# You Want Me To Do What?

## A Design Study on Two-Factor Authentication Messages

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- Motivation
- Experimental Design
- Results
- Discussion

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Over 50% of users in the U.S. have reported a significant negative security experience

like having an account hacked

[1] “Where is the Digital Divide”: A Survey of Security, Privacy, and Socioeconomics. Redmiles et al. CHI2017

Only 40% of users use two factor authentication

even though 74% of experts recommend it

[2] “...no one can hack my mind”: Comparing Expert and Non-Expert Security Practices. Ion et al. SOUPS2015

majority of users learned about 2FA from a security message

[3] How I Learned to be Secure: a Census-Representative Survey of Security Advice Sources & Behavior. Redmiles et al. CCS2016.

# To Summarize

50% of users report significant negative experiences

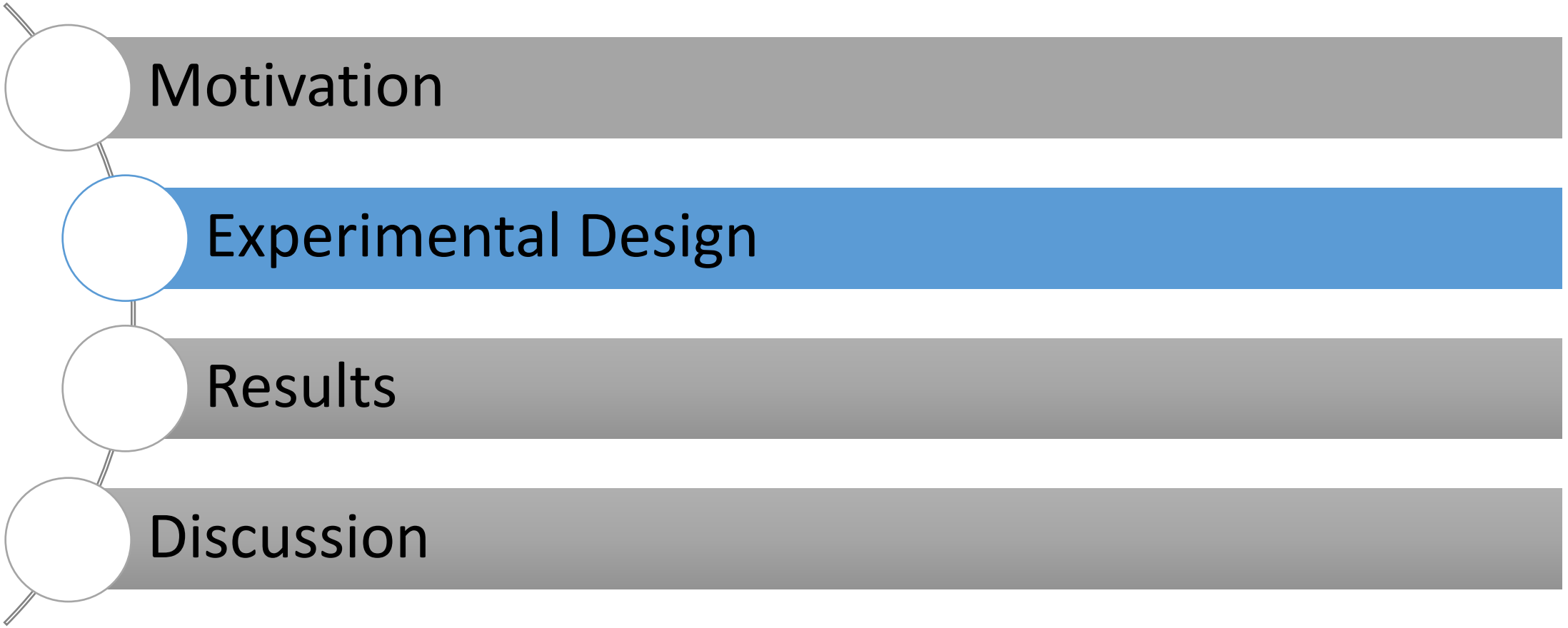
some of these could be prevented with 2FA

users already rely on messages to learn about 2FA

# Let's Fix This

Provide the best possible information about 2FA

Evaluate and design 2FA invitation messages


Motivation
Experimental Design
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## Interview

