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UNDERSTANDING HOW AFFORDANCES AND SOCIAL NORMS EXPLAIN SELF-PRESENTATION ON MEDIA

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Table of Contents

List of Figures

Abstract

Understanding How Social Norms and Affordances Explain Self-Presentation on Social Media

Lee Taber

My research focuses on understanding how self-presentation acts on media. In 3 previous projects, I have examined how people present themselves by comparing their offline personalities with self-presentations on Snapchat, Facebook, Instagram, Texting, and Video calls. I use mixed methods, combining Big-5 personality surveys and interviews to probe self-presentational differences between media. I have found reliable differences between media and offline self-presentations in those studies. In particular, Neuroticism is always lower in media across multiple studies, except for Finsta, a type of Instagram account where users intentionally show their emotional sides.

Furthermore, some differences aren't due only to the affordances of the media, but social norms on that media, which I found when looking at different types of Instagram accounts. I expand on this work through two additional studies using new methods to explore different research questions. The first study examines how multiple media users decide where to make a post. I used scenarios to understand how multiple media users decide between the media they use and propose a mental model of media choice. First, if there is a quick match between an existing social norm on a medium and their intended post, they will post it there. If there isn't, then the user must consider the affordances and other social norms of the media they use before deciding where to post. The second study examines how outside observers interpret an Instagram profile. I presented observers with a dynamic webpage, similar to Instagram, to gather behavioral and survey data on how said observers looked at

and interpreted these Instagram profiles. Based on the results, observers don’t see an Instagram-specific self-presentation but are more accurate to the profile owner’s offline personality. I finish by presenting my doctoral research's technical and theory-based implications.

Acknowledgements

The text of this dissertation includes reprint[s] of the following previously published material:

Taber, L., & Whittaker, S. (2018, April). Personality depends on the medium: differences in self-perception on Snapchat, Facebook and offline. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (pp. 1-13).

Taber, L., & Whittaker, S. (2020, April). " On Finsta, I can say 'Hail Satan'": Being Authentic but Disagreeable on Instagram. In *Proceedings of the 2020 CHI conference on human factors in computing systems* (pp. 1-14).

The co-author listed in these publications directed and supervised the research which forms the basis for the dissertation.

For the following two publications see the discussion below:

Taber, L., Dominguez, S., & Whittaker, S. (2022). Cats, Kids, and video calls: how working from home affects media self-presentation. *Human–Computer Interaction*, *37*(5), 454-479.

Taber, L., Dominguez, S., & Whittaker, S. (Under Review). Ignore the Affordances; It's the Social Norms: How Users Think About Where to Make a Post on Social Media. CSCW.

I was the primary investigator for the studies. I formulated the research questions with the help of my advisor (Steve Whittaker), developed the literature reviews, and recruited the majority of the participants. In both studies, Sonia Dominguez assisted through recruiting and interviewing some participants. In Ignore the Affordances, Sonia and I collaborated on designing the scenarios. I was entirely responsible for the quantitative analysis in Cats, Kids, and Video Calls. I led the qualitative analysis in both studies with assistance from my research assistants and

particularly from Sonia, who was a great help with qualitative analysis on Cats, Kids, and Video Calls for the third study. I was also responsible for writing the two publications, with editing assistance from Sonia. Sonia also assisted on Ignore the Affordances by writing part of the limitations section. Sonia has given written permission for these articles to be reprinted in my dissertation, see the attached permission letter.

1 Introduction

People now use social and other communication media for an increasing proportion of their interactions compared with face-to-face interaction [6,177]. The impact of new forms of communication on our lives is therefore growing [151]. We use these media for many different purposes, e.g., to update friends and family about significant events in our lives [217,231], to share our personal experiences with others [70,154], to present the world with an idealized version of ourselves [39,220,231], and myriad other reasons. A key goal of Human-Computer Interaction (HCI) research is to study technology's influence on humans. My research addresses how using different media impacts self-presentation, placing it in the psychology/social science space of HCI work.

Self-presentation refers to how people choose how others should interpret them and their behaviors [85]. In this view, the self is situationally negotiated through different contexts (how one acts with their family is often different from how they act with their friends) and interactions with their audience. This presentational work leads other people to form impressions about them from many factors, such as appearance, mannerisms, behaviors, etc. However, with some exceptions [16,50,99,150], the research literature has largely addressed how people self-present offline with much less focus on self-presentation using digital media. This thesis examines self-presentation in the context of social media, analyzing how different media affect self-presentation and interpretation.

We use media to achieve different goals, including simple text, audio, and video updates for work and family conversations, political discussions over Twitter, and posting about experiences over Instagram. These different media deployments potentially allow us to adopt different roles and thus create different expectations for how we present ourselves. One's

professional, polished LinkedIn profile [216] is different from a comedic but positive Instagram [196,241] or the vulnerable posts one makes on Snapchat [15,154]. My research addresses how using different media platforms affects self-presentation and identifies what aspects of the medium specifically shape said self-presentation. How and why do people present themselves differently on Instagram versus Facebook? Do these differences arise from those media's different technical affordances or usage conventions? It also addresses related topics, such as measuring media self-presentation and how others interpret one's self-presentation on a medium. Based on multiple studies addressing these questions, I propose a new framework for how people understand self-presentation on social media.

This chapter sets the context for my doctoral research. I describe the research space, my motivations for working there, and my research questions. After that, I discuss the methods I use. Then I outline specific contributions, such as design implications. Finally, I give an outline of the rest of my dissertation.

1.1 Research Space and Motivations

Technology is becoming an integral part of our daily lives. People now communicate frequently with one another through social or other communication media such as video calls, YouTube, Facebook, and Instagram. Recent surveys show people access media at a high rate, with 71% accessing Facebook daily and 59% accessing Snapchat and Instagram daily [6]. The ongoing COVID-19 pandemic has accelerated these trends [47,151,207,234]. As these technologies continue to mediate our communications, it becomes increasingly important to understand their impact on us. Furthermore, social media don't exist in isolation. We also split ourselves across multiple social media, with each representing a facet of who we are and would like to be. My work addresses this idea of a social media ecology [21,242] by contrasting multiple media,

trying to understand how people interpret them in relation to one another. In the next section, I describe my research questions and methods.

1.2 Research Questions and Methods

My first goal was to determine if people make different self-presentations on social media. From a personality psychology perspective, do people see themselves as having a consistent self-presentation across different media, or do they alter their self-presentation based on that medium? And if people do indeed show such differences, what explains this? Media differ in their technical affordances or how people perceive interacting with social media features. For example, some media offer anonymity while others require using one's real name. How people interpret and act upon those differences can lead to different self-presentations. Over time, new social norms also form on social media.

Social norms represent broad, often unstated rules for what is acceptable in a social space [41,59,158,220]. However, they are vital for communities because they help regulate behavior and manage the expectations of community members [108]. Social norms on social media help users understand what types of content are acceptable and provide unspoken guidelines on how to present oneself. Different social media have different social norms, especially around how self-presentation is shown on those media. Some social media focus more on presenting an idealized self, while others allow people to present a more authentic self.

Self-presentation often follows one of two types of presentation, idealized or authentic. An idealized self-presentation focuses on presenting positive qualities or oneself in the best possible light [233]. An authentic self-presentation focuses more on showing positive and negative aspects of oneself, such as personally revealing or emotional content [193]. Often a

user’s self-presentation is also driven by the audience that is seeing it; a smaller audience can lead to a more authentic self-presentation.

Audiences are another important factor in media self-presentation. As self-presentation is constructed based on the audience's feedback [85], it is no surprise that different sizes and types of audiences can lead to different types of self-presentations. A smaller, more intimate audience can lead to more authentic self-presentations, while a larger, more heterogenous audience can lead to more idealized self-presentations. Why might this be? Users facing a larger audience must navigate context collapse [150], where the self-presentation presented to the family, close friends, people from work, etc., cannot match, and one group will see something unintended. To address this, some users instead present a vanilla self [180], trying to avoid potential controversy or criticism.

Additionally, we don’t use social media in a vacuum; users have multiple media that they can potentially choose from when deciding where to make a post. An individual’s set of media is referred to as their media ecology [21,242], and it is not well understood how people choose from the different media that might be available to them. Why might someone post on Twitter instead of Instagram, and how might the affordances, audiences, social norms, and audiences influence this choice?

Finally, the above discussion is focused on self-presentation from the presenter’s side. There is already existing work that examines how someone observing another person uses cues in order to form an impression of them [31,97,139,170]. But, given that people may have different self-presentations on different media, how do observers interpret someone’s profile? Do they see the profile owner’s offline self or their media-specific self-presentation? What cues do people look to when making an impression on social media?

