

# Privacy and Security Attitudes, Beliefs and Behaviours

Masters Thesis Presentation

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# Motivation

- Usable Privacy and Security?
- weak, uneducated, lazy, a variable to control, the enemy, one dimensional
- When it comes to privacy and security users are generally misunderstood.

# The Idea

- To develop a more nuanced picture of the different types of PAS users by examining
  - How people are interacting with PAS
  - Whether current classifications are accurate
  - The attributes that allow for clustering of individuals into groups

# Results

- Found 5 categories of users
  - The marginally aware,
  - The fundamentalist,
  - The struggling amateur,
  - The technician,
  - The lazy expert

# Outline

- Related Work
- Goals and Study Methods
- Analysis
  - First and Second Categorization
- Design Implications - Personas
- Conclusion and Future Work

# Privacy and Security



Privacy is

- privacy is **dead**
- privacy is **dead get over it**
- privacy is **overrated**
- privacy is **dead – get over it**
- privacy is **dead zuckerberg**
- privacy is **dead facebook**
- privacy is **an illusion**
- privacy is **a thing of the past**
- privacy is **the new celebrity**
- privacy is **a right**

Google Search

I'm Feeling Lucky

University of Waterloo  
Identity and Access Management

## Change Password

Your Password will need to:

- be at least 7 characters long
- be less than 32 characters long
- have at least one numeric character
- have at least one lower case character
- have at least one upper case character
- have at least one 'special' (i.e. @,%,^, etc.) character
- NOT include all or parts of your firstname or lastname
- NOT contain accountId
- NOT contain email address

User id: j6weber

Password:

Confirm Password:

Save

Cancel

# Related Work

- Westin's Model
- Privacy Concerns User Categories
  - Marginally Concerned,
  - Fundamentalist, and
  - Pragmatist
- Built on by Ackerman et al. and Sheehan

# Related Work - Problems

- Surveys
- Focus on only Privacy
- Limited predictive power



# Goal

- The goal of this work is to begin to address Privacy and Security attributes of users based on a view of users as a heterogeneous yet concrete community.

# The Study

- Semi-structured Interviews
  - 45 to 60 minutes
  - Breadth of topics
- 32 participants
  - 19 UWaterloo students & 13 Remote non-students

# The Analysis

- Transcribed Interviews
- Over 500 relevant quotes
- Q-Clustering similar quotes
  - 85 small sub-concepts
  - 24 concepts



- **Examples of Concepts:**

Security versus convenience	Sharing passwords - frequency and situations	Learning source
Privacy versus social	Determining trust of online sites	Opinions of monitoring
Software protection methods	Personal assessments	Helping others