- Evaluate existing 2FA invitation messages

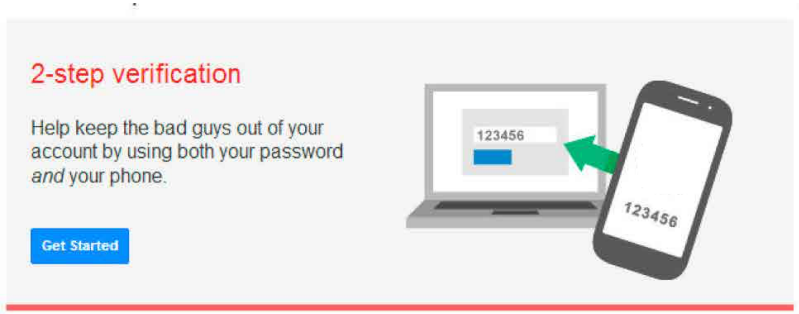
## Design

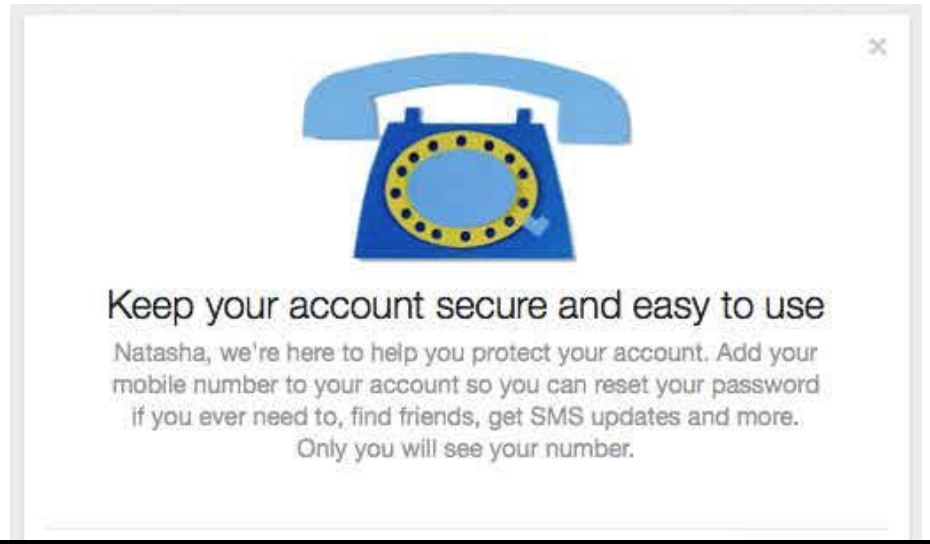
- Develop new message alternatives

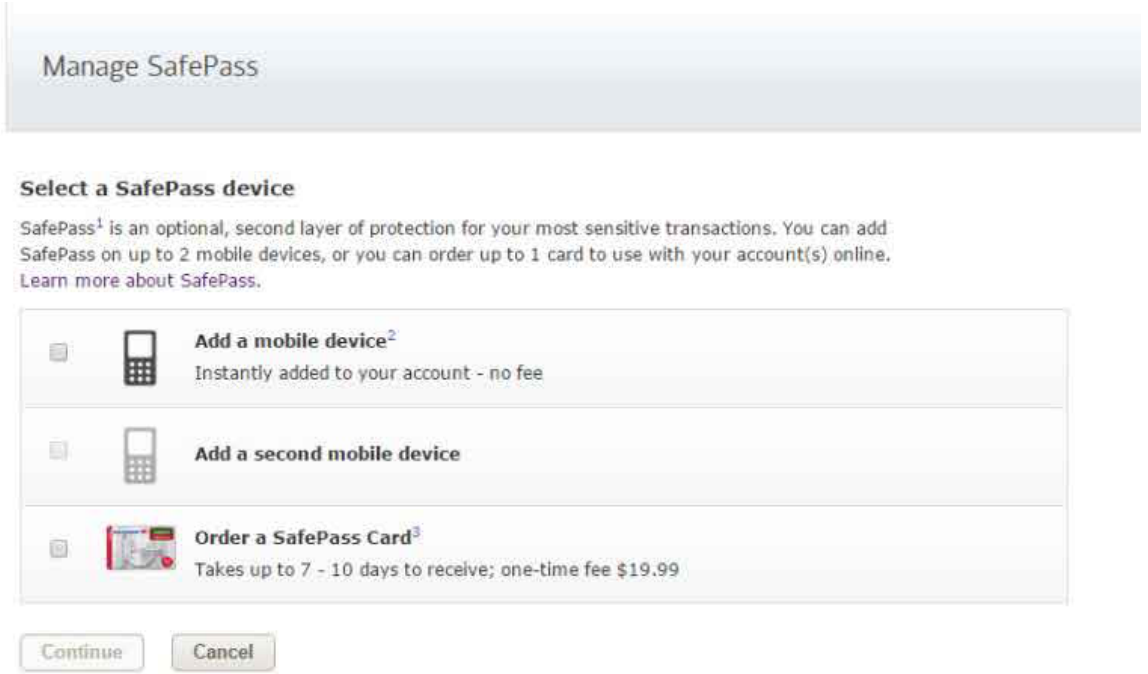
## Participants

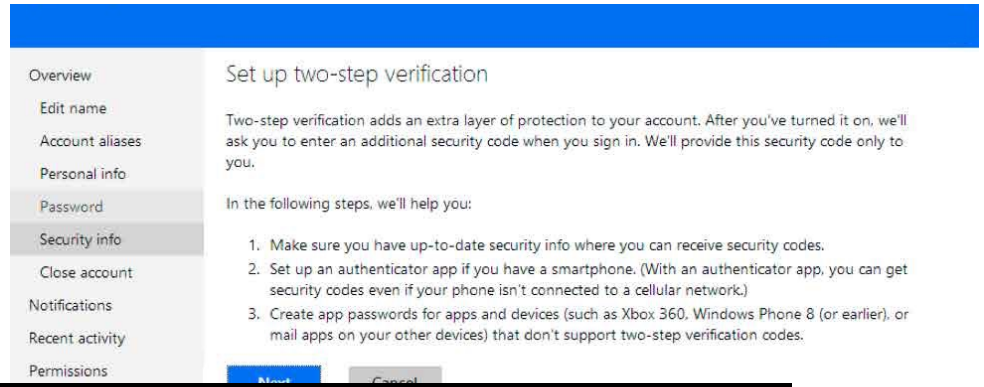
- 12 demographically diverse people
- 30 minute interviews
- Qualitative open coding of interviews & design artifacts