To navigate these different topics, I address the following research questions in the projects described in this document using a mixed-methods approach that combines surveys and semi-structured interviews, then scenarios and flowcharts, and finally, observers rating a simulated social media. This thesis describes five projects to answer the following research questions:

1. **Do self-presentations differ across media, and if so, how?**
2. **What factors (such as affordances, social norms, audiences, etc.) influence self-presentation?**
3. **How do these factors influence self-presentation?**
4. **How do people choose between multiple social media for self-presentation?**
5. **How do others interpret self-presentations across media?**

1.2.1 Methodology

I use mixed methods by combining personality surveys with semi-structured interviews to address these questions. Participants in the first three studies followed a similar protocol. We first asked them to answer a survey about their offline personality. Then they participated in a semi-structured interview that asked how they used a particular medium and answered a survey about their medium-specific personality. I will now explain and justify this process.

My mixed-methods approach combines quantitative and qualitative methods [28,29,137,204]. I collect quantitative data through surveys (specifically personality, such as the Big Five Inventory 2 [204]) to identify differences between different media for experienced users of those media. Using personality surveys allows me to measure and compare aspects of self-presentation using the established theoretical and methodological lens of personality, specifically, the Big Five trait taxonomy. The Big Five personality taxonomy was developed

using factor analysis to gather responses to different statements into broad categories of behavior [5,43,115,116,203,204]. This method has resulted in a reliable and validated set of five personality traits that are commonly used in personality research. The five traits are Openness to Experience (related to intellectual curiosity), Conscientiousness (related to responsibility and organization), Extraversion (related to social interaction), Agreeableness (related to warmth), and Neuroticism (related to emotional stability). A person's score on these traits is inferred by their agreement with validated statements such as "I am someone who is outgoing, sociable", which would help assess their Extraversion. People answer multiple questions related to the same traits to ensure reliable responses. This approach has many benefits as the research field of personality is well established with valid and reliable measurement instruments and theory. These surveys helped quantify self-presentational differences across media, which further directed my exploration; by interviewing the same people who completed the surveys, I could better understand why those contextual differences exist.

Qualitative work provides rich data but is time-consuming, slow, and complex. However, its insights add nuance and weight to quantitative findings [28,29]. The semi-structured interviews incorporated questions that probed underlying reasons for the differences in media use observed in the personality surveys. For example, I asked participants how they generally use a particular medium, which people they interact with using that medium, how the medium influences their relationships, if participants feel they can control their self-presentation when using the medium, differences between offline and medium self-presentations, concluding with questions addressing unique attributes of the medium.

I constructed the interviews to have people reflect on how they use that medium, focusing on how and why they use the medium. In particular, I asked them to describe the audiences they interact with on that medium, the unique features of that medium (such as ephemerality on

Snapchat), and if some quality of the medium influences how people use it. To analyze interviews, I conduct thematic analysis. I approach thematic analysis to probe survey results to identify themes that explain media differences (e.g. interviewees might describe how they self-censor to appear less Neurotic on Facebook because they are unsure about their Audience). I also identify themes related to independently proposed theoretical frameworks, e.g., DeVito et al. [50], who discuss how factors such as Self, Others, and Audience influence media usage. Finally, I look for other emergent themes. To do this, I typically use a small team familiar with the data to help identify important themes over several rounds of qualitative coding [29,32,241]. Without the guidance of the quantitative results, the number of interesting themes to discuss could be overwhelming. By utilizing both types of methods, I can showcase the strengths of each while supporting the weaknesses; I can present statistical significance in an experimental or correlational setting, then use interviews to characterize why that difference is meaningful to users.

The fourth study used a different methodological approach to explore how people make choices between multiple media. My standard approach of comparing self-presentations across media would not be sufficient to answer how people choose between different media and how people compare and contrast them. I wanted people to instead work through examples of posting behavior to help identify their thought processes. Using an approach proposed by [51,118,122], I gave users scenarios that cut across different media usage settings (e.g., Celebrating the success of obtaining a college degree under adverse circumstances). I then asked participants to identify and justify the factors that determined their choice of media, stating why they would post about this experience using Facebook versus Instagram versus TikTok, for example. Participants read each scenario and were asked, "Where do you think [the scenario protagonist] should post this?". Finally, they constructed a flowchart to organize various elements related to their media choices. I presented participants with hypothetical

posting scenarios relating to one of two different categories: Authentic or Idealized self-presentation. Responses took the form of a conversation, allowing both the participant and interviewer to clarify. The interviewer verbally listed potential social media at the start of each phase. Participants were encouraged to choose one social medium but could choose multiple if they made an argument for this. They then answered follow-up questions, such as "Why do you think [protagonist] would choose to post to that medium?" Following similar studies [65,66], participants were asked to think aloud while constructing the flowchart and to review their completed flowchart.

The fifth study examined observers' perceptions of others' media self-presentations. The first phase used the previous survey and interview combination to gather participants' self-presentation offline and on Instagram. The second phase utilized a new method involving a dynamic webpage with similar affordances to Instagram, partly based on Truman, a more robust simulated social media platform for research [54]. I presented observers with a profile consisting of their profile picture, bio text, the most recent 20 posts from that profile owner, the number of followers, following, total posts, and any captions provided on their posts. I used this method to gather behavioral data about how people interacted with a social media profile when judging the personality of its owner. To better understand why observers rated profiles as they did, I asked observers to rate both the Instagram personality and offline personality of the profile owner. I also asked observers to rate different aspects of the profile, such as if the profile owner had pictures showing them wearing fashionable clothing. I also identified objective data from the profile owner, such as how many posts, followers, and following they had, to see how observers interpreted that information when rating the profile owners' personality.

1.3 Structure of Dissertation

The content chapters of my thesis are as follows:

Chapter 2 begins by reviewing relevant prior literature. This chapter represents an integrated literature review. However, each chapter is a published work with an individual literature review, so the reader will likely see an overlap between some elements of each study's literature review and Chapter 2.

My first empirical study, in Chapter 3, investigated how people present themselves on two popular social media, Facebook and Snapchat, to see if their self-presentations differed. This study addressed research questions 1, 2, and 3. I found that people had different self-presentation patterns on these media; compared with offline personality, people were more Extraverted on Snapchat, less Open on Facebook, and less Neurotic on both. Furthermore, interviews suggested people's self-presentations were influenced by various elements, such as the other people they have linked to them (Audience), what that medium allows them to do (Affordances), how people generally use that social media (Norms), and others. Some of these elements, such as Audience, seem to explain self-presentational differences; for example, having a smaller group of people on Snapchat than the much larger groups of Facebook friends seemed to induce different patterns of personality scores. Although people were concerned about presenting themselves as vulnerable on both, the smaller, more intimate audience on Snapchat let people be much more goofy, explorative, and outgoing than on Facebook, leading to Snapchat being higher on Extraversion and Openness than Facebook. However, Facebook and Snapchat differ in multiple respects; Snapchat's communications are ephemeral, sent to smaller audiences, and have more focus on visual aspects of posts through filters, whereas Facebook is more profile-based, with permanent posts, a larger focus on text through status updates, and much larger audiences. It was therefore difficult to identify which media elements

contributed to these differences. Furthermore, different social norms exist regarding how people use these media. My second study therefore controlled for the medium by investigating different patterns of self-presentation on different accounts of the same medium, namely Instagram.

In my second study, in Chapter 4, the goal was to contrast two different explanations of presentational differences; If technical affordances drive self-presentation, then presentations should be identical across different accounts on the same medium. If, however, I observe differences, this would point to other factors, such as social norms, which are known to differ between Instagram accounts. This study addressed research questions 1, 2, and 3. The results supported the social norms explanation. Self-presentation differed across different Instagram accounts; how a person presented themselves on their main Instagram account differed from how they presented themselves on their secondary account (aka Finsta). Specifically, I found that people were more Extraverted than Offline on main Instagram accounts and Finstas; Instagram was less Neurotic than Offline, but Finstas were less Conscientious and Agreeable but just as Neurotic compared to Offline. By holding the medium constant, my study suggested the importance of social norms. For example, Finstas are often used as a place to vent, so people feel more comfortable posting things that would be inappropriate on their main account. In addition, participants often curated the audience members who had access to the different accounts, limiting Finsta access to their confidantes. By contrast, a main Instagram account often went to a larger group of people, encouraging the account owner to be more conservative and positive in presenting themselves.

One consequence of the global pandemic was that people adopted social distancing, leading technologies such as Zoom being used in place of in-person meetings [47,151,207,234]. In Chapter 5, my next study shifted focus to real-time communication media, probing the same research questions about self-presentation. This study also addressed research questions 1,

2, and 3. I examined the extent to which self-presentational differences exist on synchronous communication media like Zoom comparing office workers and students. I also examined students before and during the pandemic. While social media presents asynchronous “exhibits” for self-presentation, could self-presentation differences exist between one’s offline self and a real-time video medium such as Zoom? And does this depend on the context in which one is using Zoom? I again saw differences in self-presentation when comparing video to offline personality and differences between different groups in their use of video. Students pre-pandemic were higher on Extraversion and lower on Openness. But when working from home during the pandemic, they became more Conscientious instead of Extraverted while maintaining low Neuroticism at both times. Office workers were more Agreeable when working from home and lower on Neuroticism.

