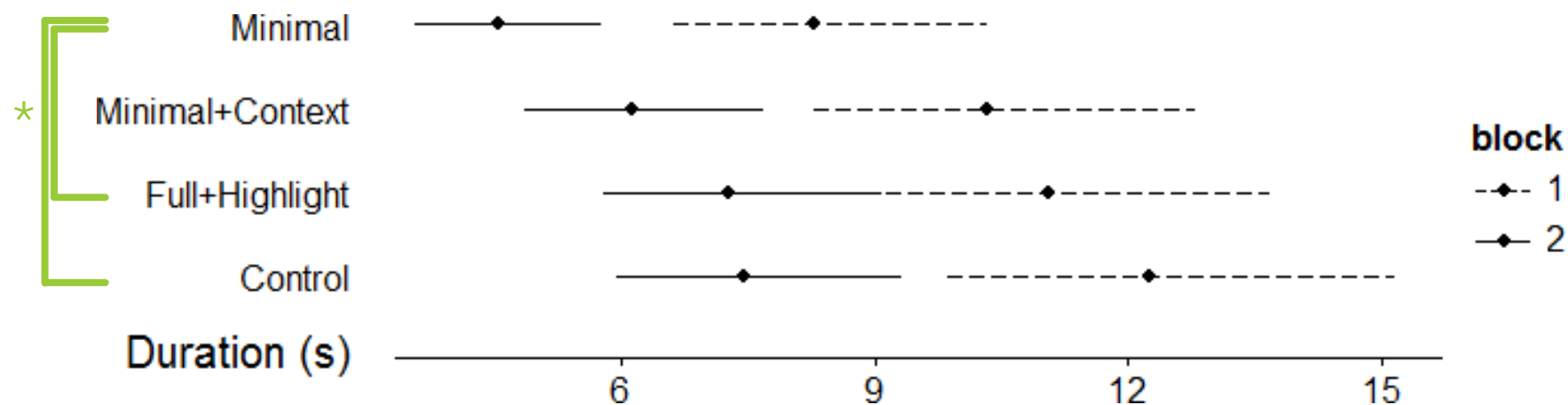


## Full



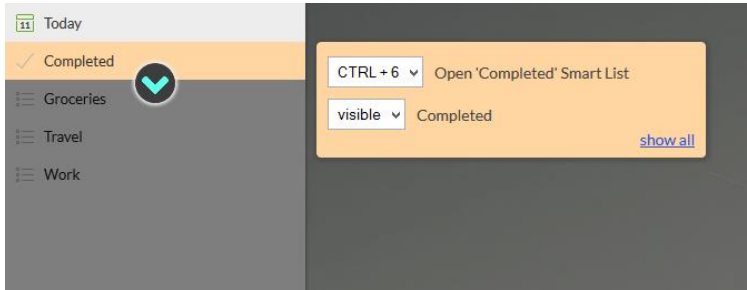
## Control



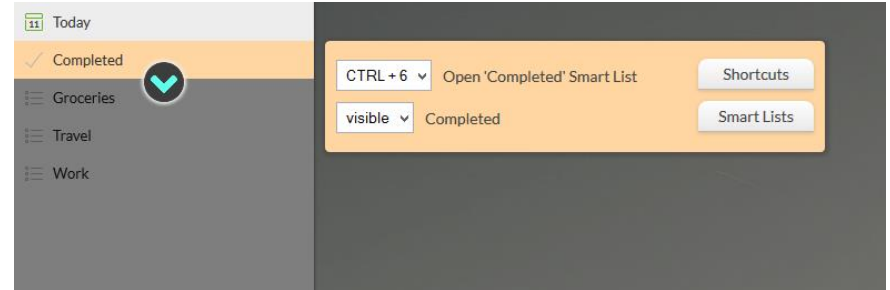




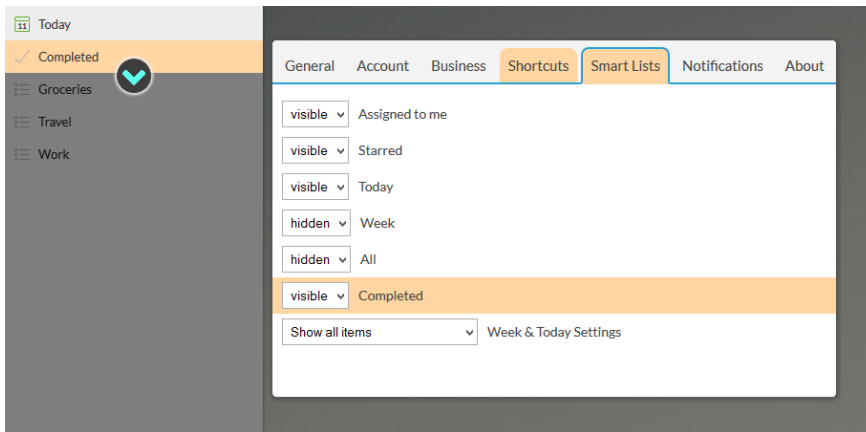
## Minimal



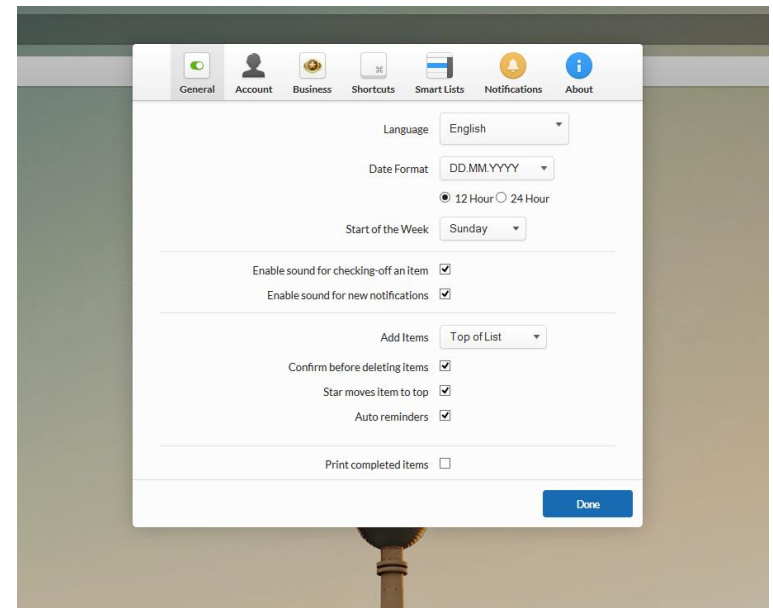
## Minimal+Context



## Full



## Control



## **Experiment 2: Lab study**

12 participants

within-subjects

4 conditions: Minimal, Minimal+Context, Full, Control

each participant did all 40 options (4 x 10)