# Messages Evaluated



# Interview

**2FA Understanding**

- Describe 2FA
- If don't know, simple definition provided

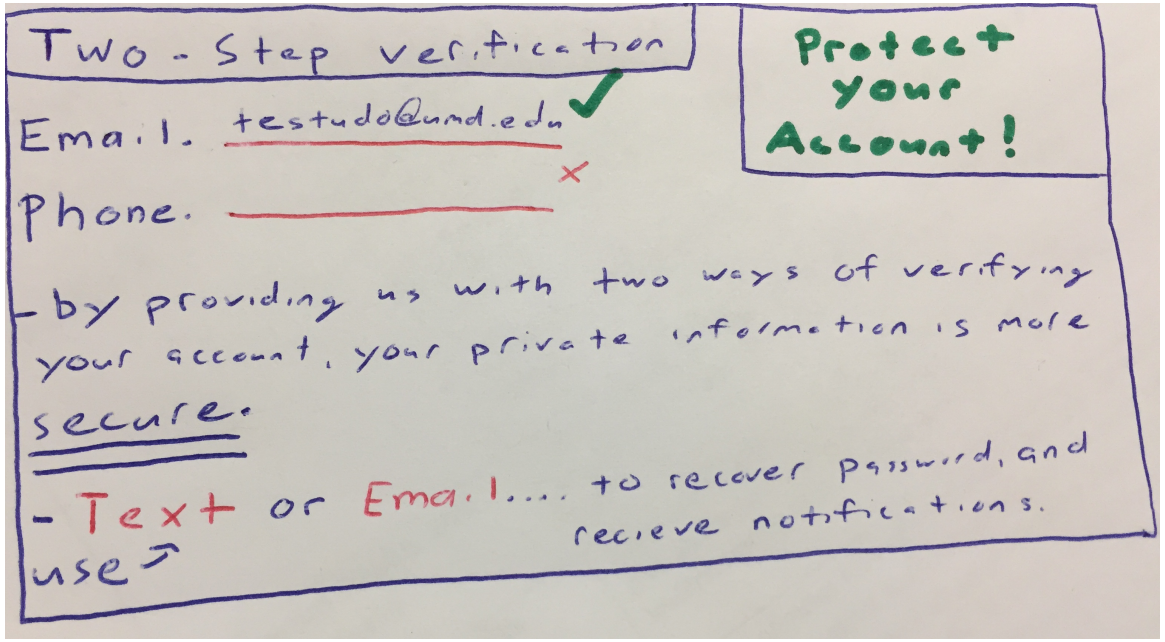
**Message 1**

- Based on message, what would make you want to use/not use 2FA?
- Based on message, how useful would 2FA be to you?
- What concerns do you have about 2FA?
- What would you change / what would you want to know?