How did I explain these differences? Since using Zoom was relatively new, there were few existing social norms. Instead, self-presentation seemed more affected by video’s affordances, for example, using the self-facing camera to self-regulate one’s appearance and expression while talking. Since Zoom is a real-time medium, having such real-time feedback helped people present a slightly different version of themselves. There were also differences between how different groups used Zoom. Office workers tended to be more Agreeable, while students became less Extraverted during the pandemic but more Agreeable. This pattern of results was due to students shifting from primarily using video calls for talking with others they are close to (friends, family, etc.) to using video calls for work and school.

The first three studies examined overall self-presentational differences across multiple media, but not how people choose between different media to decide which medium they should post to. In Chapter 6, addressing research questions 2 and 4, I asked people to consider what elements they think about when making a post. Therefore, I used a different scenarios method, asking people to respond to different scenarios, probing where a hypothetical person should

make a post, and identifying the most important elements determining that choice. Results showed that social norms strongly influenced choices. People had clear ideas about what different social media were “for” and made their suggestions based primarily on how well the scenario fit their schema of what social media best supported. For example, TikTok was for dance videos, Instagram was for posting pictures of a friend, and Snapchat was for sharing feelings when upset. However, when there was no exact match between the scenario and a given media norm, participants would compare and contrast different media elements, such as affordances, to determine where to post.

My prior studies examined media production, namely how media producers see themselves and decide how and where to post on social media. For example, those studies show that people moderate how they use media to appear less Neurotic on Facebook and more Extraverted on Instagram than offline. However, they do not address media perception, i.e., whether posters’ actions have the intended effects. The next study in Chapter 7, therefore, asked how media observers interpreted posts on social media, asking whether other people correctly identify the self-presentation that a profile owner is trying to achieve. This study addressed research question 5.

Observers first interacted with Instagram profiles and then made judgments about the owner’s personality. We also collected data about what aspects of the profile affected these judgments. I then compared these judgments against the profile owners’ own assessments of their personality. Overall, observers were not very accurate at identifying the person behind the profile. However, they were better at detecting the profile owner’s offline self than their Instagram personality. Observers’ interpretation of the profile owners’ self-presentation was influenced by the medium's affordances, the specific types of photos, and the cues the person used to convey their self-presentation. However, there was an unclear mapping between the cues observers used to make their judgments and the cues that owners had chosen to signal

their personality. Observers missed many potentially useful cues and used some unrelated to the profile owner's personality traits. Nevertheless, some cues were reliable and actually used by observers. I found that objective cues, such as the number of photos on a profile or post, were correctly identified as informative about the owner's personality. In contrast, subjective ones, such as whether someone is fashionable, were less predictive of the owner's personality.

Chapter 8 concludes with an analysis of my main results. I discuss the implications of my research for media and personality research. I then discuss outstanding research questions as well as technical implications for future social media technologies, suggesting new designs.

2 Background

2.1 Personality

Personality generally is conceptualized in two significant ways. The first focuses on traits, sometimes referred to as temperament, which is the fundamental core of what that person is across situations and times. Traits are intuitive; many agree that each person has a core set of responses and predictable behaviors across situations [19,43,46,55,72,116,202]. Trait theories, such as the Big Five taxonomy [46], define traits as internal states or attitudes that drive predictable, observable behaviors across situations. For example, an extraverted person is reliably gregarious and outgoing. The second way looks at situational factors. Other social psychology researchers, such as Funder [75,77,78], argue that context plays a more critical role in explaining behavior [160]. For example, an extraverted person might talk more frequently in a classroom than an introvert, but the situational demands will reduce the amount they talk during a formal lecture. I will now go into further detail about these personality models starting with traits and moving to situations.

2.1.1 Traits

The Big Five taxonomy of traits used factor analysis to identify conceptual groups of how we talk about ourselves. Trait theorists have reached a consensus on the Big Five, so this taxonomy has become popular in various research [204]. In particular, traits have become quite popular in HCI because they speak to consistent aspects of people that are predictive of human behavior. Since traits are correlated with behaviors, once the correlations between traits and behaviors are better understood, knowledge of traits can allow for behavior predictions. The Big Five Model is also known as OCEAN, an acronym for the traits: Openness to Experience,

Conscientiousness, Extraversion, Agreeableness, and Neuroticism [46,116,204]. These five factors are composed of intentionally broad categories of behavior.

The first factor is Openness to Experience (or Open-Mindedness in newer versions of the Big Five Inventory [204]). This factor is related to intelligence, aesthetic sensitivity, and curiosity. Someone high on Openness is often creative, with many different ideas and thoughts. They might also be interested in art, music, or other activities related to aesthetic sensitivities. They will also be interested in a wide range of activities, not narrowly focused on one particular category. On the other hand, someone low on Openness will often be practical, steady, and relatively routine in their interests.

Next is Conscientiousness, which is related to productivity, time-keeping, and organization. Someone high on Conscientiousness is organized and efficient, ensuring to stay on task. They will likely have high self-discipline and often achieve goals that they set for themselves. Someone low on Conscientiousness will often procrastinate, be disorganized or late, and have trouble setting and meeting deadlines.

Extraversion is related to the preference for interpersonal interaction. Someone high on Extraversion will likely be gregarious, sociable, and highly energetic when interacting with others. They often find it easy to join a conversation and genuinely enjoy talking in front of a crowd. Someone low on Extraversion will often find interpersonal interaction draining and may have difficulty interjecting in an ongoing conversation.

Agreeableness is related to dispositional warmth towards other people. Someone high on Agreeableness will be seen as warm, compassionate, and caring to other people. Others will often see them as respectful, polite, and trustworthy with other people. Others often see someone low on Agreeableness as rude, cold, and untrusting/angry with others.

Finally, Neuroticism (or Negative Emotionality in newer versions of the Big Five Inventory [204]) relates to how people react to stress. Someone high on Neuroticism is often anxious, depressed, or emotionally volatile. They might be moody, depressed, or get emotional quickly and easily. Others will see someone low on Neuroticism as emotionally stable and not easily worried or upset.

One common criticism of traits is that they rely on self-report and that in specific contexts, a person might fail to state how they act truthfully. This tendency is also known as social desirability bias, where a person may give information that makes them look good rather than respond truthfully [60,132,149]. However, other work contradicts this. It evaluates strangers' ratings -- where people unfamiliar with the participant rate them on traits. Such stranger ratings are consistent with self-report even when strangers are presented with minimal information [23]. For example, strangers who viewed a static image of a person could give accurate ratings for each of the five factors (except for Neuroticism, as it is hard to determine from strictly physical traits). Naturally, these ratings were better for dynamic visuals and best when including audible cues [23].

There is also a large body of work from Gosling about how strangers can predict such traits from personal objects or environments [88,90]. For example, if you look at a stranger's work desk and see that it is messy, you could reasonably infer that they are low on Conscientiousness. Furthermore, specific items on the desk could give you further clues about their traits. Someone with various aesthetically exciting artworks or music posters is likely higher on Openness. In contrast, someone with a candy tray on their desk might be higher on Extraversion as they try to entice social contact. Such physical cues have been well studied and are a fruitful way of inferring traits from physical environments. The same is true of people's social media profiles or web pages, which is the focus of my research. Strangers can reliably

predict personality traits from online profiles or web pages, indicating that personality residue can be inferred from digital artifacts [9].

2.1.2 Situations

Goffman's theory of self-presentation uses a theater metaphor to describe behavior [85]. There are two stages in a self-presentation act: the front stage, which the audience of a social interaction can see, and the backstage, where the presenter has their thoughts/other attributes that are not intended for the audience to see. This process is also interactive; the presenter fine-tunes their performances based on feedback from their audience. While Goffman created this theory long before social media, this approach has taken root in HCI and CMC because it is easily applicable to these domains (as in [17,70,154,243]). Another researcher has expanded this dramaturgical metaphor to explicitly include permanent social media as exhibitions rather than performances [107]. They were looking at social media self-presentation as exhibits that utilize their inherent affordances. For example, a presenter on social media may curate particular posts that aren't working as intended. Considering curation as happening asynchronously rather than in real-time better fits the concept of an exhibit instead of a presentation, where adjustments based on audience feedback might happen in real-time.