# Personal Assessments

Motivation



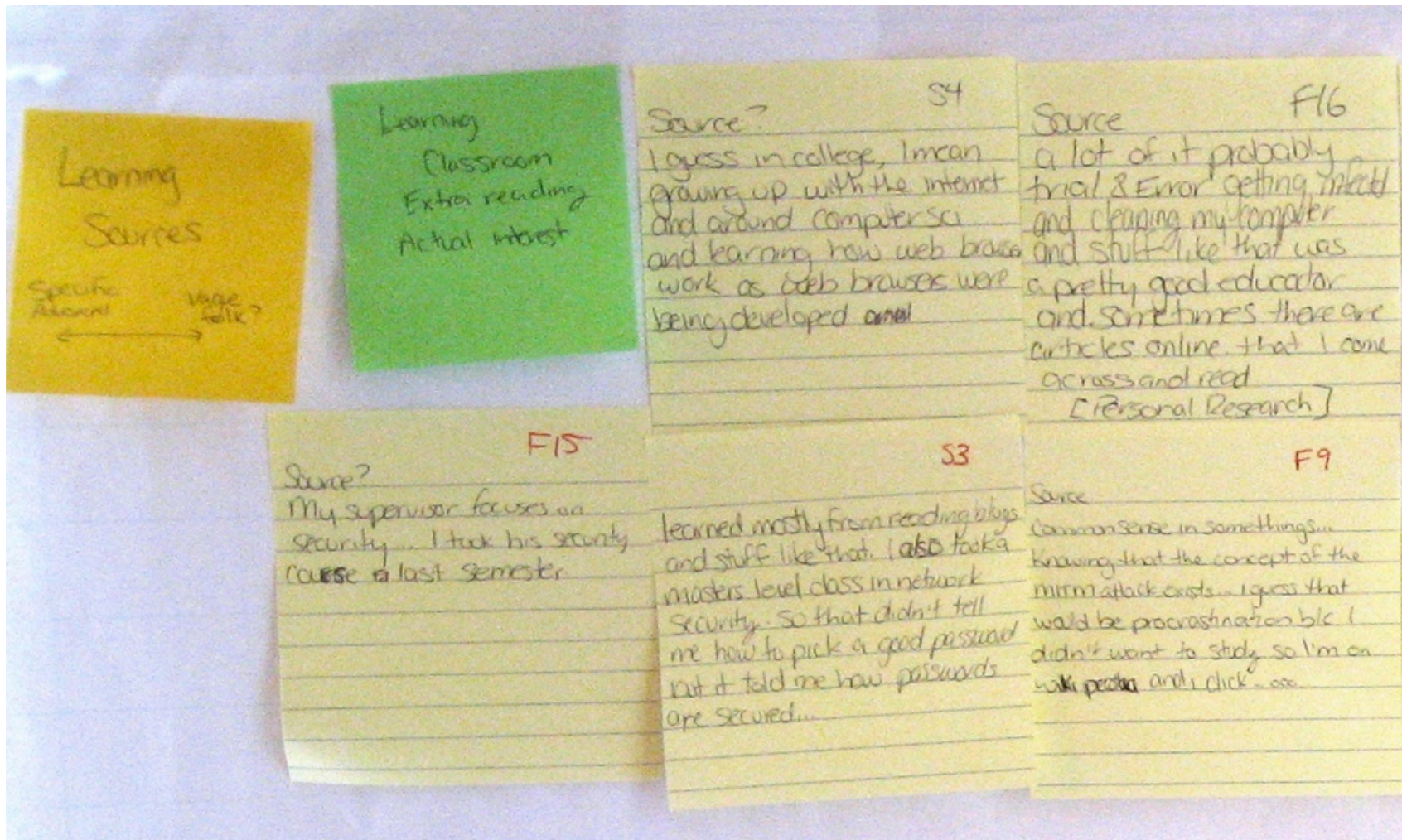
No concerns	
I'm not very secure	
I don't know how	
I'm not a target	
I don't matter (honest man)	
You can't find me (obscurity)	
I know it when I see it	
I used to be very insecure	
I protect only my bank	
I treat it like it's public	
I monitor very closely	
	Marginally Concerned
	Pragmatist
	Fundamentalist

# The Same as Westin's

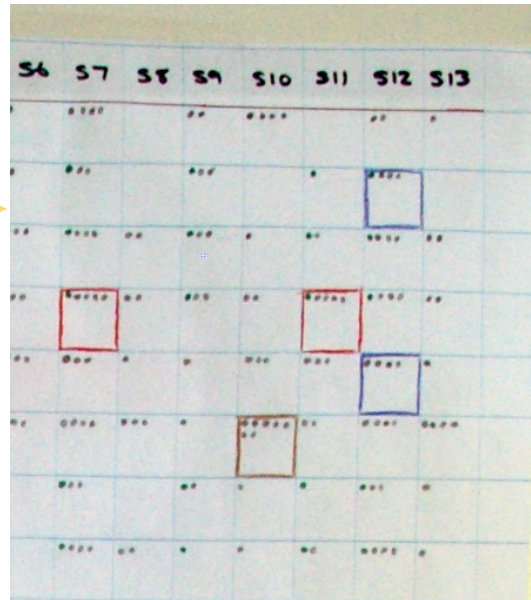
And it did not seem that all had been wrung from the quotations!