**Message 2**

- Compare with Message 1

# Design Task




Provide colorful markers
Leave room to provide comfort

Ask them to sketch a message that would convince them to use 2FA

- Motivation
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- **Results**
- Discussion

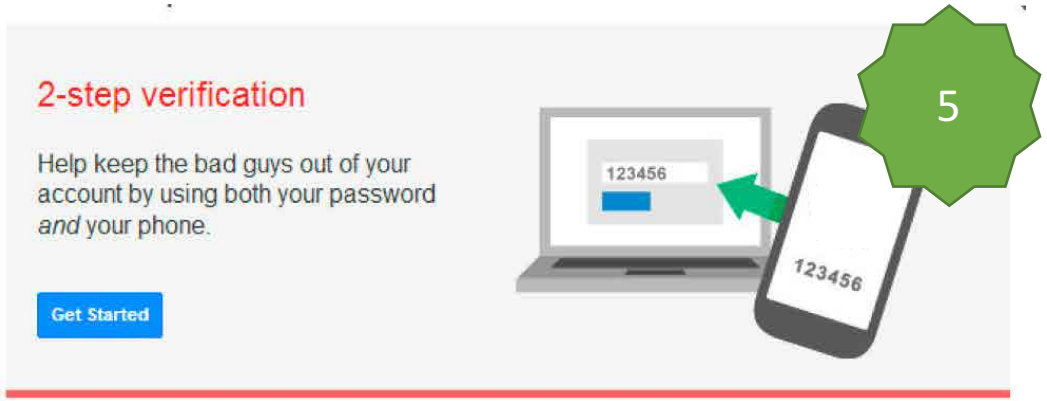
# Participants

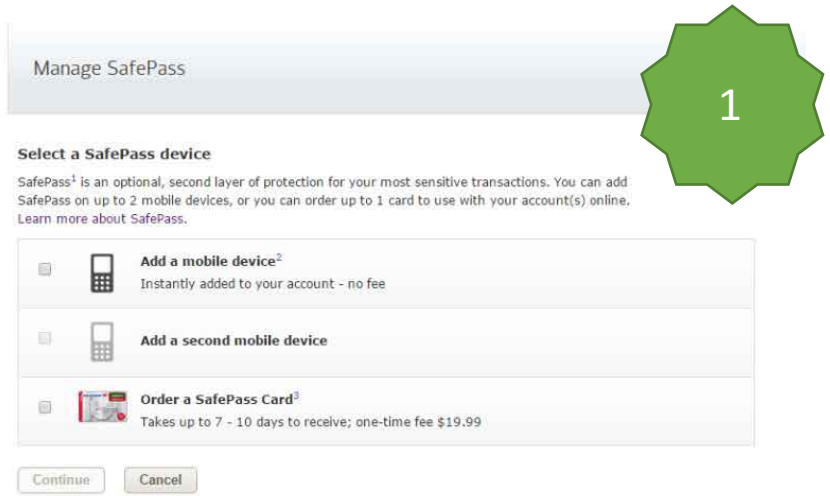
Participants were slightly less wealthy than DC area