I've described two personality theories—trait-based personality, which is mainly quantitative, and situational-based personality, which is mainly qualitative (although there is some quantitative situation-based work, see [76,160]). Traits are often used as predictor variables in HCI and correlational research, for example, finding that Extraverted people tend to spend more time on social media [89]. Traits explore behavior from the perspective of individual differences. However, people show reliable personality differences across situations and media [76,160,211,212]. We may understand something about the person, but the media they use can influence how people present themselves and are perceived. Personality alone doesn't

explain why someone might have a polished, professional version of themselves on Facebook yet act in a goofy, gross, spontaneous way on Snapchat. We need a way to quantify or theorize about the environmental, situation, and media elements. I incorporate theoretical constructs from computer-mediated communication to explain these differences, in particular, to help quantify and understand differences in authentic and idealized self-presentation.

2.2 Authentic and Idealized Self-Presentation

Self-presentation on social media is complex, with many factors influencing how people present themselves on particular media. Generally, there are two main clusters of self-presentation; authentic and idealized. Authentic self-presentation is when one presents themselves with both good and bad parts. For example, making a public post about a time when one failed at something to help inspire other people to persevere. Idealized self-presentation is more polished, where one posts in order to present the best side of themselves. An example of this might be a glamorous shot of someone in a beautiful location with filters and editing in the photo.

Idealized self-presentation is often driven on social media by social desirability or a bias to present oneself through positive and socially acceptable content [39,220,231,241]. For example, social norms exist for presenting positive emotions over negative or neutral ones on Facebook, Twitter, Instagram, and WhatsApp. These norms are stronger for Instagram than for Facebook and Twitter [62], indicating Idealized self-presentations can vary. This bias also has implications for those who read others' posts. For example, Facebook users assume that others on Facebook are happier, with better lives and more friends [39].

Authentic self-presentations are also desirable at certain times and in specific contexts. Previous research has found positive outcomes for those who can Authentically express

themselves online, such as less negative and more positive affect [93,128,156,193]. However, expressing such Authenticity on social media is often fraught [14]. For example, a recent study comparing Finsta vs. main Instagram accounts found that the more Authentic Finsta accounts were less satisfying and useful due to receiving fewer comments [111]. There are even content differences in what people post. Another study found that people who present authentically on Facebook are more likely to post personally revealing and emotional content and experience higher levels of positive and lower negative affect [93,193].

Authentic self-presentations allow users to fulfill needs alongside Idealized self-presentations with different accounts or media, allowing users to achieve their self-presentational goals. However, outcomes can be complex and reliant on multiple factors; another study found greater negative affect from imagining criticism for Instagram users who present a false self on Instagram than users who present a more Authentic self [113]. An analysis of Facebook showed that positive self-presentation was directly related to subjective well-being, while authentic self-presentation was indirectly related through perceived social support. In other words, if people are honest on Facebook, their subjective well-being is based on how many friends respond. If they are not, subjective well-being is based directly on their idealized self [128]. Authenticity also relates to the coherency of self-presentation; those who are less consistent offline tend to present a less authentic online self [156].

Because self-presentation is a complex process for people, sometimes they use different accounts for different types of self-presentations [15,39,85,107,156,211,212]. For example, studies of Instagram usage show people present a more Idealized version of themselves on one Instagram account while using another to present a more Authentic version [111,120,136,212]. Because of this, a major factor in determining self-presentation is whether the goals appear Authentic or Idealized.

2.3 Affordances and Features

Affordances have a complex history in the HCI discipline. The concept originated from a psychologist, Gibson, who described how animals and humans interact with their environments [83]. He uses the term affordances to describe the attributes that a creature utilizes from their environment based on what they perceive and how they can use it. For example, humans perceive a pebble as ‘graspable’ because they have opposable thumbs and hands of a specific size. A differently evolved animal perceives the same object differently, e.g., an ant might see the same pebble as an obstacle or that it can offer shelter from predators. Gibson invented this theory to situate humans and animals in the ecology of their environment. Although humans can somewhat control our environments, we are still shaped by what we perceive we can do. Norman extended this concept by applying it to how physical and digital objects are designed in terms of how humans interact with them [167]. Gaver also examined affordances in the context of interface design, for example, how we understand how to interact with a scroll bar or on-screen button [80,81]. Here we distinguish between affordances and features.

Features are the technology's basic, immutable, objective properties that cannot be changed without fundamentally changing the media. For example, a phone call doesn’t have the visual affordances of a video call. However, affordances are how people decide to use technology. These are based not only on features but also on social norms, changes in use over time, or other influences. For example, because of subjective concerns about how other people might read their posts, some people use Facebook to post rather bland, vanilla posts that are palatable to a large audience [180,211]. This affordance is not a feature (Facebook allows one to post text, pictures, or videos with minor moderation based on content). Still, the behavior is based on the features of how Facebook surfaces content to a large audience which may go to unintended people.

DeVito's affordance framework for self-presentation on social media notes three broad categories of affordance: Self, Other Actors, and Audience [50]. The Self category is related to concerns about the individual's self-presentation. The Other Actors category relates to how other people can directly respond to profile elements. The Audience is related to a general understanding of how people, in general, could potentially see a profile. Each of these has several related sub-affordances. For example, Self contains presentation flexibility (i.e., the ability to present oneself using a variety of content forms and styles), content persistence (i.e., how long content is available over time), and identity persistence (i.e., if a piece of content is associated with an individual persona over time). Other Actors contain content association, the ability to link content with one's persona, and feedback directness, the ability to respond directly to the content. Finally, the Audience contains audience transparency, the awareness of who in your audience can see what content and visibility control, how an individual can determine what linked content is visible to others.

As discussed earlier, each affordance is related to features but is distinct from them. DeVito's framework was validated by asking people to rate different social media based on each Self, Other Actors, and Audience category. Social media like Twitter were rated low on the Self category of identity persistence, for example, because profiles are easy to change, and people often do so. We see here that affordances directly speak to a specific goal, that of self-presentation. All the affordances described here relate to self-presentation directly (does a social medium have a profile or not) or indirectly (how can people comment on my posts or other self-presentation acts). Other work within this space notes general media affordances that apply to various communication channels [74]. One such as this Perceived Social Affordance Framework is useful for comparing affordances across multiple media, which helps support research examining multiple media. Others describe higher-level "affordance sets," referred to as elements [16] that describe what broad sets of affordances people use in different

media. Next, I discuss attributes of media use that are not inherently tied to the medium, social norms, and social media ecologies.

2.4 Social Norms and Social Media Ecologies

Social norms are broad, often unstated, rules for what is and is not acceptable on a platform [158,220]. Social norms can be complex, especially in social media, where sanctions might be implicit and nearly imperceptible. A study examining social norms on Facebook found that people have complex strategies for seeking social support, as overtly seeking social support is seen as a social norm violation on Facebook [32]. When policing social norms, other research has found that people often use quite subtle strategies to deal with online social norm violations, such as implying disagreement by not actively approving [185]. Most of the time, people would rather complain about it to others using a different medium (in person or by texting), both as a form of venting and to confirm that it is a violation [185]. So in practice, young people using Facebook don't bother to confront someone directly on Facebook about a violation unless it's a strong tie or the violation is egregious.

People can attribute meaning based on the constellation of media they use, focusing on one particular medium or another for specific goals, audiences, or messages. It's the affordances of a particular medium that influence behaviors and how that medium's affordances compare with other media. Boczkowski et al. highlight a particular media constellation for young Buenos Aires users they interviewed to understand the rationale behind their media choices in the context of other media they use [21]. For example, their participants described Facebook as too big an audience to post meaningfully to (in the sense of emotional, vulnerable content), so they mainly focus on milestones (e.g., graduation, wedding) to present a "vanilla self" [180] -- presenting themselves as well-meaning, successful, etc. By contrast, something like Snapchat might allow for "meaningful posting" to a small group of friends or close bonds, where someone

can talk more authentically about things that bother them-- presenting themselves as flawed, failing, or struggling [15,225]. Another set of researchers examined a similar problem from a slightly different lens. Tandoc et al. looked at “poly-media swinging,” or how people move (swing) from one medium to another and for what [213]. Their research speaks to niche theory by identifying two main gratifications (goals) that media swinging can address: self-presentation and relationship management. They also bring up an important point in relationship management: some users were not just interested in social connection (uniting networks) but social disconnection (segmenting networks).

2.5 Impressions and Perception

So far, I have focused on self-presentation from the perspective of the social media content creator. However, an important independent set of questions concern the extent to which these self-presentation efforts are successful. Perception concerns how self-presentations are judged by observers, probing whether observers judge self-presentations consistently with content creators. One key type of work relevant to this research body is zero acquaintance impression studies [9,23,90,125,165,171,188]. Previous research on zero acquaintance impressions has found that people can make somewhat accurate impressions of another person simply by viewing different types of informational cues about that person, for example, viewing their photograph, watching them in a video, or even hearing them talk [23].