# Second Categorization

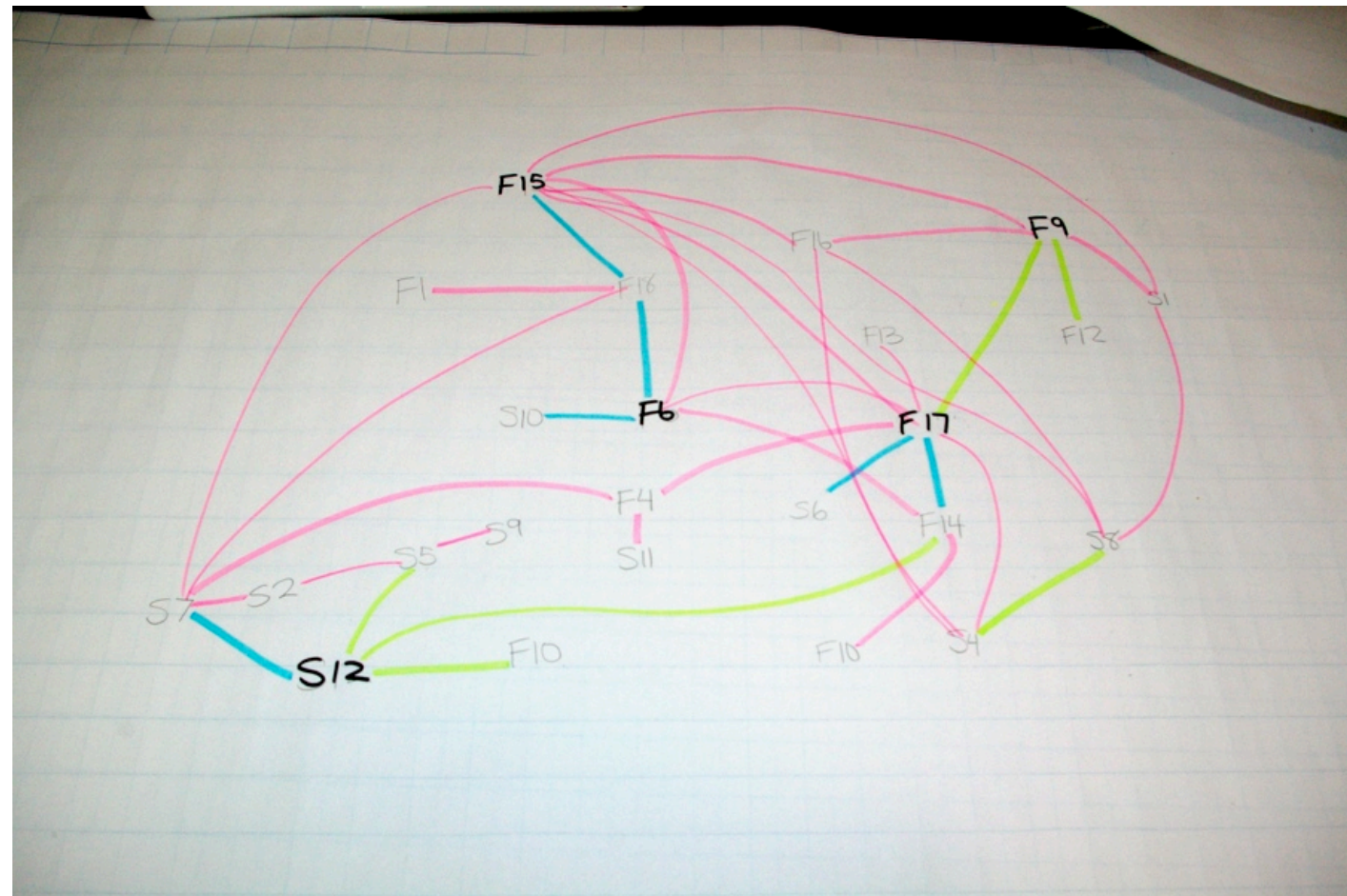
- Each similar quote created a link between participants







- Starting at the strongest connections a weighted graph was created



# P-Clusters

P5, P7, P9, P12, P15, P16

P1, P4, P8, P22, P25, P29

P10, P14, P17, P18, P19, P21, P23

P2, P6, P20, P26, P27, P30, P32

P3, P11, P13, P24, P28, P31

# P-Clusters

P5, P7, P9, P12, P15, P16

← Learns from  
TV shows and Friends

P1, P4, P8, P22, P25, P29

P10, P14, P17, P18, P19, P21, P23

← Passwords are unique  
and personal 'to me'

