"You don't want to be the next meme": College Students' Workarounds to Manage Privacy in the Era of Pervasive Photography

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Pervasiveness of digital photography in everyday life
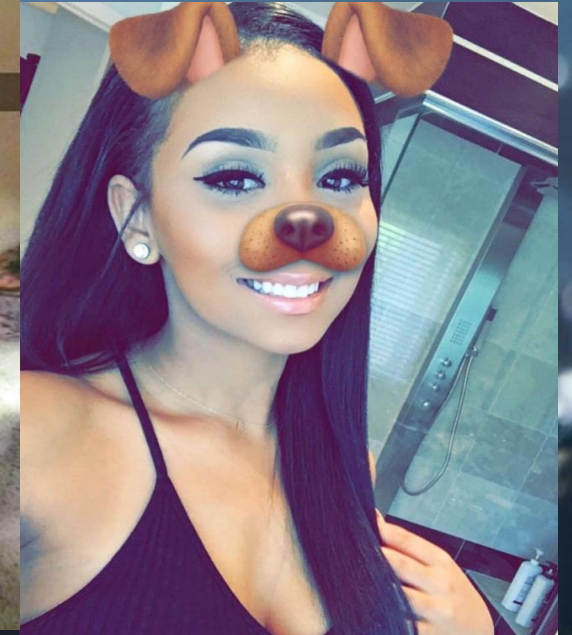
77% of Americans own **smartphones**
[The Pew Research Center]

Instagram, has **doubled its user base**, to 800 million monthly active users in **two years**
[Statista]

In Snapchat, users **create 3.5 million snaps** everyday* that include, for example, funny situations, selfies, and sexting**
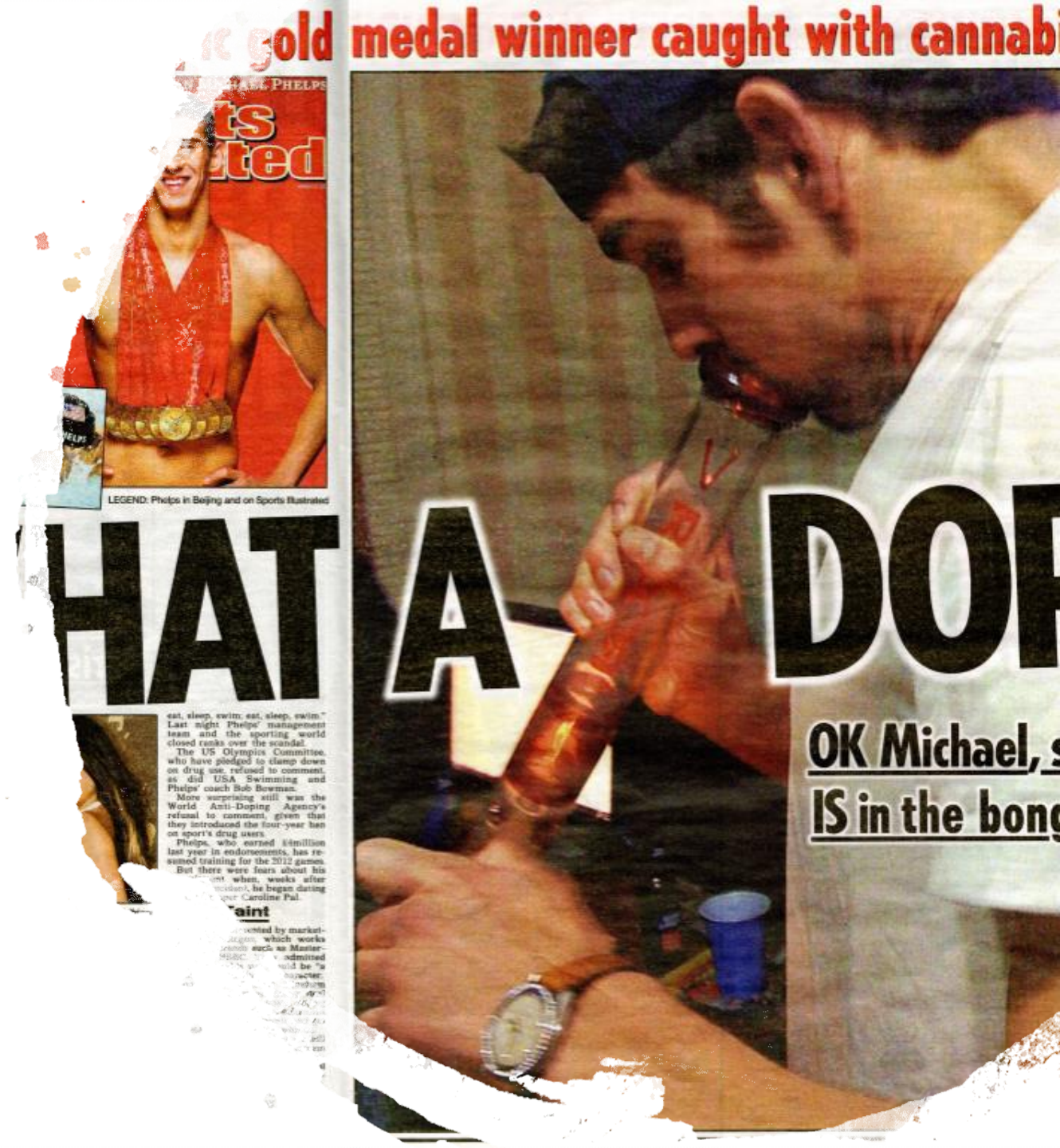
 *[Statista]   **(Roesner et al., 2014)