Recall Gosling’s discussion of trace cues when discussing personality traits. Such traces are an example of a more permanent cue than the ephemeral information traditionally used in self-presentational studies (i.e., Goffman style performance, Hogan style artifacts [85,107]). Instead, Gosling examined how accurately observers judge someone else’s personality using traces provided in the form of artifacts and the layout of their office or doom room [88,90,165,227]. That work showed that people could form accurate impressions of the other

person simply by looking at their things, with statistically significant accuracy correlations ranging from .65 for Openness to .20 for Agreeableness.

How do people make these judgments? Gosling's study utilizes Brunswik's lens model [31,170] to interpret how people interpret people's possessions and make inferences about their personalities. Cues represent informational signals about a person's personality. For example, if someone is very talkative, this represents a cue about their Extraversion. Cues can be related to various signals in a post. For example, cues could be actions like the language or emojis used in a caption on their post or objects such as fashionable clothing. One important, relevant distinction in this context is between information that is "given" versus "given off" [85,86]. Given information is information that one intentionally conveys. Given off information is unintentionally expressed information. For example, one might deliberately say they are hardworking and organized, representing a given cue about their Conscientiousness. However, if the same person is consistently late for work and constantly forgets about deadlines, this is a given off cue about their Conscientiousness. Cues can also be accurate or inaccurate, which depends on the observer correctly linking behavior to personality. For example, an observer might assume that someone wearing bright clothing is Extraverted when that's not the case. The total of all cues an observer sees forms a lens that observers use to understand the person's personality.

There are two important concepts in relation to cues: cue validity and cue utility [31,170,171]. Cue validity is a cue that a profile owner uses to express a trait. Cue utility is a cue that observers use to infer a trait from that profile. These concepts lead to two categories of potential errors in profile interpretation. One error is where the observer fails to successfully interpret a trait by missing a valid cue, i.e., a cue that accurately expresses a trait. For example, an observer interprets someone as being less Agreeable because they overlooked that the profile owner has many photos where they are smiling. The second is where the observer uses a cue

to judge someone, but that cue isn't expressing a trait; for example, an observer might think that an attractive person is more Conscientious due to the halo effect [5,215], but in reality, the cue of attractiveness is unrelated to that trait. We can use these concepts of cue validity and utility to compare media. Some media are "clearer" lenses allowing more accurate inferences about owners' self-presentation. Other media might be more "opaque," where observers experience more errors in interpreting the owners' personalities through that medium.

How observers interpret personality is complex, and one common way to understand it is to try to break apart variance sources. Kenny's Social Relations Model (SRM) [124,126] helps tease apart some of the nuances in how observers interpret profiles. The SRM has been used successfully on personality traits, behaviors, liking, and meta-perceptions [8,124]. As discussed earlier, it is important to understand how profile owners might present themselves separately from how observers interpret those presentations. The SRM uses different data structures to address this issue by partitioning the variance we might see in rater scores. The SRM allows us to identify whether particular observers rate multiple profiles consistently (called assimilation), whether particular profiles are seen by multiple raters consistently (called consensus), and whether a particular observer rates a particular profile in a specific way (called uniqueness). Consensus speaks to the accuracy of observers' perceptions. If observers agree about the presence of a trait in a profile, we can be confident that they are accurately identifying that trait. Across multiple studies examining traits in offline contexts, Kenny et al. [126] report an average proportion of the variance in scores as follows: 20% due to assimilation (indicating that assimilation accounts for 20% of the variance in scores), 15% due to consensus, 20% due to uniqueness variance, and error accounting for the remaining 45%.

A recent article examined observer interpretations of Instagram profiles [171]. We now describe the list of self-presentational cues Osterholz et al. identified from previous studies of Instagram [12,13,23,33,45,68,69,109,127,129,130,153,155,161,165,184,208,224,228,240]. They

reached a consensus on these cues through multiple rounds of discussion and revision. To simplify their analysis, Osterholz et al. next identified five cue aggregates using principle component analysis: Aesthetic/Professional Posts, Diverse/Private Posts, Colorful/Active/Positive posts, Appearance Based Posts, and Instagram Activity posts. These represent a relatively comprehensive list of cues, although they may be missing some important ones. For example, the authors presented participants with a static set of photos instead of showing the detailed elements of a post (such as the number of comments, number of likes, the caption text, etc.). Therefore, these may represent missing cues that could provide useful information about the presenter's personality.

The results from this study indicate that this is a promising method for comparing observer and profile owner ratings. Osterholz et al. [171] found statistically significant correlations between all self-report and observer ratings on all traits, representing accuracy correlations ranging from .10 for Agreeableness to .23 for Openness. They found significant positive correlations for cue validity between Extraversion and Openness for Instagram Activity. Openness was also significantly positively correlated with Aesthetic/Professional Posts and Diverse/Private Posts. Extraversion was significantly positively correlated with Diverse/Private posts and Colorful/Active/Positive posts. For cue utility, observers were correlated with many more traits; Extraversion was positively correlated with four out of five cue aggregates, Openness was positively correlated with four out of five cue aggregates, Agreeableness was positively correlated with Diverse/Private and Colorful/Active/Positive and negatively correlated with Appearance Based, Neuroticism was correlated with Colorful/Active posts and Conscientiousness was linked to Aesthetic/Professional posts.

3 Are There Differences in Self-Presentation Comparing Facebook and Snapchat?

3.1 Project Summary

In this project, we examined differences in how people perceive and present themselves online on specific social media platforms. If personality surveys detected differences, what explanations would people give for how they present themselves? Would explanations invoke the platform or their traits? Are people generally consistent with following one tactic (such as emphasizing socially desirable traits online)? There were two studies within this project. First, we investigated the differences between people's self-presentation on Facebook and their offline personalities. When we identified differences, we extended the study to focus on Facebook and Snapchat as comparison points, comparing them against each other and offline self-presentations. We chose these two social media platforms precisely because they have different and distinct audiences and technical affordances. Since the differences seen in the first part of the study only represent one instance of online self-presentation, in the second study, we wanted to highlight any potential differences in how people perceive and present themselves.

Personality is a longstanding and intuitive psychological construct. It presupposes a stable 'self', with a consistent pattern of thoughts, feelings, social attitudes and behaviors. This personality is thought to influence one's expectations, self-perceptions, values, and attitudes. It also predicts our reactions to other people, problem-solving, and well-being. This work explores how personality differs across social media and offline contexts.

Social media platforms are a natural place to explore personality and the self, as such platforms are now a common feature of everyday life [178]. As a result, social media are increasingly relevant in determining self-perceptions as well as how people present themselves to others [144]. Social media platforms are different from traditional modes of self-presentation. Social media affordances [15,50] may enable behaviors that are more consistent with social, performative concepts of self [85,107] where the self is situationally negotiated through social contexts and interactions.

Consistent with this situational view, specific social media affordances such as profiles make it easy for people to edit and control their online self-presentation [50,63,231]. For example, users can strategically select what they share, for example by posting flattering photos [218]. Additionally, social media allow users time to communicate in a measured way, crafting posts and responses as required [231]. Nevertheless, self-presentation and perception in social media are complex and difficult to predict; users are often unclear exactly who their audience is [20,34,144]. And many social media allow one's contacts to comment on and quote one's posts, affecting control over self-presentation [50].

Furthermore, different social media platforms have very different affordances [15,50,63,64]. Some like Facebook and LinkedIn offer the opportunity to create a detailed profile, while others like Twitter do not. Profiles also have very different goals, with LinkedIn being a professional persona compared with the creative identity projected in Tumblr. There are also key differences in content persistence, e.g. Snapchat content disappears after viewing [15,114,154,182,225]. There are also differences in the extent to which others can link to one's posted content and provide feedback [15]. Finally, platforms differ in whether and how content can be controlled and directed at specific audiences [154].

Although there is evidence that online profiles represent authentic self-presentations [9], it has also been argued that the social context of platforms like Facebook induce social desirability biases generating pressure to post positively [93,231]. This is an important issue to resolve, as a lack of authenticity can backfire. Projecting an inauthentic online self reduces social connections and decrease well-being [93].

This pair of studies address how people perceive and present themselves online. From a theoretical perspective, are social media behaviors consistent with a stable versus situational view of personality? And how do differing affordances of social media platforms relating to control over content, feedback and audience influence self-presentation and perception, leading to personality differences? In addition, do social media contexts lead people to emphasize socially desirable traits (Agreeableness, Extraversion) while downplaying negative traits (Neuroticism)? Our first study compares people's assessments of their offline personality against how they judge their personality on Facebook. In a follow-up and partial replication, we explore personality across two social media platforms with very different affordances, social functions, and audiences, Snapchat and Facebook. Snapchat is ephemeral with interactions usually targeting strong ties. In contrast Facebook is more permanent, users have a detailed personal profile and often large networks embracing strong and weak ties. We compare self-presentations in these platforms with offline personality, exploring the differences we observe.