talk-aloud & interview



**Interface**

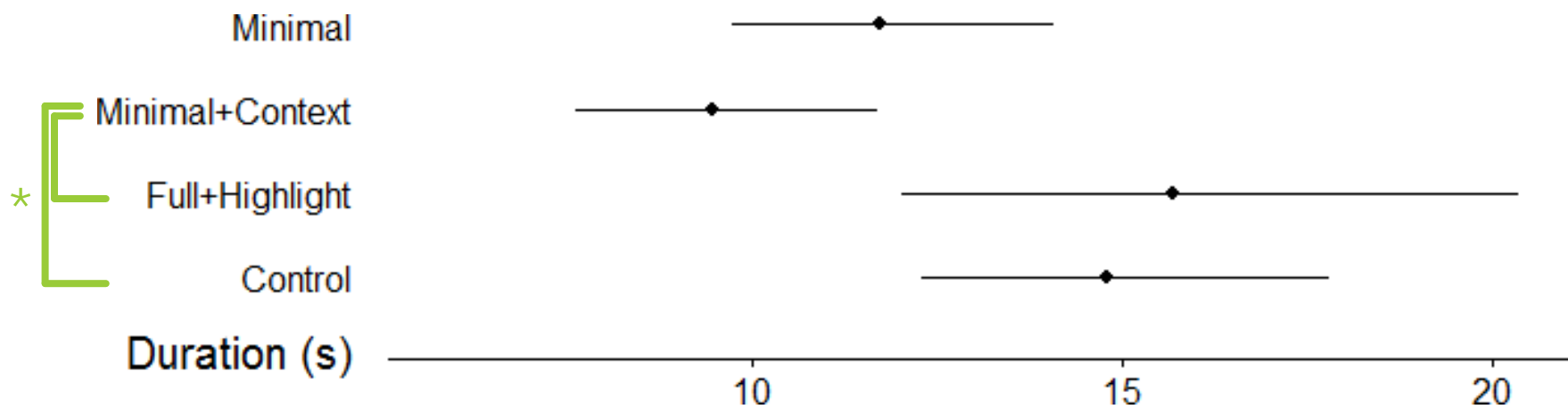
**Block**

$p < .01$

$p = 0.12$

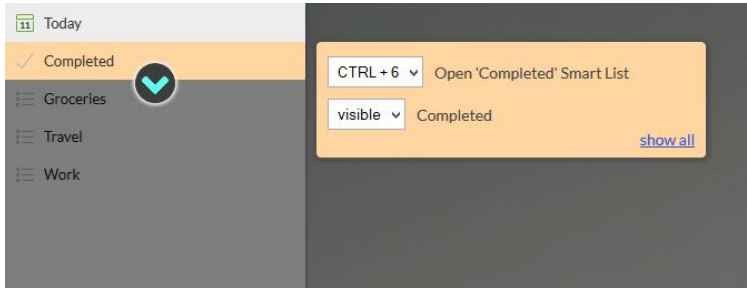
$ges = 0.16$

$ges = 0.07$

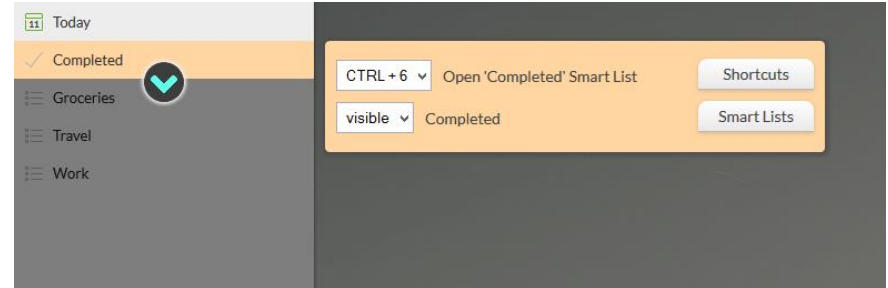




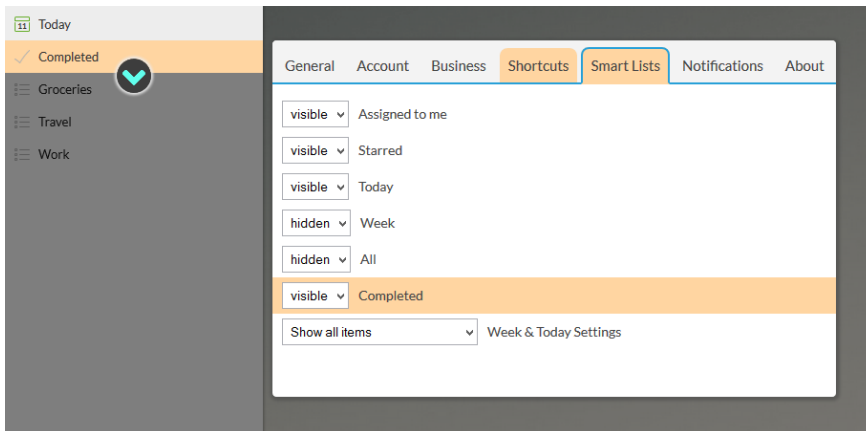