Pervasiveness of digital photography in everyday life

In 2009, a published photo of the Olympian swimmer Michael Phelps smoking marijuana went viral
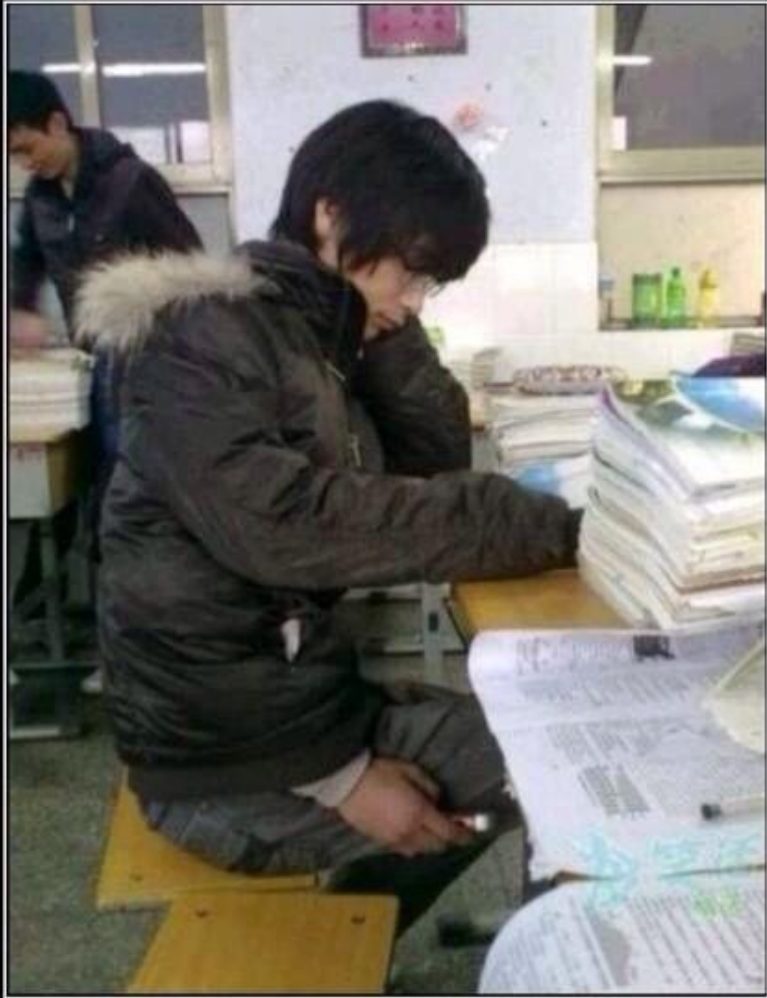
Pervasiveness of digital photography in everyday life

In 2011, New England Patriots cheerleader, Caitlin Davis, was fired after photos surfaced on Facebook of her defacing a person's face with sexual and racist drawings

Cheating

Level: expert

Cheating

Level: expert

VERY DEMOTIVATIONAL.com
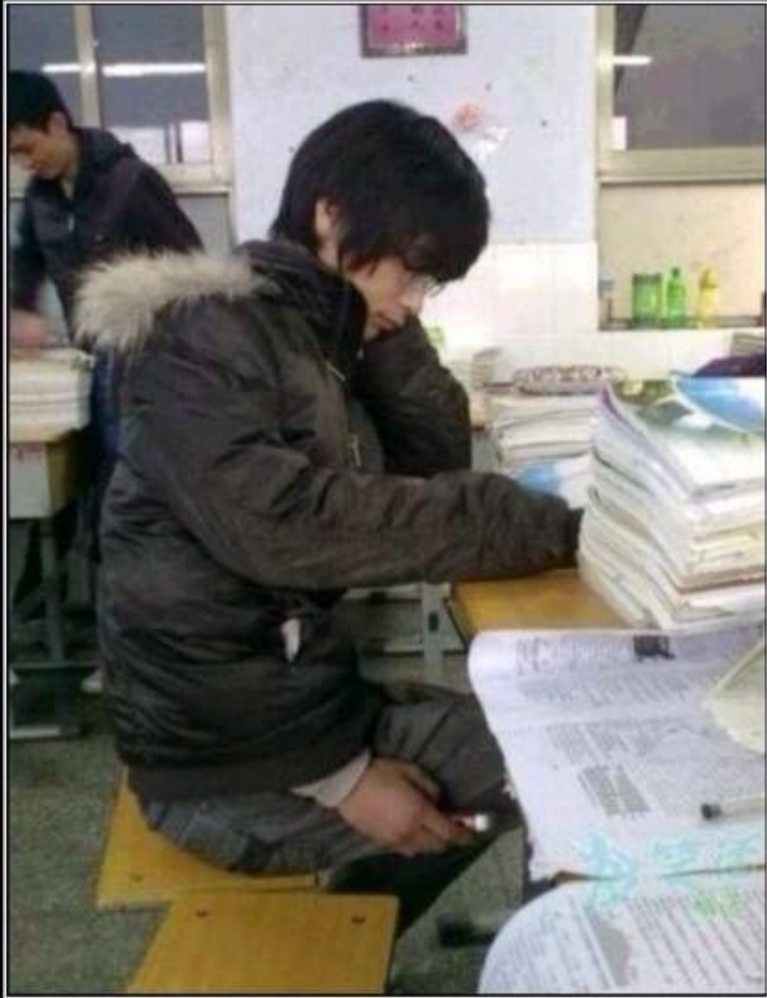
This is Mario after doing 2 joints of marijuana. Still think doing drugs is cool?

Cheating
Level: expert

Maybe she's born with it, maybe it's methamphetamine

drgrayfang

fter doing 2 joints of think doing drugs is

Maybe she's born with it, maybe it's methamphetamine

Cheating
Level: expert

VERY DEMOTIVATIONAL .com

fter doing 2 joints of
s

BAD ASS

I'M A
VIRGIN
(But this is an old shirt)
KEY WEST

GRANDMA

memecenter.com MemeCenter

9

my main goal in life is to be as comfortable as this man is on the subway

with it, maybe it's

fter doing 2 joints of

BAD ASS

I'M A VIRGIN
(But this is an old shirt)
KEY WEST

GRANDMA

Constant state of surveillance by one's peers, friends, family and strangers

What does it mean to be a **young adult** living in such an environment?

What does this mean for an **individual's privacy**, and for the challenges of trying to control the **impression** others have of one, now and in the future?

We focus on…

RQ1: What are the everyday privacy **concerns** of undergraduates with regard to photography and social media?

RQ2: How are undergraduates **responding** to these concerns?

RQ3: What privacy **enhanced designs** are inspired by this understanding?