Research questions:

-Are there personality differences between social media and offline contexts?

-How do the different affordances of social media platforms affect online behaviors and contribute to personality differences?

-Does the social context of online platforms lead people to emphasize socially desirable traits such as Agreeableness and Openness and de-emphasize negative traits such as Neuroticism?

3.0.1 Contribution

Our work is the first to compare offline with online personality, as well as personality across social media platforms. Two studies show novel findings documenting clear differences in offline and online personality. In both studies, people perceive Facebook personality to be less Neurotic and less Open than offline personality, which may result from self-editing to avoid controversy. A second study shows additional differences between social media platforms. Snapchat is used in a hypersocial manner, with some seeing themselves as more Extravert than offline. Qualitative analyses suggest these differences arise from platform affordances concerning audience and ephemerality, leading to design and theory implications.

3.2 Related Work

We review personality theory, comparisons of online and offline self-presentation, as well as literature on social desirability biases in social media. We also summarize impacts of online authentic self-presentation on well-being, and affordance explanations of social media differences.

3.2.1 Personality Theory

Personality theorists now generally agree on the “Big Five” personality trait factor taxonomy, also known by the acronym OCEAN [46,55,115]. This consists of five personality dimensions: Openness to Experience: contrasting how explorative/imaginative vs. conservative/habitual a person acts, displayed by a preference for independent actions and novel experiences;

Conscientiousness: organization/time keeping vs. messiness/lateness, displayed through setting goals and self-control; Extraversion: positive social interaction vs. preference for solitary activities, displayed by a desire to interact with others; Agreeableness: friendly vs. cold interactions, displayed by altruism, co-operation, and trust; Neuroticism: anxious/nervous conduct vs emotional stability, displayed by how often and how controlled one's negative emotions are. Measured by these traits, personality has been found to be relatively stable over the lifespan [202].

Classic personality theory involves inferring traits from observable behaviors such as language use, non-verbal communication, and appearance [106,165]. Recent personality research has extended to examining personal artifacts and physical spaces, as traits such as Openness have proved more difficult to detect from observable behaviors. This newer literature is directly relevant to online behaviors.

Gosling [88,90] systematically examined relations between personality and personal physical environments e.g. dorm rooms and offices. For both settings, analysts can identify Openness and Conscientiousness accurately, but inaccurately identify other traits. Gosling explains these relations between personality and physical environment in terms of three separate mediating mechanisms [88,90]. Identity Claims are when people intentionally structure personal environments to signal aspects of their personality to others. Emotion Regulation is self-directed organization occurring when people actively design personal environments to influence their mood. And Behavioral Residue is when people unconsciously leave informative traces in their environment following past actions.

While trait theories assume stable characteristics, in contrast situationist accounts of personality argue that social and environmental contexts can elicit rather different behaviors in the same person [159,160]. Classic psychological studies support situationism [48,157], which

is also consistent with sociological accounts [85]. Our work contributes to this debate by exploring consistency between online and offline personality [9].

3.2.2 Intentional Identity Claims: Profiles and Personality

Much recent work addresses how people use digital media, such as profiles to intentionally signal personal characteristics to others. People's Facebook and online dating profiles are actively crafted to signal personal characteristics [64], accurately reflecting a non-ideal personality [9] and this has been explained using Goffman's account of self-presentation [85]. Despite opportunities to control online self-presentation, there are strong overlaps between offline and online self-presentations revealed in profiles [9]. Indirect aspects of one's online profile such as number of online friends, density of friendship networks, likes or language used online also correlate with offline personality [112,134,174]. Offline personality traits also influence profile construction. Self-monitoring, or the tendency for people to alter their behavior based on the social situation, predicts Facebook profile characteristics.

Those who are high on self-monitoring have less detailed and more cautious Facebook pages while those low on self-monitoring are more revealing [87]. Big Five personality factors also drive both social media platform usage and self-presentation behavior. These traits influence presentation strategy such as posting behavior and reactions to other actors [112,193]. Higher-order personality constructs such as self-monitoring [144] and self-esteem [222] also influence online activities.

Offline personality also influences amount and type of interaction with online profiles. People with higher offline Openness are more willing to post personal information on Facebook [3], and those who are high on offline Extraversion use Facebook more often [89]. Gender also has

an effect; men low on Openness play more Facebook games than men high on Openness and women low on Agreeableness use fewer Instant Messenger features [162].

3.2.3 Authenticity and Well-Being

Other research looks at relations between authenticity and well-being. It again explores whether people present themselves differently online versus offline, examining consequences for well-being.

One line of work argues that social media can facilitate more authentic self-expression, specifically allowing some individuals to overcome barriers of self-presentation experienced in offline interactions promoting well-being [187]. This is informed by research indicating that people who express their authentic self in offline interactions are more likely to experience positive psychological outcomes [93].

User concerns about self-presentation may be more readily managed online than offline. Social networking sites allow users control over how they present themselves. People who feel more able to express their true self on Facebook have a greater tendency to post personally revealing and emotional content [193]. These authentic self-presentations may have important impacts on well-being. People who present their true selves on social media have higher general levels of positive affect and lower levels of negative affect [93,193].

This research suggests benefits to presenting an authentic self online. However other factors such as social desirability may mitigate against authenticity. Users of social media such as Facebook are keenly aware of how others present themselves, which has an effect on how they use social media themselves. People use social media sites as a way to compare themselves with others [94]. Those who frequently use Facebook may assume that others are happier, have better lives, and more friends [39]. Despite a desire to present an authentic self-

image [9], a positivity bias may force users to make social comparisons more frequently then they might offline. Some research suggests that negative social comparisons, namely shame and envy, can even lead users to burnout or switch websites [142].

Other work suggests that more outgoing styles of social media usage promote well-being. Active use of Facebook such as messages, posts, and comments can help increase bonds with others [34,35]. This also translates into an increase in well-being; those who engage in direct, active communication also report lower loneliness, compared to those who simply consume content [36]. Direct communication can also be effective for those lacking in self-esteem. Facebook may be very useful in building weak ties that help integrate one into a community. These ties may help those with low satisfaction and self-esteem feel more integrated and provide help in the form of information and social/work opportunities [62]. Snapchat, as a form of social media mostly comprised of direct communication, is strongly associated with positive mood and enjoyable interaction with strong existing ties, but not weak ties [15,154].

Overall then, this work suggests that while there are wellbeing benefits to being active and authentic online, there are also countervailing pressures of social comparison that may lead people to control their online self-presentation. The current work contributes to this authenticity debate by exploring consistency between online and offline personality, explaining the differences we observed.

3.2.4 Affordances

Affordances present a useful lens through which to view different social media. Affordances describe how social media platform features are perceived in terms of how people can interact

with them [83]. This notion of affordance has been used in prior work to analyze differences between social platforms [15,26,62,63,219].

Each social medium has distinct features that influence how users engage with it. DeVito et al. [50] present a taxonomy of affordances for different social media. They identify three broad categories of affordances relating to: self, other actors, and audience. The self describes aspects of presentation flexibility, content persistence, and identity persistence. Together these support the ability to present the self differently, how long content is accessible and editable, and the stability of presentation of self [231]. Other actors, or how other users can interact with the self, includes content association and feedback directness [26]. These aspects relate to how other people can link content (e.g. by tagging), and how direct feedback is. Finally, the audience can be seen through transparency, or awareness of who can view content, and visibility control, the ability to control who sees what [20,64,143].

DeVito et al. categorize Facebook as having high levels of identity persistence and content association, in addition to high visibility control, which lends itself well to long term self-presentation. However, it has also lower levels of perceived audience transparency [143]. Snapchat, by contrast, has low content association and feedback directness, and the highest perceived audience transparency, which means it is useful for presenting self-presentation in the moment, without much need for coherence [15,182].

The same framework also describes self-presentation as an interaction between affordances of social media and individual differences. For example, users low on self-esteem may examine audiences much more closely than others while Neurotic users may be more focused on content association by other actors [50].

Overall, prior work identifies important theoretical and empirical questions about differences between online and offline personalities. It also suggests how social media affordances

potentially influence different online self-presentations, and how this relates to questions of authenticity and social desirability. Our work adds to this debate by conducting novel empirical work directly comparing online and offline personality across multiple social platforms, aiming to explain observed differences. Specifically, we use the framework of DeVito et al. [50] to analyze personality differences in terms of platform affordances. We examine how people's online self-presentation behaviors and personality presentation are directly influenced by platform differences concerning: (a) users' ability to control self-generated content by creating profiles and carefully crafting posts, (b) feedback from other actors relating to that self-generated content, and (c) users' awareness of their online audience.