## Minimal



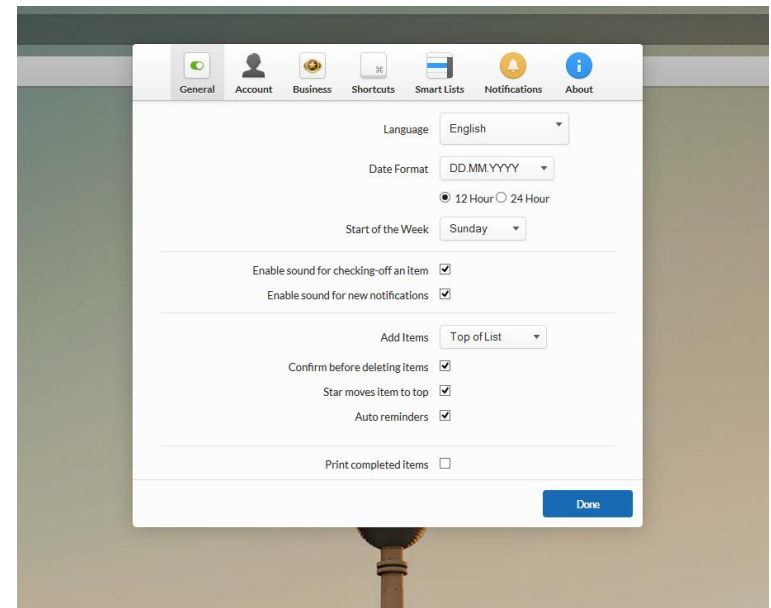
## Minimal+Context



## Full



## Control



**Perceived speed**  
**Preference**

$p = .07$

MC > C

$p = .09$

Control

~~Ease of Use~~

# OUTLINE

Motivation

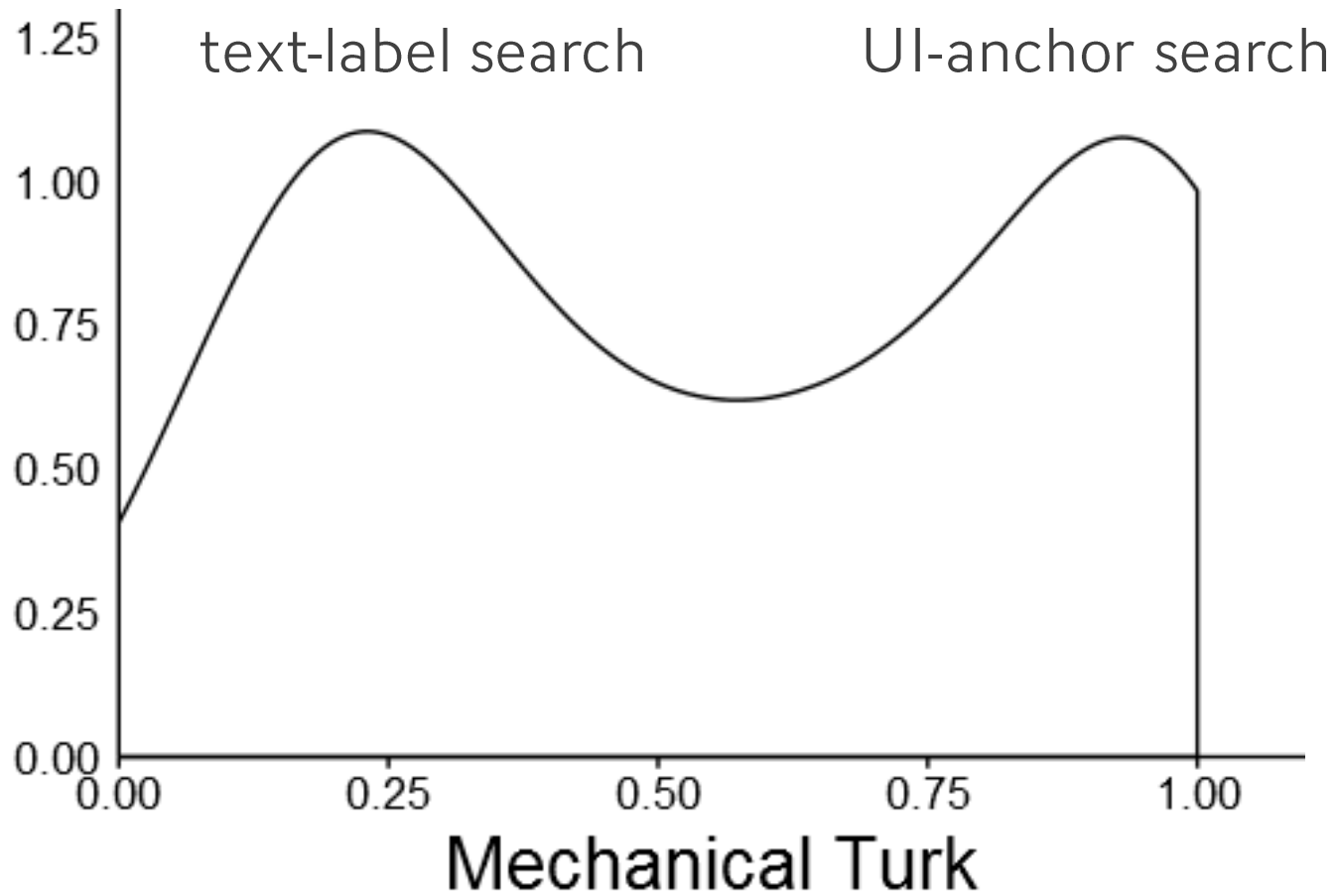
Surveys