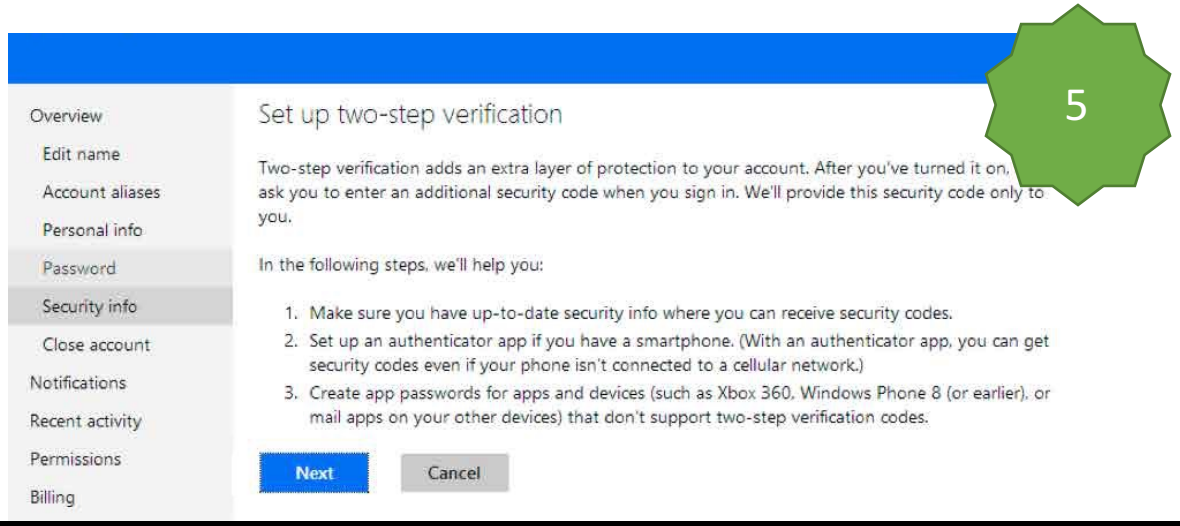
Participants were slightly more educated than DC pop.

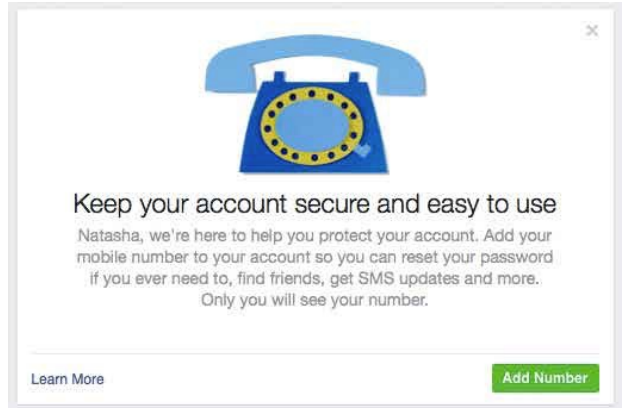
Nine participants relatively accurately described 2FA