3.3 Study 1

Our first study examined whether people judged their personalities to be different on Facebook versus offline. We also wanted to explore why such differences occur and relate these to prior work addressing the effects of platform affordances on online behavior. We used a mixed methods approach combining standard personality surveys with semi structured interviews.

3.3.1 Method

3.3.1.1 Participants

Participants were recruited opportunistically through personal contacts. Our sample was 21 people (14 women), aged 18-23, (M = 19.94, SD = 1.32). There were: 45% Caucasian, 30% Hispanic/Latino, 20% Asian/Asian American, and 5% Black/African American. They were students at a large US university.

3.3.1.2 Materials

The 44 item Big Five Inventory (BFI) is a widely used personality survey that asks participants how much they agree with different statements about their personality. E.g., a participant might rate a statement such as “I am someone who is talkative” on a one to five scale. Responses are coded and rated in five main personality factors: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Participants receive a score on each factor, where a low score indicates that they are low on that factor while a high score indicates they are high on that factor. The BFI was administered twice to each participant. The first time, participants rated their regular offline personality. The second time, we made a minor modification to the survey. Following an interview about how they used Facebook, participants were asked to rate their personality as “On Facebook I am someone who…”. Cronbach’s alphas for each factor for offline and Facebook respectively were: Openness: .68 and .72, Conscientiousness: .67 and .75, Extraversion: .71 and .66, Agreeableness: .70 and .73, and Neuroticism: .73 and .74.

3.3.1.3 Procedure

On completing the initial survey about people’s offline personality, we interviewed participants about how they used Facebook, specifically how they presented and perceived themselves. The interview aimed to understand whether and why participants thought that there were differences between Facebook and offline behavior in how they talked to people, who they talked to, and the content of those interactions. A sample question was, “How does Facebook feature in your relationships with people? Could you describe the types of people you generally talk to on Facebook?” We probed what topics they tended to post and read about on Facebook. We also asked if they felt they were more “experimental”, asking them to provide examples of positive and negative Facebook interactions. Once the interview was concluded, participants

were asked to complete the survey, again, this time characterizing their personality when using Facebook. We requested offline personality evaluations before the Facebook interview as we did not want the interview to affect people's offline perceptions of themselves.

3.3.2 Results

Table 1 supports the view that Facebook 'personality' is indeed different. Paired t tests analyzing each of the Big 5 traits from the survey responses show that on Facebook people are significantly less Open to Experience, less Agreeable and less Neurotic although there are no differences for Conscientiousness and Extraversion. The results only partially support the social desirability hypothesis. Consistent with social desirability, Facebook personality is less Neurotic, but contradicting the hypothesis, people are less Open and less Agreeable.

Trait	***Facebook M(SD)***	***Offline M(SD)***	$t_{(20)}$	***p***	***d***
Openness	***3.91(.63)***	***4.19(.43)***	***2.890***	***.009***	***0.53***
Conscientiousness	3.33(.48)	3.37(.68)	0.334	.74	0.07
Extraversion	3.23(.86)	3.35(.56)	0.593	.56	0.17
Agreeableness	***3.51(.67)***	***3.76(.58)***	***2.149***	***.043***	***0.40***
Neuroticism	***2.37(.87)***	***2.87(.86)***	***4.428***	***.0002***	***0.58***

Table 1. Facebook personality is significantly less Open to Experience, less Agreeable, and less Neurotic. Rightmost column d shows effect sizes.

Although there are reliable differences between traits across media, we can also ask whether people show consistent traits across situations. In other words, are people who are Agreeable

offline also Agreeable on Facebook? To test this, we correlated each factor across media. As expected, individual traits correlate somewhat reliably regardless of media. The respective Pearson correlations were: Openness, r(19)=.50, Conscientiousness, r(19)=.45, Extraversion, r(19)=.36, Agreeableness, r(19)=.55, and Neuroticism r(19)=.42. These correlations are all significant ($p<.05$) showing that people's self-presentation is relatively consistent, although Table 1 reveals clear, reliable differences between Facebook and offline; namely that Openness, Agreeableness and Neuroticism are all lower on Facebook.

3.3.2.1 Interview Analysis

We now analyze possible reasons underlying these differences between Facebook and offline. Following a procedure by Thomas [214], three analysts conducted thematic analysis on the interview transcripts to identify references to personality factors as well as participants' explanations for differences between Facebook and offline personality. We analyze qualitative data that indicate reasons why participants appear less Open, Agreeable and Neurotic in the surveys. We explore how different affordances of offline and Facebook interaction promote different behaviors that give rise to these perceived personality differences. Specifically we examine the different affordances of Facebook and offline interaction in relation to self, other actors and audience [50]. Examples were discussed and any disagreements resolved.

Facebook personality is carefully curated and less Open

Many participants suggested differences in how they present themselves on Facebook as opposed to everyday life. The following participant both states that she is different online as well as identifying which parts of herself ('ideas and things I enjoy') she chooses to reveal when on Facebook.

"I don't use social media as a platform to expose people to my real life. I feel like if you want to participate in my life, you should participate in it. I use it more as a tool for sharing my ideas and things that I enjoy." (206)

And even those people who stress authenticity implicitly acknowledge that they are actively constructing a persona. This participant describes exploiting Facebook's affordances, controlling self-generated content to carefully craft both her profile and the content of her posts:

"I wouldn't post something that's not me 'cause I would always think about what I post. I like really think about what I post. I don't just post for fun. I like to make my profile a certain way." (213)

While some participants stress positive elements of themselves on Facebook, many others characterized their Facebook selves as filtered versions of their offline selves. This filtered self is less Open, being more 'cautious or reserved'. Again this is seen as a self-conscious process that is supported by Facebook's affordances that allow people to control self-generated content to edit, reflect and evaluate before committing each post.

"I definitely feel like I don't have a different expression, but definitely filtered and sometimes a little more cautious or reserved online." (205)

Fear of Audience Social Judgement Promotes Self Editing

What then, causes people to compartmentalize themselves in this way, reducing Openness in what they reveal about themselves on Facebook? Filtering of self-generated content seems to arise from negative perceptions of the Facebook audience. This critical audience leads discussions to often have very unpredictable, unfavorable outcomes:

“On Facebook everyone takes everything incredibly personally…Everything's trivial and a little more crazy online. People are able to say things without thinking... They're able to say things that are extreme or rely on absolutes in their arguments and it just turns into this completely hostile place." (215)

Furthermore, when Facebook interactions do go wrong, participants were clear that blame is attributed to the person making the initial post promoting the firestorm. Feedback from other actors is visibly connected to the originating post, making it obvious where the trouble began:

this is my post that went the most wrong … I didn’t like how the post transgressed, it didn’t develop the way that I wanted it to...It is my content that I produce, so my content is creating feedback, so even if it’s the person’s own opinion, it’s my content creating the feedback.” (100)

Concern that ‘drama’ will be blamed on the original poster, leads people to moderate self-generated content to prophylactically and defensively tone down potentially controversial views:

“I do see myself refraining from saying some things when it comes to online posts just because you can be misinterpreted more easily and I'm a pretty sarcastic person. I am a little more PC on Facebook.” (107)

Participants often admitted to being a critical and less Agreeable audience to other Facebook posters. They were particularly judgmental of others who seemed to be narcissistic or needy. To deflect such potential criticisms, they took great care to avoid appearing that way themselves:

"Let's say I look on someone's fb and they have a thousand selfies. I'm going to judge the f**k out of that. Like you're the most narcissistic person I've ever seen.... I see other people doing that, I'm not really into that, so I'm not going to do that myself." (206)

Similar concerns about not wanting to appear Neurotic, leads people to edit self-generated content stressing only one's positive attributes.

"The side that is shown to fb is very very limited. Never the sad depressed things, 'cause nobody wants to see that." (203)

Explaining Facebook Personality Differences

Our interview analysis suggests how Facebook platform affordances might explain the survey findings of reduced Agreeableness, Openness and Neuroticism. It seems that Facebook personality is a carefully curated presentation. People control self-generated content to craft profiles to avoid negative social consequences arising from concerns about a critical audience. Participants believe that, like themselves, others are judgmental and less Agreeable on Facebook. They worry that their posts will elicit unpleasant feedback from other actors, for which they (the poster) will be held responsible. Their response is therefore to self-edit by shying away from potentially controversial topics, leading them overall to be less Open in their self-presentation. At the same time, they want to avoid appearing needy or requiring affirmation. This again affects their self-generated content; they therefore tend to post positively, avoiding negative or personal, emotionally controversial, topics. As a result, they present themselves as less Neurotic. Overall these results suggest a more complex picture than a simple social desirability explanation for people's evaluation of their Facebook versus offline personality.