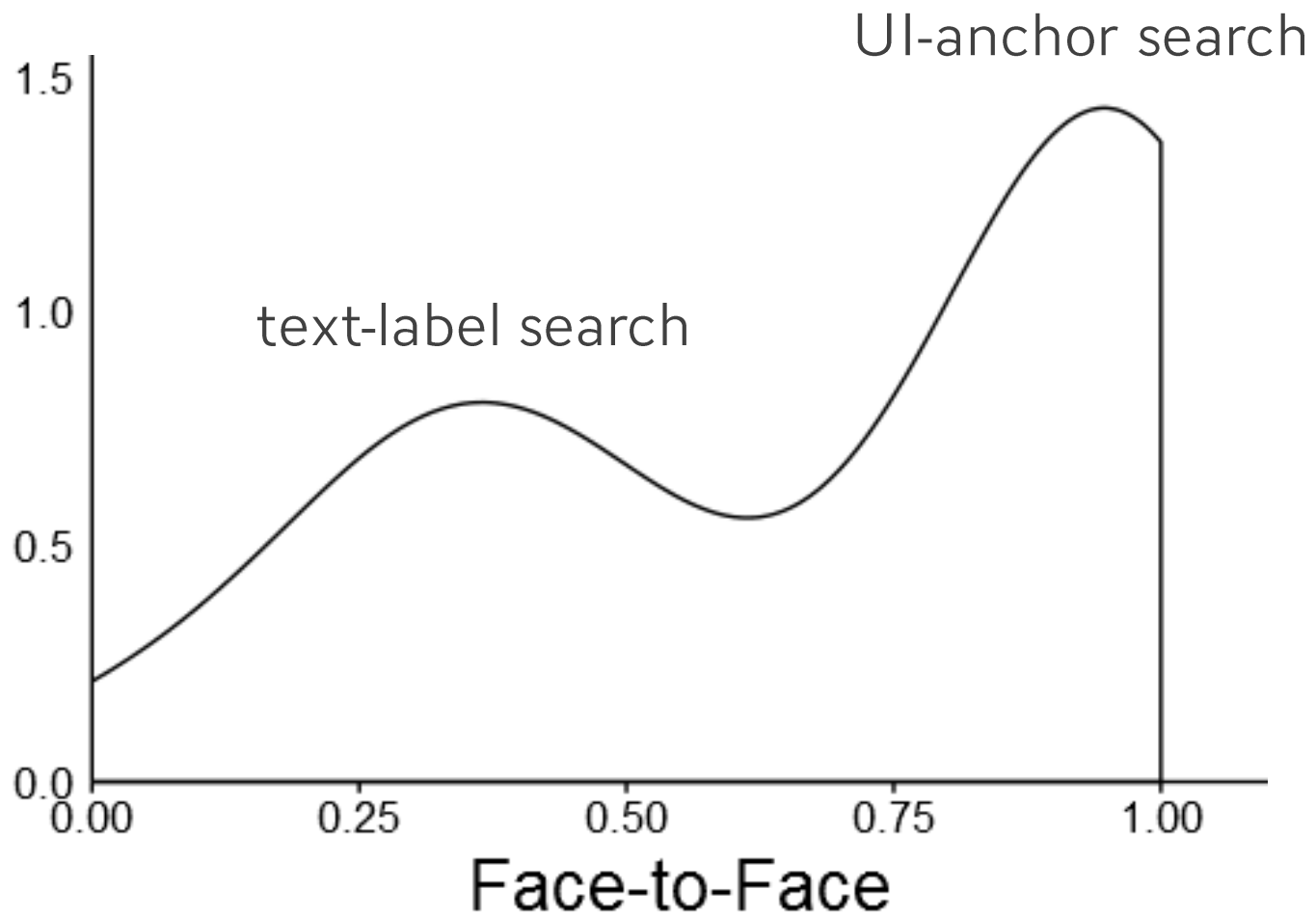
Design

Experiments

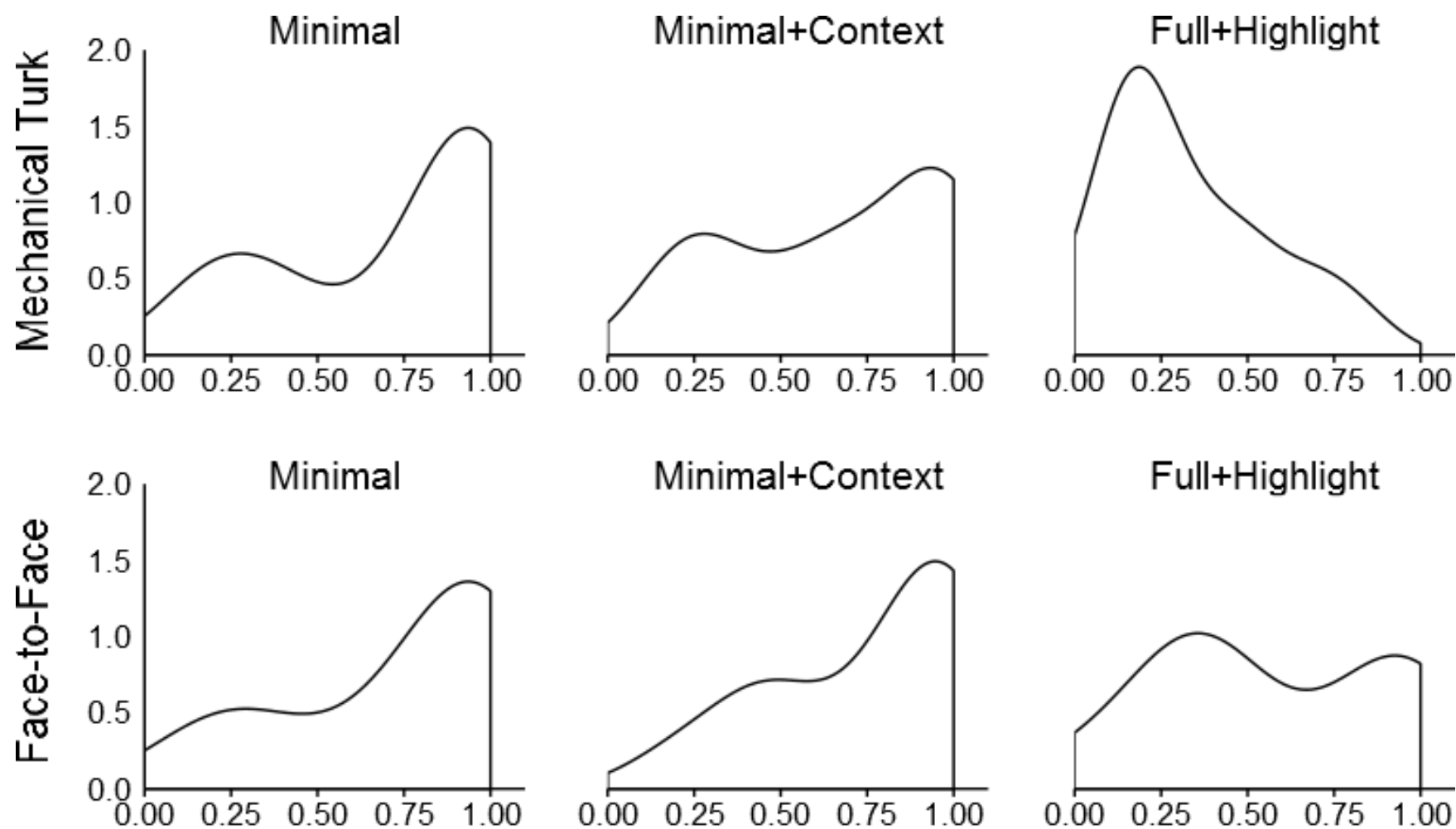
> Discussion

# **Search strategies**









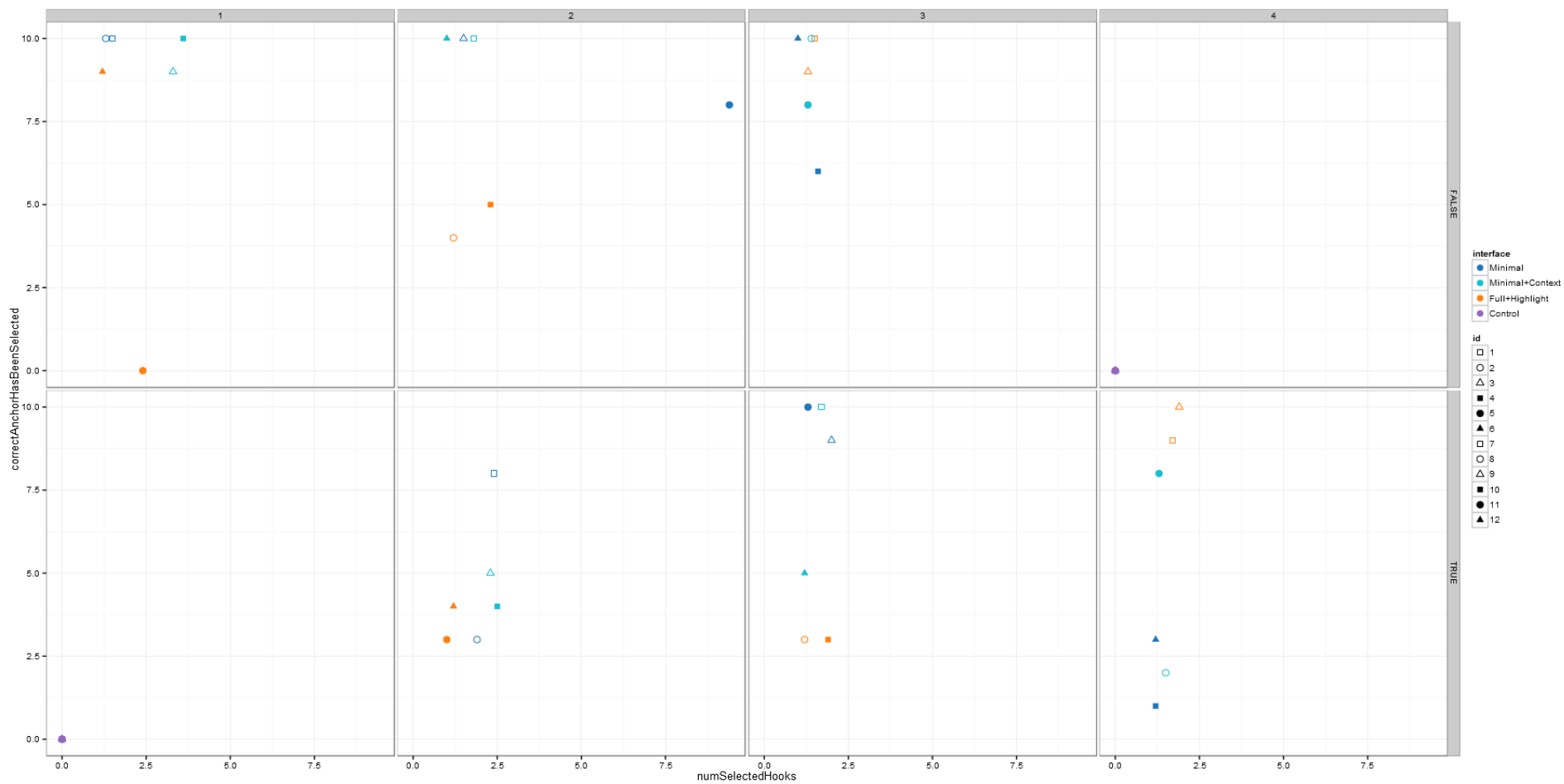
## Differential analysis

consider only “anchor-search participants”