# Message Pref

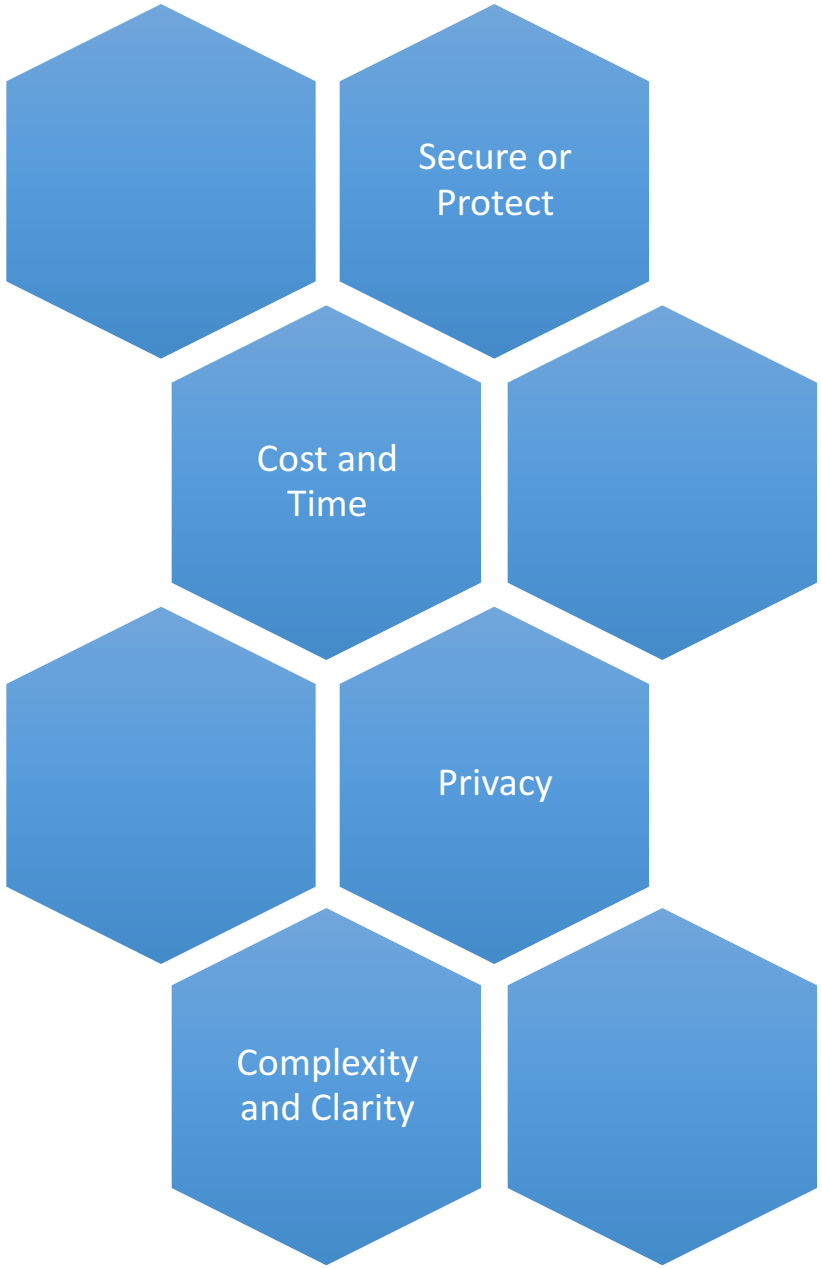


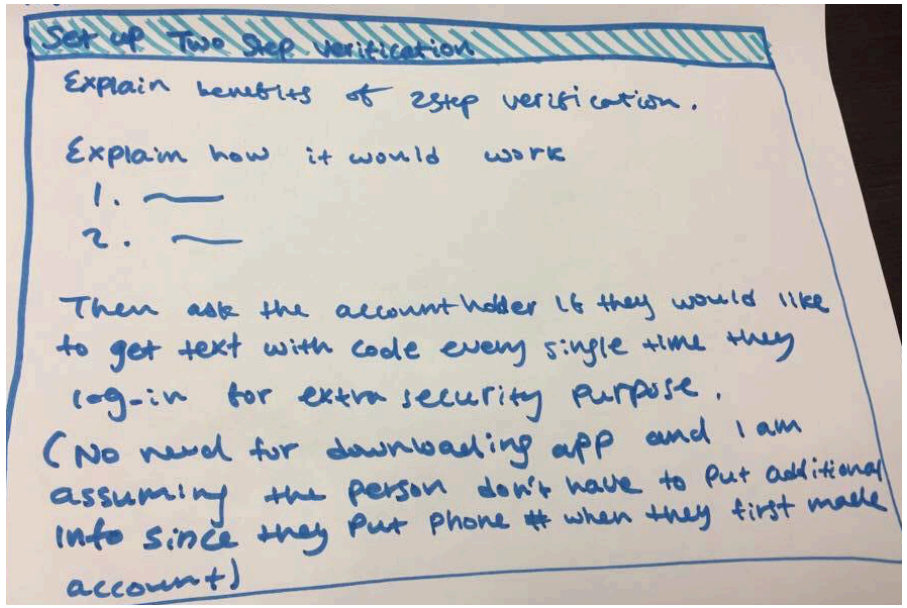
# Content

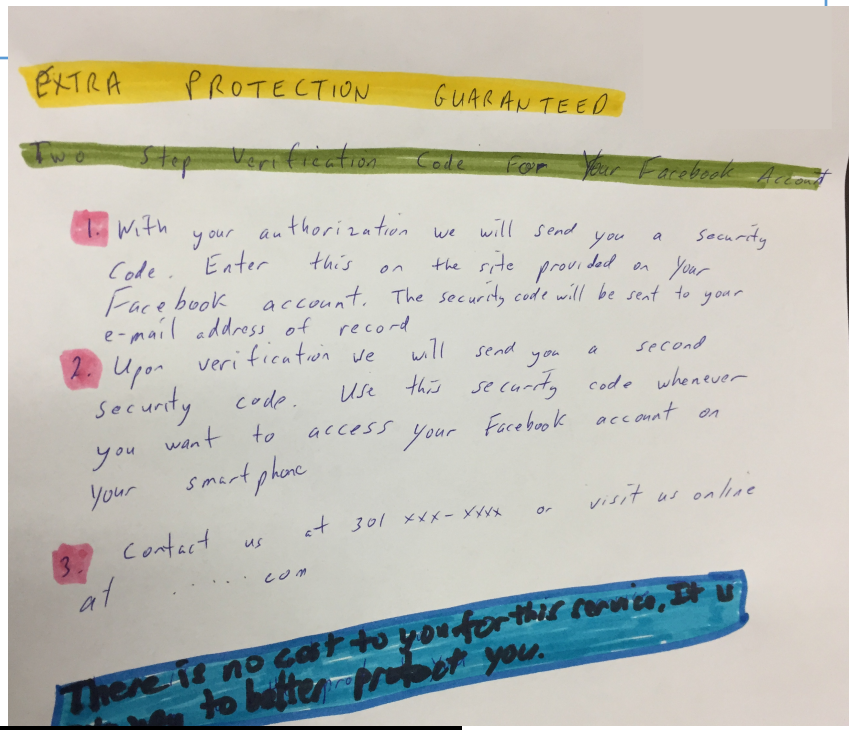

Secure or Protect
Cost and Time
Privacy
Complexity and Clarity

Content

## Complexity and Clarity

- Participants preferred simple, yet detailed messages
- They wanted to understand the purpose of 2FA
  *"there is no real explanation. . .*
  *it just says 'a second layer of protection'"*
- 9 participants actioned these recommendations in their designs using bullet points