Holistic perspective on digital **photography** and **privacy**, is needed…

Wearable camera and Lifeloggers

(Hoyle et al., 2014-15)

Public and private spaces

(Denning et al., 2014)

(Choe et al., 2011)

(Singhal et al., 2016)

Social media networks (e.g., Facebook, Snapchat and Twitter)

(Such et al., 2017)

Semi-structured interviews with undergraduate students (N=23)

Social Media Usage

Legend: Snapchat, Facebook, Instagram, Twitter, Yik Yak
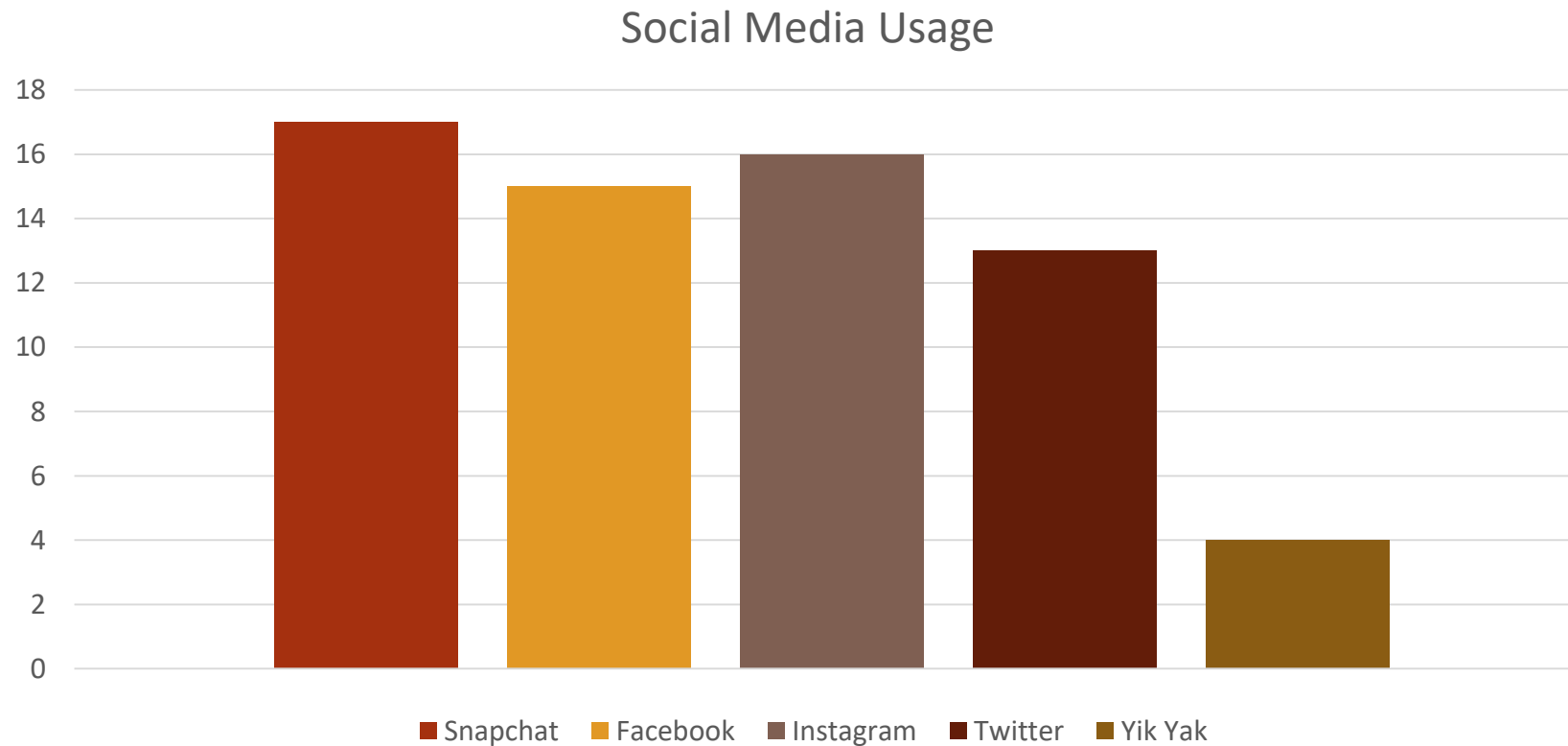
Structure of the interview

Stories about privacy and technology related events

4–5 stories about different living (e.g., dorm) and public places (e.g., bar)

Attitudes and behaviors around digital photography

Sample questions from interview protocol

Q: I want you to recall an instance within the last 6 months in a living space where you or someone else felt uncomfortable because there were concerns that someone may record, post, or possess certain information about you or them.

Q: I'd like you to think about when you take a photo. How would you describe the conventions you personally follow when using social media apps, like Snapchat or Facebook, to take/share a photo?

Analytic Procedure: Identifying key concepts

Recorded and transcribed audio

Coding procedure

Iterative process using open and axial coding

Reached theoretical saturation with the first 18 interviews

What are the everyday privacy **concerns** of undergraduates?

Photos as threats to privacy

Personal Privacy

Judgments and misinterpretations

Captured by strangers to create memes

Group Privacy

Group privacy as "an extension" to personal privacy

Ppl think I'm drinking but it's just soup

Personal Privacy: Judgments and misinterpretations

*[My friend] came home and was **drunk**. Somebody was **taking a video** of her ... She asked the person to **delete** it ... [but] she found out the video wasn't completely deleted ... She didn't want a video **leaked on Twitter** ... I don't think it's the general **reputation** she wants to have is this **silly sloppy drunk girl**. (P14)*

Personal Privacy: Captured by strangers to create memes

*[I saw a] person **taking a picture** and ... **laughing** around 'cause he was a **heavier-set guy**. I didn't think anything of it at that time but there was a **trend** going around **social media** of people taking pictures of each other and **giving rude comments** about it (P4)*

Group privacy as "an extension" to personal privacy

*We have **people** that **watch** all our **accounts** so if you're ever **drinking** in your letters **[in clothes with the sorority's name on them]**, that's a big **no-no** because our nationals can see it, and our **chapter** will be in **trouble**. So if you ever post a **Snapchat** at a bar or a party and you have your letters on ... you'll be **asked to remove** it.(P11)*

How are undergraduates **responding** to their everyday privacy **concerns** with regard to **photography** and **social media**?