P2, P6, P20, P26, P27, P30, P32

P3, P11, P13, P24, P28, P31

← Don't believe they are  
personally a target

# P-Clusters

P5, P7, P9, P12, P15, P16

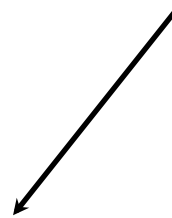
P1, P4, P8, P22, P25, P29

P10, P14, P17, P18, P19, P21, P23

P2, P6, P20, P26, P27, P30, P32

P3, P11, P13, P24, P28, P31

Chooses security over  
convenience



# P-Clusters

P5, P7, P9, P12, P15, P16

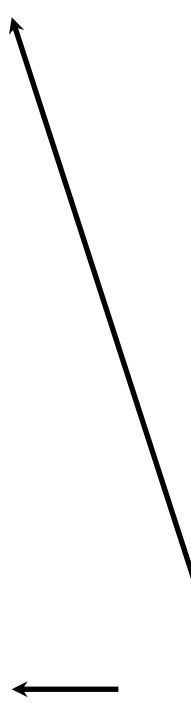
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P3, P11, P13, P24, P28, P31

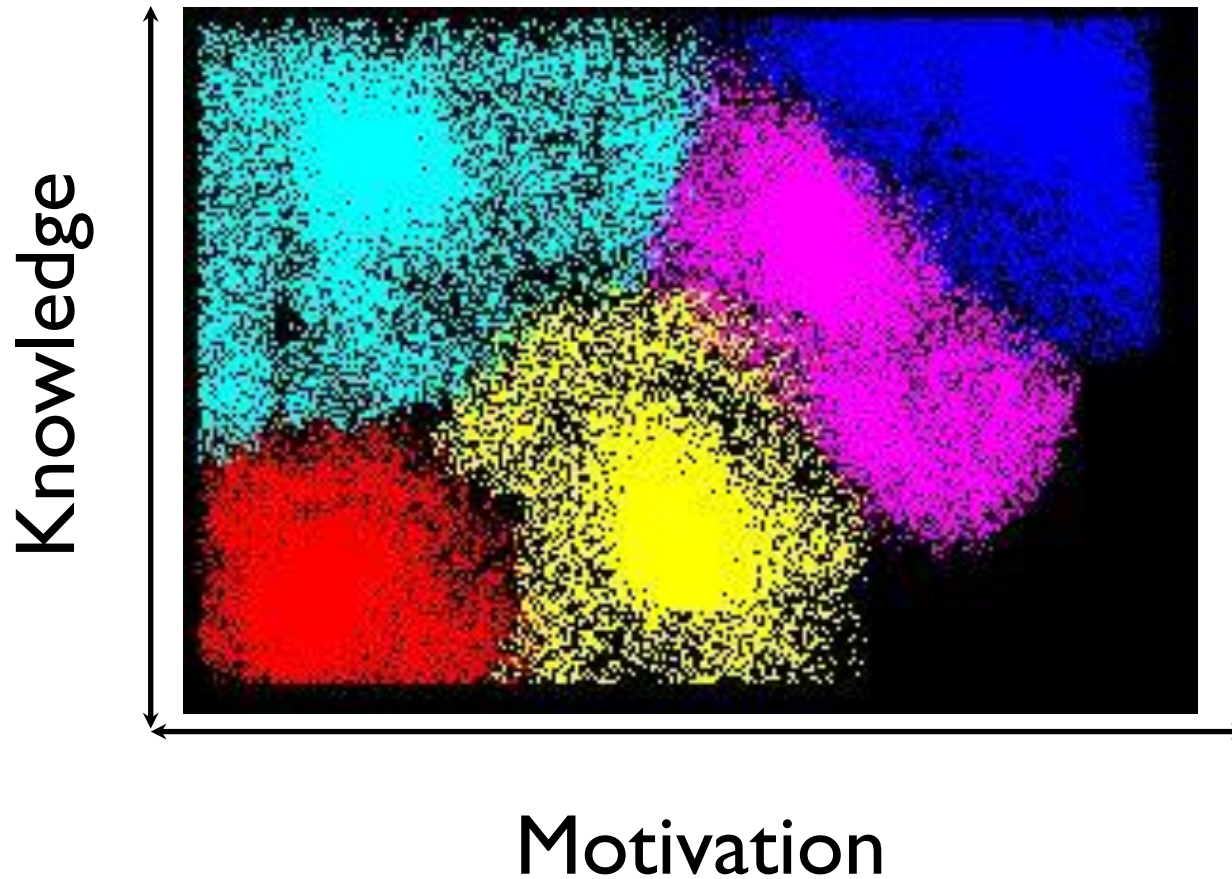
“I don’t matter”  
(Honest Man)

A diagram consisting of two arrows. One arrow starts from the top of the quote and points diagonally upwards and to the left towards the first cluster of P-values. The other arrow starts from the bottom of the quote and points diagonally upwards and to the left towards the last cluster of P-values.