Design Options

# Your Security Matters

Hackers can gain access to your account by stealing your password. Once they get into your email account, they can gain access to other accounts like your bank account.

## Help us keep your account secure.

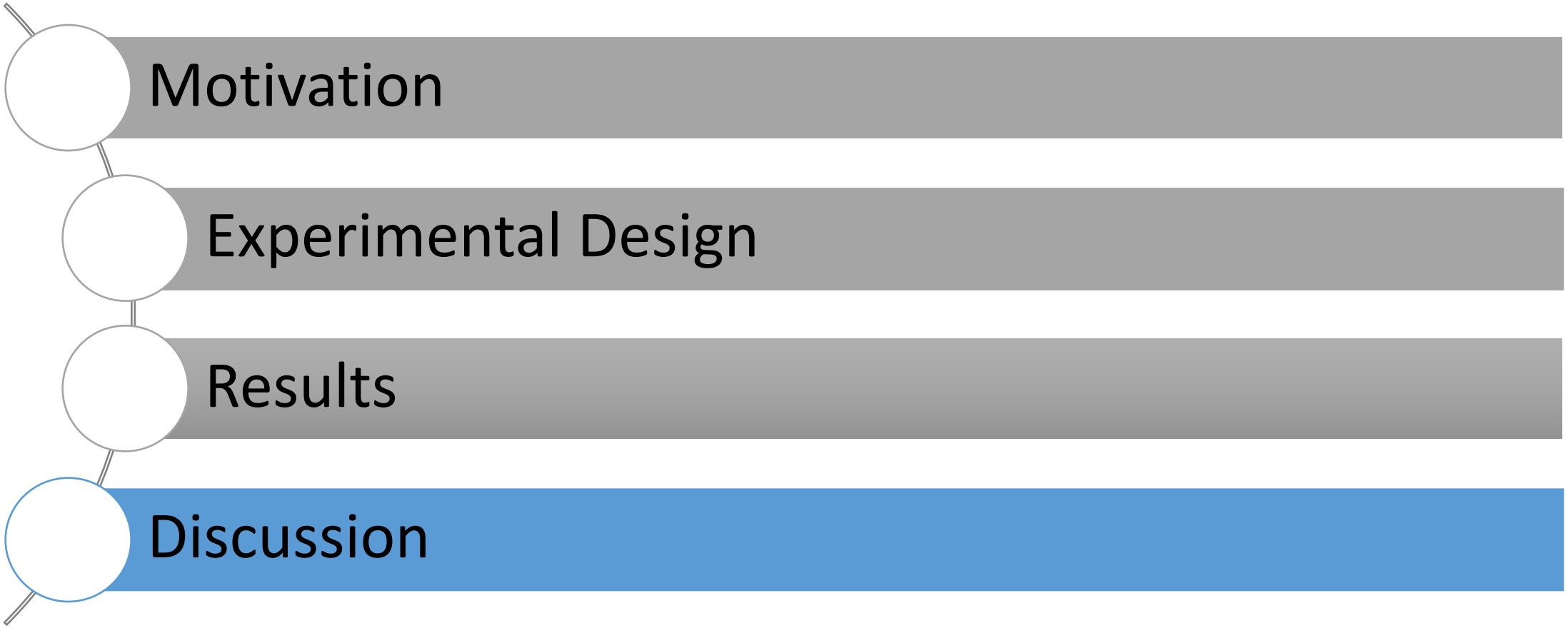
Add an extra layer of security to your account by enabling 2-step-security. With 2-step-security we will ask for your password and then send a security code to your phone. You will enter this code every time you login. Learn more.