Workarounds to manage privacy
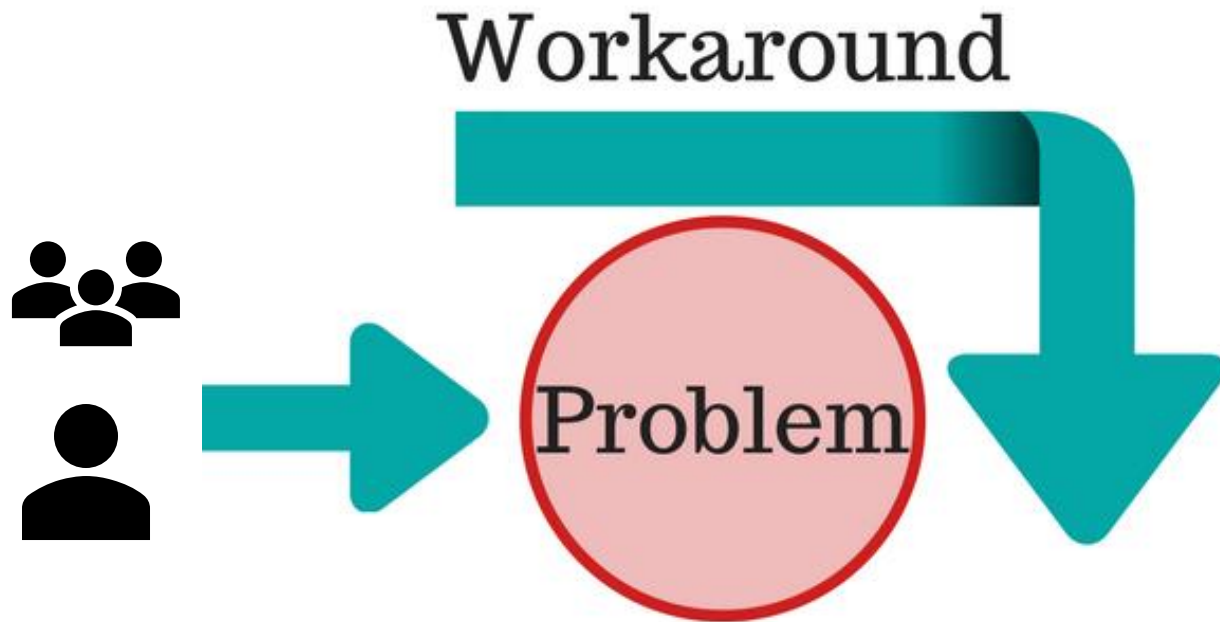
"Work patterns an individual or a group of individuals **create** to **accomplish** a crucial work goal within a **system of dysfunctional** work processes that prohibits the accomplishment of that goal or makes it difficult"

(Morath and Turnbull, 2005)

Experience Model: Privacy Workarounds (WA) for Surveillance from Everyday Photography

First Stage	Second Stage	Third Stage	Fourth Stage
Should I be Ready for a Photo to be Taken Today?	Should a Photo be Taken Now?	Should the Photo be Shared?	Should the Sharing of the Photo be Mitigated?

If yes, then → (Second to Third Stage)

If yes, then → (Third to Fourth Stage)

First Stage

WR #1 Maintain One's Physical Appearance

WR #2 Self-discipline

Second Stage

WA #3 Explicit or Implicit Denial by the Subject

WA #4 Altering the Scene

Third Stage

WA #5 Seeking and Demanding Explicit Consent

Fourth Stage

WA #6 Accept and Adapt

WA #7 Watching out for Others

WA # 8 Negotiate Directly

Experience Model: Privacy Workarounds (WA) for Surveillance from Everyday Photography

First Stage

Should I Ready for Photo to Taken Tod

Fourth Stage

hould the ring of the hoto be itigated?

WR #1 Maintai Physical Appea

ccept and

WR #2 Self-disc

atching out ers

Scene

Address the "gap between ethnographic description and the design of technology"

"Explanatory and developed in a way that has implications for strategic action"

(Rachel Jones, 2006)

WA # 8 Negotiate Directly

Experience Model: Privacy Workarounds (WA) for Surveillance from Everyday Photography

First Stage

Should I be Ready for a Photo to be Taken Today?

Second Stage

Should a Photo be Taken Now?

If yes, then

Third Stage

Should the Photo be Shared?

If yes, then

Fourth Stage

Should the Sharing of the Photo be Mitigated?

WR #1 Maintain One's Physical Appearance

WR #2 Self-discipline

WA #3 Explicit or Implicit Denial by the Subject

WA #4 Altering the Scene

WA #5 Seeking and Demanding Explicit Consent

WA #6 Accept and Adapt

WA #7 Watching out for Others

WA # 8 Negotiate Directly

First Stage: The potential to be captured in a photo

First Stage

Should I be Ready for a Photo to be Taken Today?

WA #1 Maintain One's Physical Appearance

WA #2 Self-discipline

Ubiquity of photography in public places

Being alert to one's environments and actions

Fourth Stage

Should the Sharing of the Photo be Mitigated?

6 Accept and

7 Watching out Others

Scene

WA # 8 Negotiate Directly

27

First Stage: The potential to be captured in a photo

First Stage

Should I be Ready for a Photo to be Taken Today?

*I know if I'm going to a **social gathering,** a lot of **people** are gonna **take pictures** so I make sure to do my **makeup** … my **hair** and I'll wear a **new top** (P6).*