# Unifying Dimensions

- Identify meta-characteristics of the five P-clusters of participants
- Both Knowledge (low and high) and Motivation (low, medium and high)

# Motivation vs Knowledge Continuums



\*Approximation



# P-Clusters

P5, P7, P9, P12, P15, P16

P1, P4, P8, P22, P25, P29

P10, P14, P17, P18, P19, P21, P23

P2, P6, P20, P26, P27, P30, P32

P3, P11, P13, P24, P28, P31

# P-Clusters

P5, P7, P9, P12, P15, P16

Low Knowledge &  
Low Motivation

P1, P4, P8, P22, P25, P29

High Knowledge &  
High Motivation

P10, P14, P17, P18, P19, P21, P23

Lower Knowledge &  
Low - Medium Motivation

P2, P6, P20, P26, P27, P30, P32

Higher Knowledge &  
Medium - High Motivation

P3, P11, P13, P24, P28, P31

High Knowledge &  
Lower Motivation

# P-Clusters

P5, P7, P9, P12, P15, P16	Low Knowledge & Low Motivation	Marginally Aware
P1, P4, P8, P22, P25, P29	High Knowledge & High Motivation	Fundamentalist
P10, P14, P17, P18, P19, P21, P23	Lower Knowledge & Low - Medium Motivation	Struggling Amateur
P2, P6, P20, P26, P27, P30, P32	Higher Knowledge & Medium - High Motivation	Technician
P3, P11, P13, P24, P28, P31	High Knowledge & Lower Motivation	Lazy Expert

- So now what?
  - I have these long lists of traits and dimensions that aren't very helpful for informing design on their own
  - How to incorporate these clusters into the design process?

# Personas



Mark



Robert



Allison



Patricia



Henry

# Personas



Mark

Marginally  
Aware



Robert

Fundamentalist



Allison

Struggling  
Amateur



Patricia

Technician



Henry

Lazy  
Expert

# Patricia



- The Technician -- Medium-High Knowledge and High-Medium Motivation
- *“The Nigerian princes and stuff. That stuff, I know it when I see it now.”*
- And Short Profile