### To enable 2-step-security:

1. Connect your phone number to your account.
2. Receive security code 10 seconds later.
3. Enter code to login to your account.

Enable

Later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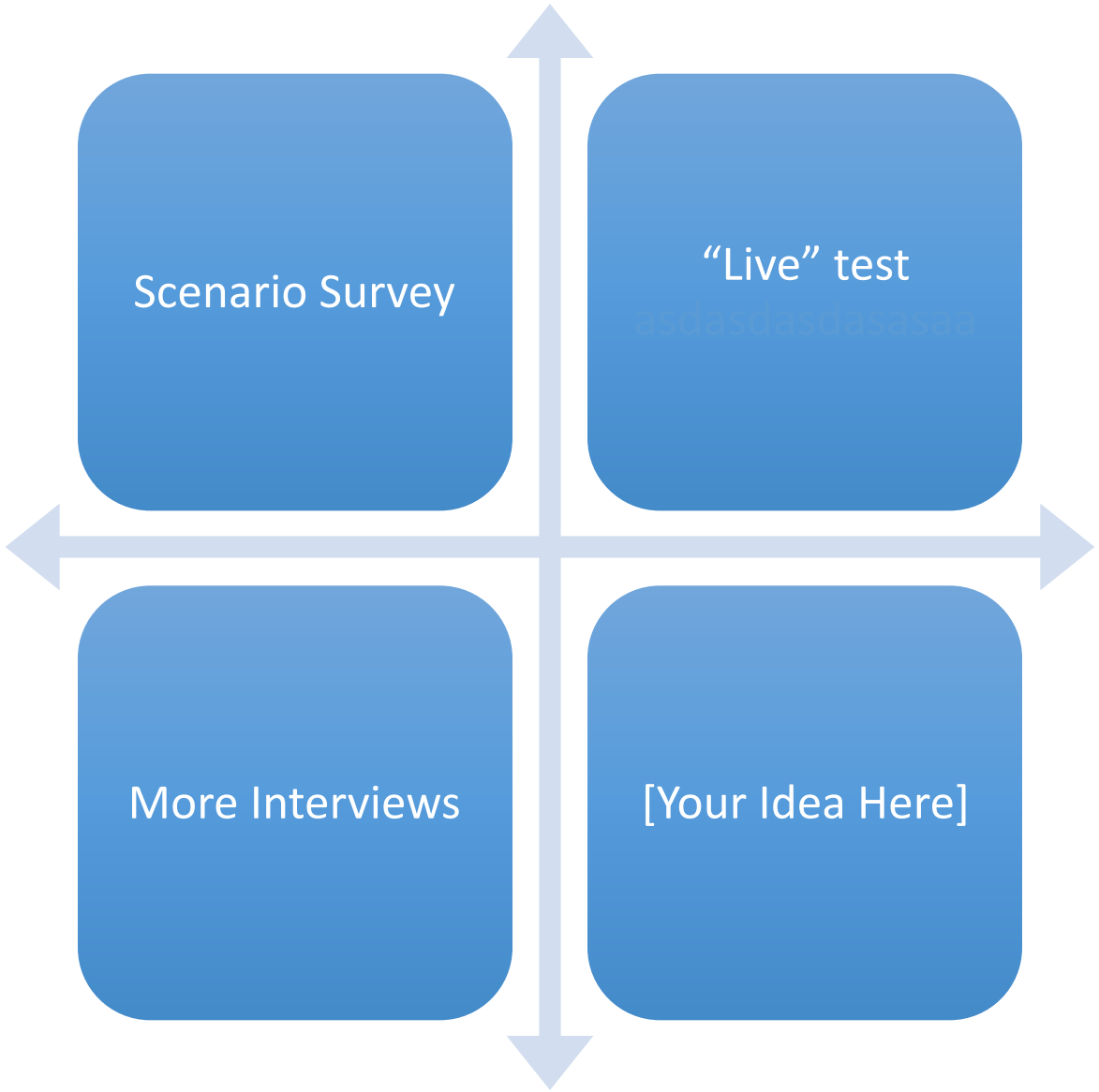
# Future Work

Interview + design study | open ended inquiry into what is & isn't working

Quantitative evaluation | evaluate design options

# Evaluation?



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