WA #1 Maintain One's Physical Appearance
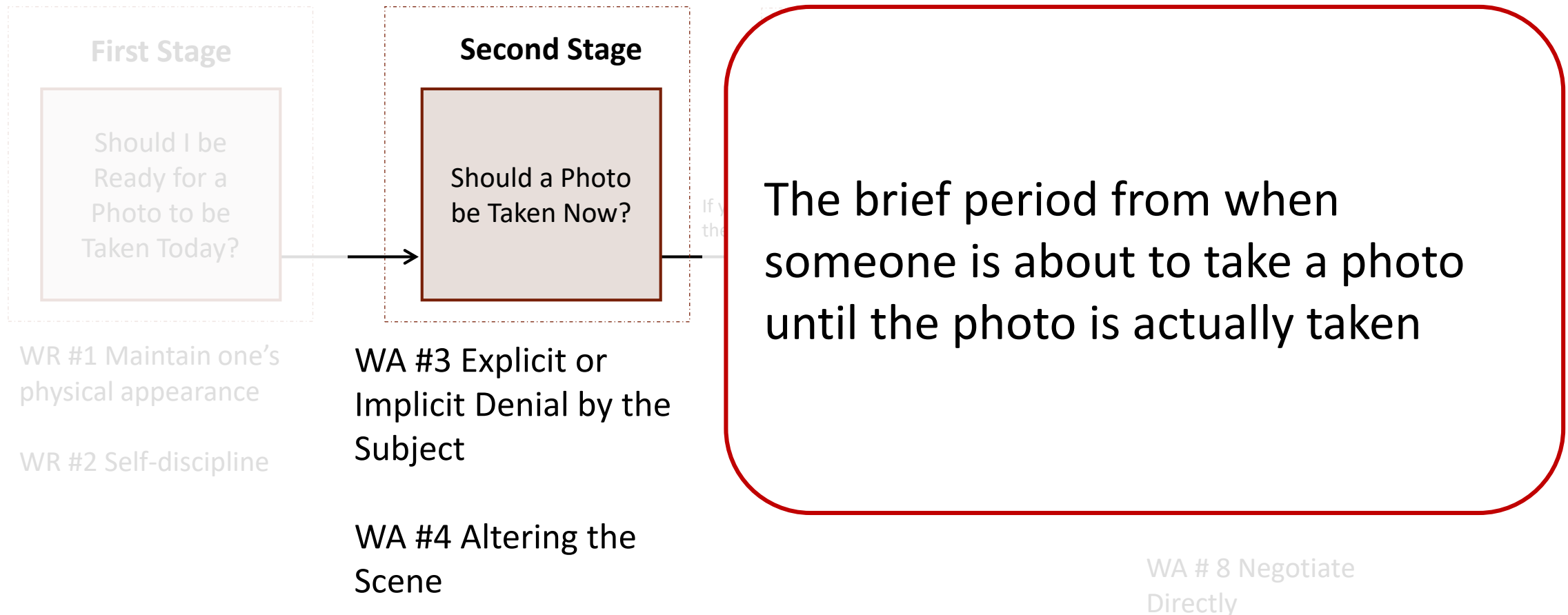
Second Stage: Imminent photography and altering the scene

Second Stage

Should I be Ready for a Photo to be Taken Today?

Should a Photo be Taken Now?

The brief period from when someone is about to take a photo until the photo is actually taken

WR #1 Maintain one's physical appearance

WR #2 Self-discipline

WA #3 Explicit or Implicit Denial by the Subject

WA #4 Altering the Scene

WA # 8 Negotiate Directly

Second Stage: Imminent photography and altering the scene

SOMETIMES YOU JUST GOTTA DANCE

Second Stage

Should a Photo be Taken Now?

WA #4 Altering the Scene

*[W]e were **dancing** around and **acting stupid**, and my **friend** started **recording** us ... so I **stopped** dancing ... (P1)*

WA # 8 Negotiate Directly

Second Stage: Imminent photography and altering the scene

Hide a beer in a large soda cup.

Place ice around the beer can to keep it upright.

Second Stage

Should a Photo be Taken Now?

WA #4 Altering the Scene

*If I'm hanging out at a friend's apartment and they do have **alcohol**, I make sure **not to include** that in the picture. (P4)*

WA # 8 Negotiate Directly

Third Stage: The taken photo

The photo has been taken for a subject, but is not yet shared on social media

Third Stage

Should the Photo be Shared?

If yes, then

Fourth Stage

Should the Sharing of the Photo be Mitigated?

WA #5 Seeking and Demanding Explicit Consent

WA #4 Altering the Scene

WA #6 Accept and Adapt

WA #7 Watching out for Others

WA # 8 Negotiate Directly

Third Stage: The taken photo

Third Stage

Should the Photo be Shared?

WA #5 Seeking and Demanding Explicit Consent

Before I post pictures I say, "Hey look at my photos from the night before," and we'll pass each others phones around … "Hey don't put this up" or "Let's delete this" (P10)

Scene

Directly

Fourth Stage: Photo as shared object

First Stage

Should I be Ready for a Photo to be Taken Today?

WA #1 Maintain One's Physical Appearance

WA #2 Self-discipline

WA #4 Altering the Scene

Photo has already been shared online through social media

Fourth Stage

Should the Sharing of the Photo be Mitigated?