# Evaluation

- Evaluating the Categories
- Evaluating the Personas



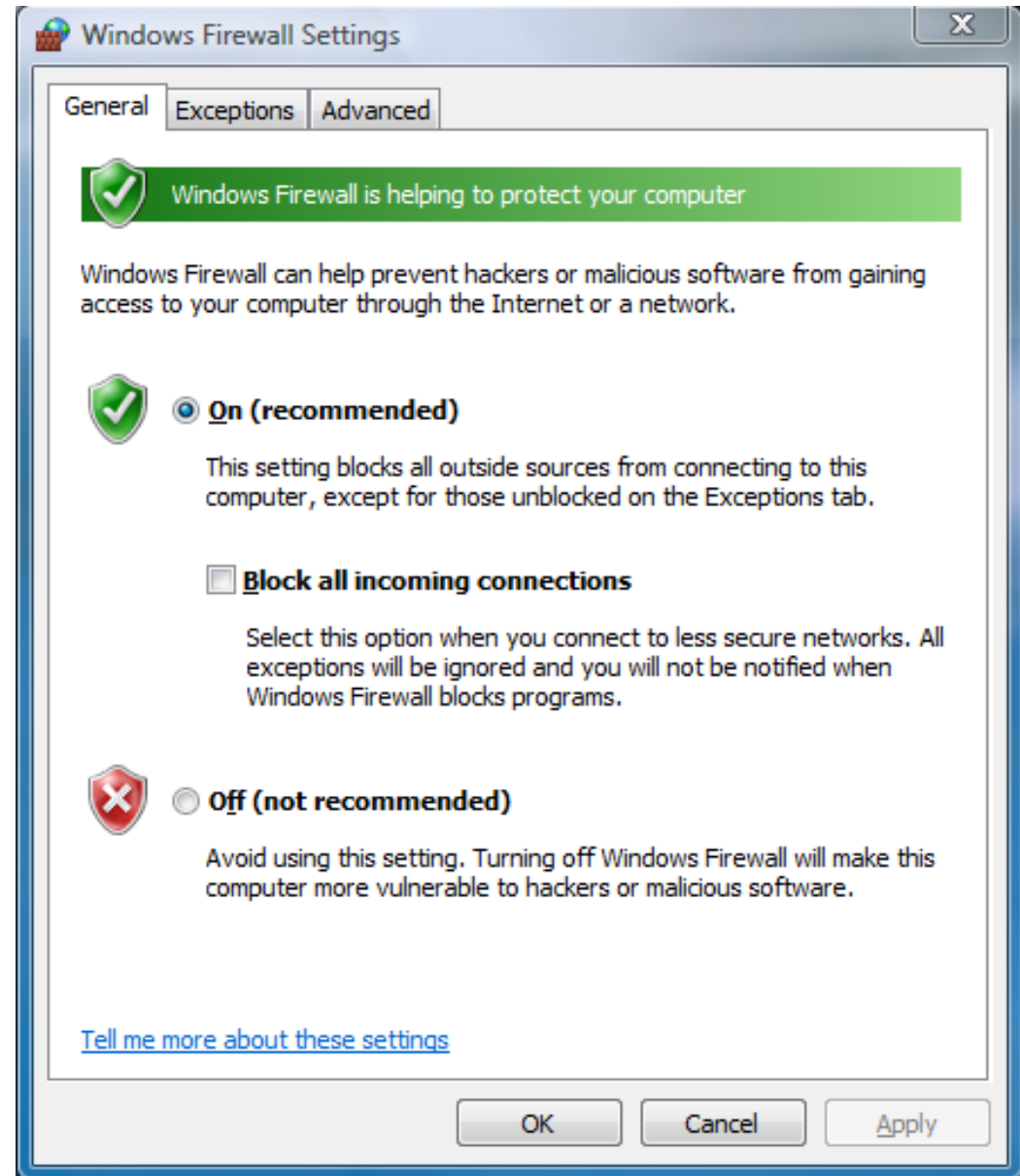
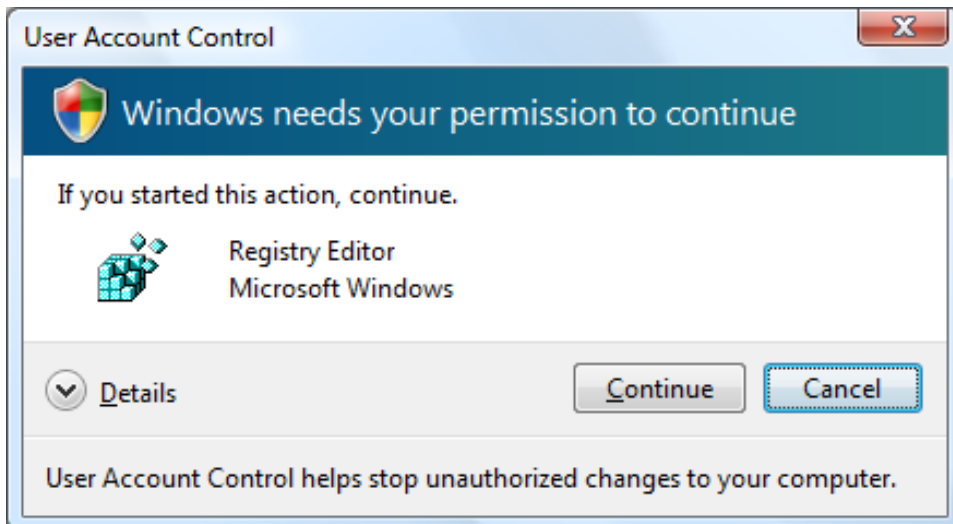
# Evaluating Categories

- Colleague's Study on WiFi Security
- 12 Participants
- Taught them about the personas and asked them to assess the fit of their participants

# Evaluation

- Evaluating the Categories
- **Evaluating the Personas**

# Evaluating Personas



# Future Work

- Expanding the user research
  - Demographically
  - Quantitatively - Survey tool
- Applying the personas to design
  - New tools or redesigns to use the differences between people

# Conclusion

- The goal of this work is to begin to address Privacy and Security attributes of users based on a view of users as a heterogeneous yet concrete community.
- Qualitative Interview Study
- Privacy and Security User Categorization
- Persona Creation and Demonstrated Use

# Thank you!

Questions? Comments? Concerns?

- Focus of User's concerns

Global  
Security

Local  
Security

Global  
Privacy

Local  
Privacy