MTurk:      $M \sim M+C$      both  $<$  Control

Lab:         $M \sim M+C$      both  $<$  Control & F+H





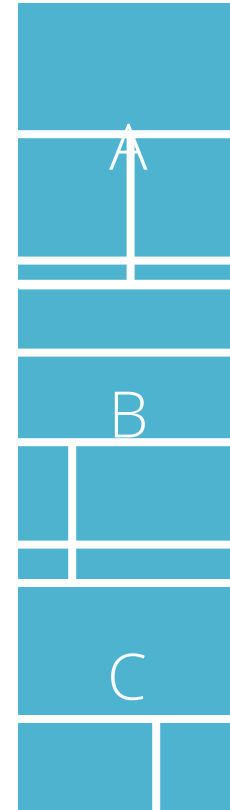
Why do participants choose different strategies?

## **Text-label search**

familiarity

safer

illusion of speed



## **UI-anchor search**

not aware of the full panel

simplicity

learning effect

## **Future work**

Longitudinal study

Other applications & domains

Automatically generate the mapping

Refine the mapping collaboratively



**Anchored Customization** – map settings to UI anchors

**Customization Layer** – alternative to settings panels

**Minimal & Minimal+Context** faster (35%)

**Bimodal** distribution of search behaviors

# Thank you!

**Antoine Ponsard**



**Supervisor** Joanna McGrenere  
**2<sup>nd</sup> Reader** Tamara Munzner