WA #6 Accept and Adapt

WA #7 Watching out for Others

WA # 8 Negotiate Directly

Fourth Stage: Photo as shared object

DOESN'T MATTER HOW COLD IT GETS
THERE WILL ALWAYS BE THAT ONE GUY
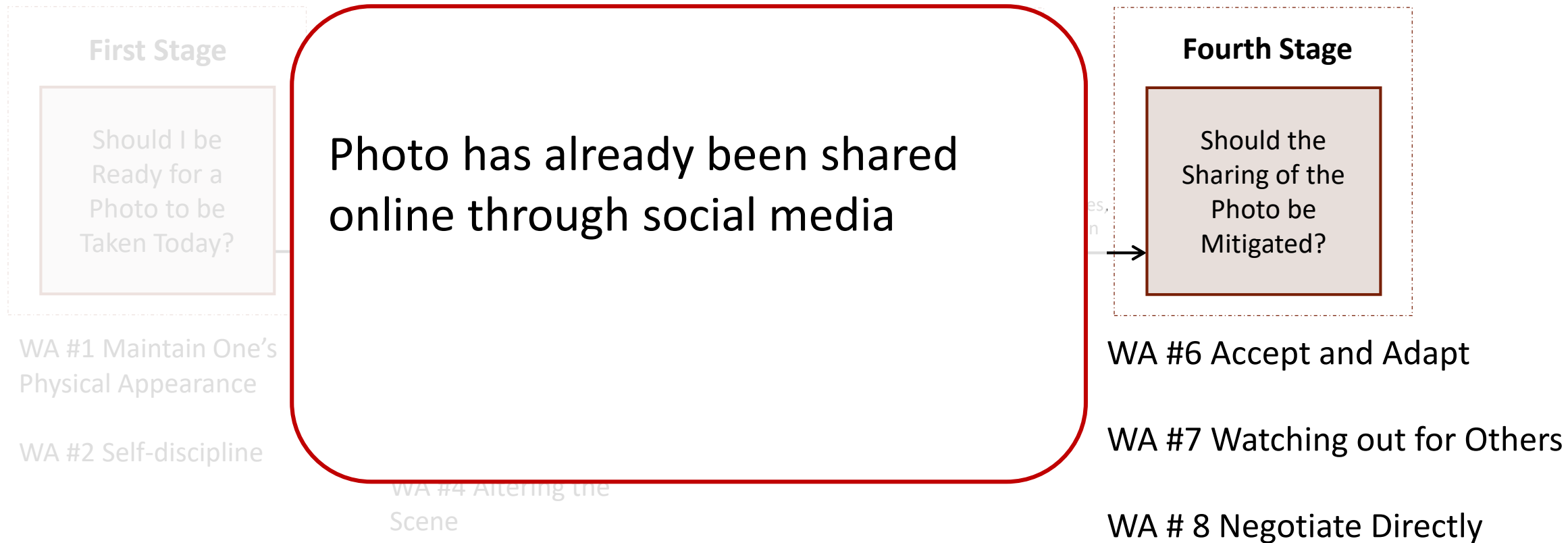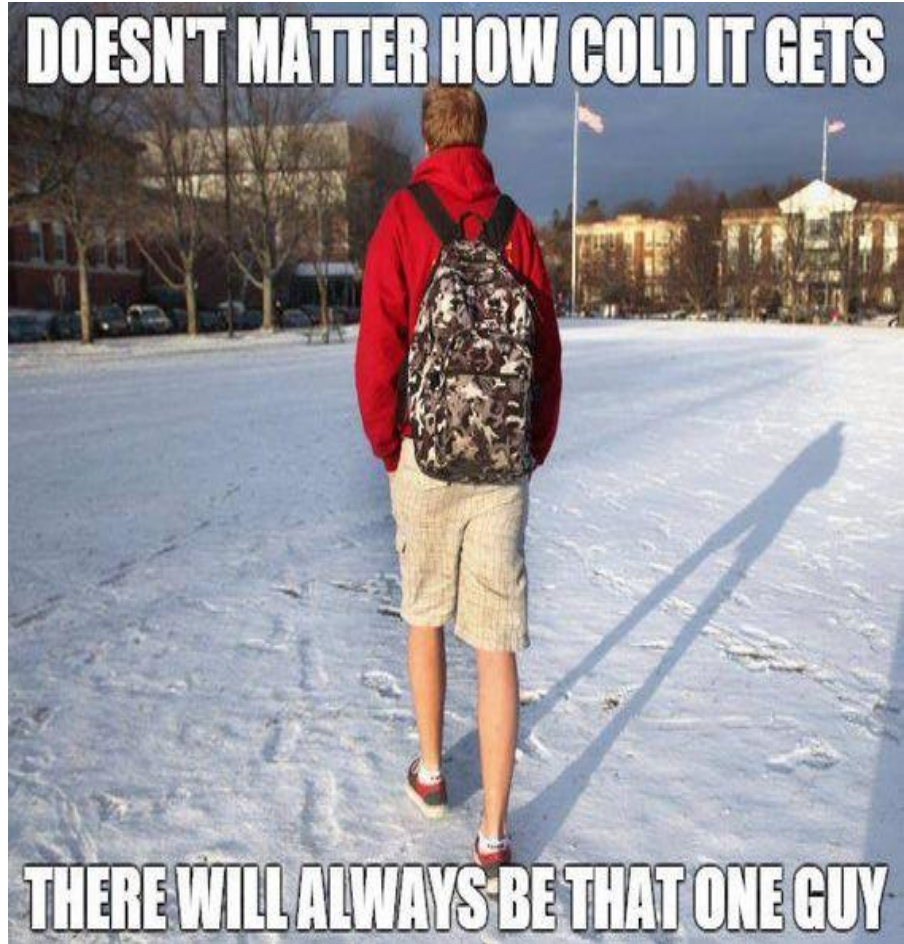
It was **snowing** and [my friend] was wearing **open-back moccasins**. One of her friends saw on a guy friend's Snapstory ... like, "Who is this girl **wearing** moccasins?" and she was like, "I **know** who that girl is." She took a **screenshot** and **sent** it to [my friend] ... It was a **random guy** who **made fun** of her. (P10)

Fourth Stage

Should the Sharing of the Photo be Mitigated?

WA #7 Watching out for Others

What privacy **enhanced designs** might help to support participants goals?

DESIGN

Designs for Individual Stages

Photo Trajectories: It Takes a Village…

A design opportunity map for photo surveillance

Designs for Individual Stages

First Stage

Should I be Ready for a Photo to be Taken Today?

Designing for Potential Captures

Second Stage

Should a Photo be Taken Now?

Designing for In-the-moment Maneuvers and Scene Alteration

If yes, then

Third Stage

Should the Photo be Shared?

Designing for Photo Negotiation

If yes, then

Fourth Stage

Should the Sharing of the Photo be Mitigated?

Designing to Shield from Consequences
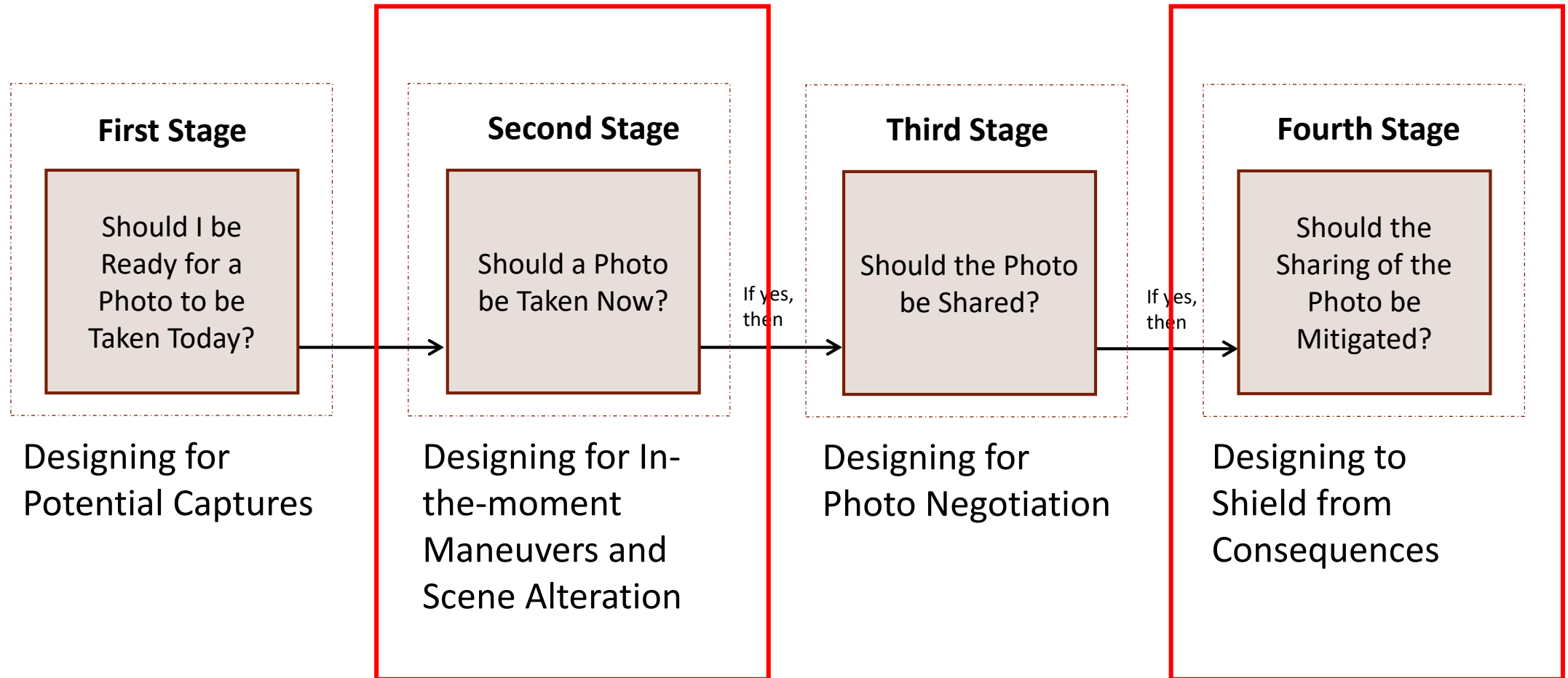
Designs for Individual Stages

Second Stage

Should a Photo be Taken Now?

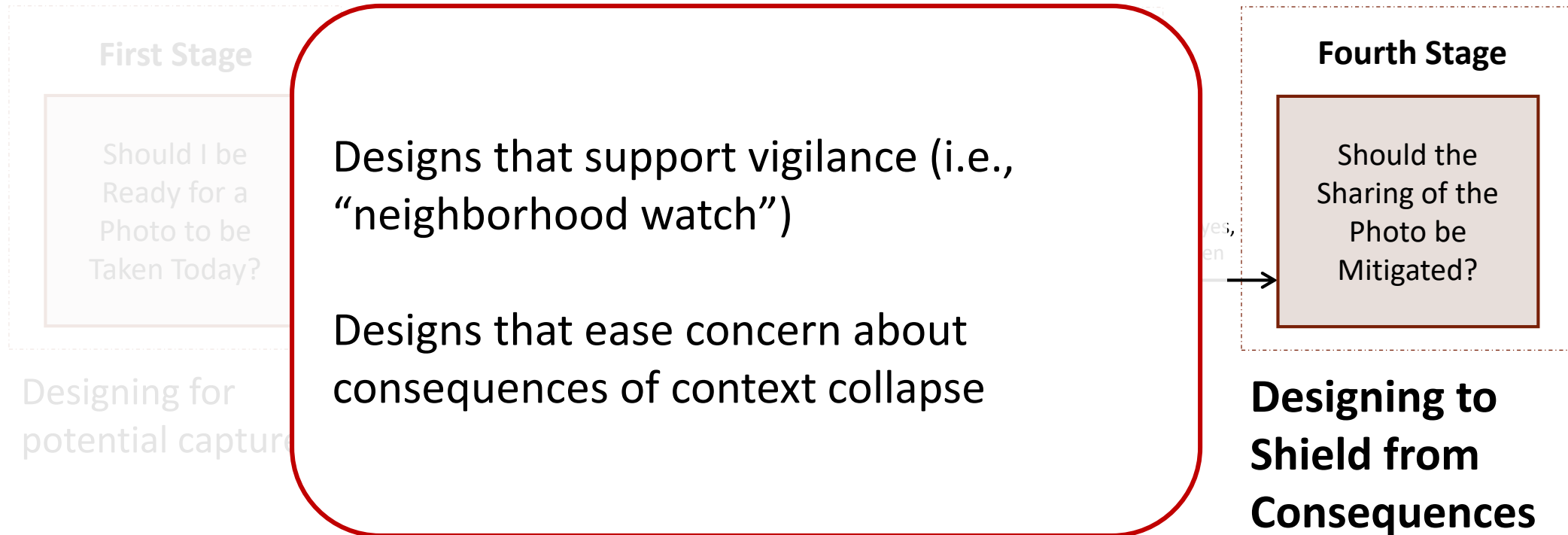**Designing for In-the-moment Maneuvers and Scene Alteration**

Designs that support socially unobtrusive rejection of capture

Designs that evaluate how "safe" a photo is

Designs for Individual Stages

First Stage

Should I be Ready for a Photo to be Taken Today?

Designing for potential capture

scene alteration

Designs that support vigilance (i.e., "neighborhood watch")

Designs that ease concern about consequences of context collapse

Fourth Stage

Should the Sharing of the Photo be Mitigated?

Designing to Shield from Consequences

Photo Trajectories: It Takes a Village...

First Stage	Second Stage	Third Stage	Fourth Stage
Should I be Ready for a Photo to be Taken Today?	Should a Photo be Taken Now?	Should the Photo be Shared?	Should the Sharing of the Photo be Mitigated?

If yes, then → If yes, then → If yes, then →

The Power of the Photographer:
Empowering the Subject and Bystanders, too

Making Past Workarounds Visible

Making Future Trajectories Visible

Photo Trajectories: It Takes a Village…

First Stage	Second Stage	Third Stage	Fourth Stage
Should I be Ready for a Photo to be Taken Today?	Should a Photo be Taken Now?	Should the Photo be Shared?	Should the Sharing of the Photo be Mitigated?

If yes, then → (between Second and Third Stage)

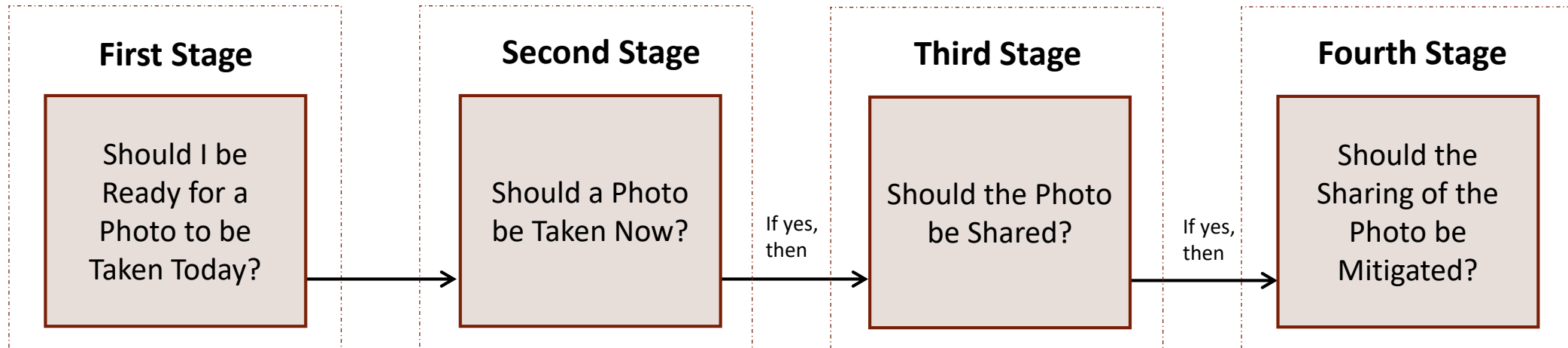If yes, then → (between Third and Fourth Stage)

**The Power of the Photographer:
Empowering the Subject and Bystanders, too**

Making Past Workarounds Visible

Making Future Trajectories Visible

Photo Trajectories: It Takes a Village...

Dilute the concentrated **power** of photography that resides with the **photographer**

Spread that power **across all interested actors**

Solutions need to answer questions on how to **work around conflicts**

**The Power of the Photographer:
Empowering the Subject and Bystanders, too**

Making Past Workarounds Visible

Making Future Trajectories Visible

Photo Trajectories: It Takes a Village...

Did all **co-owners** (photographer and the subjects) of a particular photo **approve** it to be **shared** online? With **whom**?

Could past **workarounds** of a photo be **visualized**? Can we see to what **degree** different actors' decisions allowed the photo to reach its **current state**?

The Power of the Photographer:
Empowering the Subject and Bystanders, too

Making Past Workarounds Visible
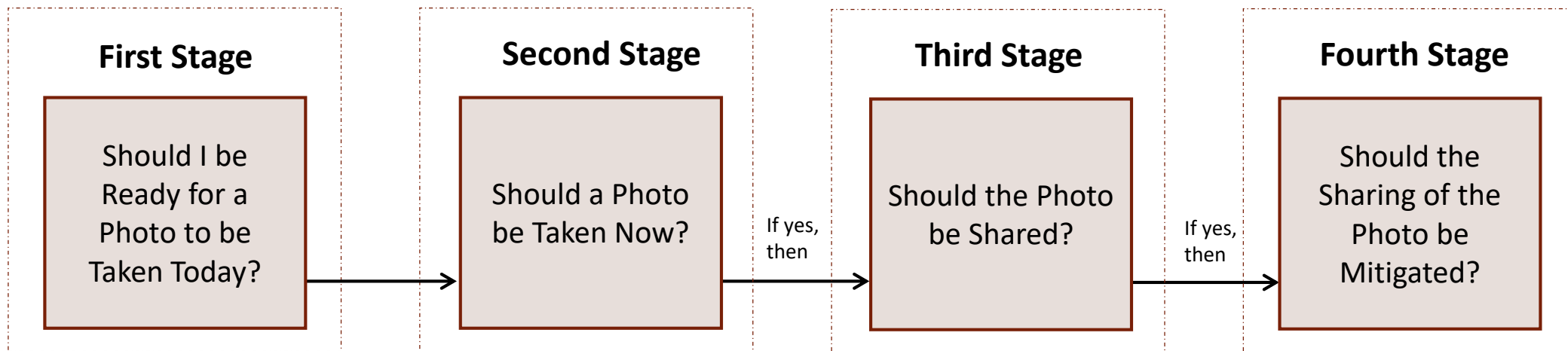
Making Future Trajectories Visible

Summary

Provide a **holistic model** that highlights how undergraduate students use **workarounds** and live in constant state of **watchfulness** to **manage** their **privacy** in the face of **surveillance** from pervasiveness **photography** and social media

Build a **design opportunity map** that highlights how **designs** can address users' **privacy** concerns over a digital **photo's lifespan**, both on **individual stages** and **across stages**.

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Q&A

	First Stage	**Second Stage**	**Third Stage**	**Fourth Stage**
	Should I be Ready for a Photo to be Taken Today?	Should a Photo be Taken Now? → If yes, then →	Should the Photo be Shared? → If yes, then →	Should the Sharing of the Photo be Mitigated?

	First Stage	Second Stage	Third Stage	Fourth Stage
Work-arounds	Maintain One's Physical Appearance Self-discipline	Explicit or Implicit Denial by the Subject Altering the Scene	Seeking and Demanding Explicit Consent	Accept and Adapt Watching out for Others Negotiate Directly
Design for Individual Stages	Designing for Potential Captures	Designing for In-the-moment Maneuvers and Scene Alteration	Designing for Photo Negotiation	Designing to Shield from Consequences
Design Across Stages	The Power of the Photographer: Empowering the Subject and Bystanders, too Making Past Workarounds Visible Making Future Trajectories Visible			

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