3.3 Study 2

The first study showed several ways in which people reveal different personality characteristics on Facebook from offline. However, that study explored a single social media platform. It may

be that the affordances of different platforms elicit different ‘personalities’. It might also be that participants treated our Facebook questions as probing a general online persona, as opposed to Facebook in particular. We therefore conducted a second study, intended to replicate the effects of Study 1 but also to explore personality effects for a distinct platform, Snapchat. Snapchat has very different affordances from Facebook. Snaps are ephemeral and tend to target an audience involving a small number of strong ties, with few opportunities to link to posted content. In contrast Facebook posts are permanent, allowing direct commenting from other actors with audiences often being much larger and spanning strong and weak ties.

Again we address whether social media personality differs from offline personality, and how this relates to the particular affordances of different platforms. The new study uses a slightly modified version of the previous procedure.

3.3.1 Participants

Participants were drawn from the University of California, Santa Cruz (UCSC). They signed up for the study online and received class credit. We excluded 13 participants because of failure to follow instructions. The final sample was 127 participants (86 women, 39 men, and 2 who preferred not to state), aged 18- 24, (M = 19.72, SD = 1.28). Within our sample there were: 35% Caucasian, 27% Hispanic/Latino, 25% Asian/Asian American, 6% Mixed Race/Ethnicity, 3% Black/African American, 1% American Indian, 1% Middle Eastern.

3.3.2 Materials

3.3.2.1 44 Item Big Five Inventory (BFI)

This was administered three times, with interviews interspersed between each survey. The first time, participants rated their regular offline personality. The second and third times, we made

a minor modification to the standard survey. After a short interview about how they used each social platform, participants were asked to rate their personality on that platform: “On Facebook I am someone who…” or “On Snapchat I am someone who…” respectively. Cronbach’s alpha for each factor, offline, Facebook, and Snapchat respectively was: Openness: .60, .75, .61, Conscientiousness: .80, .68, .67, Extraversion: .86, .84, .85, Agreeableness: .71, .64, .68, and Neuroticism: .77, .76, .69.

3.3.3 Procedure

There were 3 phases. Participants first completed the regular BFI. They then participated in two short interviews about their self-perceptions and presentations on Facebook and Snapchat. Half completed the interview for Snapchat first and the other half for Facebook. The interview prompts were identical to those used in Study 1. After each interview they completed a version of the BFI probing personality on that social platform “On Facebook I am someone who…” or “On Snapchat I am someone who…”.

3.3.4 Results

We first analyzed surveys using a 2 Order (Facebook vs Snapchat first) X 3 Media (Offline, Snapchat, Facebook) MANOVA with the 5 OCEAN personality traits as dependent variables. There was a main effect of Media: $F(10,115) = 27.77$, $p < .001$, Wilks’ $\Lambda = .29$, partial $\eta^2 = .71$, but no main effect of Order: $F(5,120) = .72$, $p > .05$, Wilks’ $\Lambda = .97$, partial $\eta^2 = .03$ and no interaction: Media x Order: $F(10,115) = 1.12$, $p > .05$, Wilks’ $\Lambda = .91$, partial $\eta^2 = .09$.

To analyze each trait directly, we conducted 5 univariate 2 factor ANOVAs: each was a 3 Media (Offline, Snapchat, Facebook) X 2 Order (Facebook vs Snapchat first) where Media is a within

subjects variable and the dependent variable was the OCEAN trait. Main trait effects are shown in Table 2.

From Table 2, we can see that there were significant differences between offline, Snapchat and Facebook on Openness, Extraversion, and Neuroticism traits. Based on the large etas, these are quite powerful effects. Again there were no order effects on any trait based on which interview participants completed first. In other words, Facebook personality did not differ if people completed the survey about it first (i.e. before discussing Snapchat) or second (after discussing Snapchat). To probe specific differences between Facebook, Snapchat and offline traits, we conducted post-hoc comparisons for each trait that was significant in the ANOVA, which were Openness, Extraversion, and Neuroticism. See Table 3 for the post-hoc comparisons.

These comparisons indicate that for the Neuroticism trait, offline was significantly higher than Facebook (FB) and Snapchat (SC), which were not significantly different from each other. For Openness to Experience, offline and Snapchat are significantly higher than Facebook but not significantly different from each other. For Extraversion, Snapchat was significantly higher than offline which was then significantly higher than Facebook. Because each personality variable is on a 5-point scale, these differences indicate a fairly large effect. For example, the two Neuroticism comparisons (Offline– FB and Offline – SC) show an effect between about a 10% to 20% decrease in reported Neuroticism looking at the upper and lower limits.

Trait	df	*F*	η^2	*p*
Openness	***2, 126***	***58.67***	***.32***	***<.001***
Conscientiousness	2, 126	2.88	.02	.06
Extraversion	***2, 126***	***63.71***	***.34***	***<.001***
Agreeableness	2, 126	1.29	.01	.28
Neuroticism	***2, 126***	***92.53***	***.42***	***<.001***

Table 2. OCEAN ANOVA. Openness, Extraversion and Neuroticism traits differ across different media. N = 127.

The comparisons between Facebook and offline largely replicate Study 1, again showing reduced Openness and Neuroticism for Facebook. However, one clear difference is that Study 2 shows reduced Extraversion in Facebook compared with offline and no differences for Agreeableness, whereas in Study 1 people were less Agreeable on Facebook. We return to this discrepancy in our discussion.

3.3.3.1 Correlations of Traits Across Media

We again evaluated whether people show consistent traits across media, correlating each factor across media. As expected, individual traits correlate fairly reliably regardless of media. For Openness, the correlations ranged from .40 to .58. For Conscientiousness, they ranged from .43 to .61. For Extraversion, .26 to .51. For Agreeableness, .50 to .67. For Neuroticism .28 to .41. These correlations are all significant (Pearson r, $p < .01$, $df = 125$). Overall, this suggests reliable and consistent differences in people's self-presentation across media.

3.3.3.2 Interview Analysis

We next analyzed a subset of 15 randomly selected transcribed interviews to explore reasons for these personality differences using the procedure described above. We again apply the platform affordance [50] framework to suggest explanations for these differences between media. Analysis confirms Study 1's observations that participants' concerns about their perceived audience leads them to self-edit and control their online persona to minimize perceptions of emotional volatility. As a result, Neuroticism is lower in both Snapchat and Facebook. Again, we see great care being taken with Facebook to avoid controversy and potential negative feedback from other actors by reducing Openness. However, there are important differences observed between Snapchat and Facebook. Like Facebook, people self-present as less Neurotic on Snapchat, but in contrast on Snapchat they are both more Extravert and more Open.

Media	M1	M2	*LL (95%)*	*UL (95%)*	*d*
Openness					
Offline-FB	**3.7**	**3.22 *****	**.365**	**.610**	**0.86**
Offline - SC	3.7	3.61	-.002	.178	0.19
FB – SC	**3.22**	**3.61 *****	**-.531**	**-.267**	**-0.67**
Extraversion					
Offline -FB	**3.35**	**2.77 *****	**.397**	**.793**	**0.64**
Offline - SC	**3.35**	**3.63 *****	**-.449**	**-.114**	**-0.36**
FB - SC	**2.77**	**3.63 *****	**-1.086**	**-.668**	**-0.89**
Neuroticism					
Offline -FB	**3.12**	**2.32 *****	**.633**	**.976**	**1.011**
Offline - SC	**3.12**	**2.42 *****	**.550**	**.855**	**1.013**
FB - SC	2.32	2.42	-.245	.042	-0.15

Table 3. Pairwise Comparisons for Openness, Extraversion, and Neuroticism for Offline, Snapchat and Facebook personality traits. Note. *** p < .001. df = 126. Upper Limit (UL), Lower limit (LL) model mean differences with Bonferroni adjustment for multiple comparisons. Rightmost column d shows effect sizes.

One possibility is that effects arise from Snapchat's ephemerality [15]. Chats disappear once seen, leading to more freedom in self-presentation. People can post more directly self-relevant personal content without risking this being on record or that other actors will comment on it negatively. Furthermore, chats involve a different audience, often being close friends who may be more forgiving of controversy, promoting greater Openness and Extraversion.

Audience Concerns Promote Controlled Self-Presentations on Social Media

As in Study 1, we again saw caution being exercised when posting on Facebook. As before, this seemed to be motivated by concerns about critical judgements from their audience. Multiple comments echoed the following:

"I feel like…highly scrutinized on FB, so I never post anything. I don't update my profile picture. I don't really like to put an image of myself out there very much." (P07)

This guardedness again promotes controlled Self presentation, deliberately toning down self-generated content because of concerns about audience perception:

"I feel like I am probably more conservative on Facebook with portraying myself just because there is so many relatives and I'm trying to keep a good image…I don't necessarily want them to see what I do on the weekend versus what I post about how my school is going, you know." (P18)

Another factor contributing to this controlled self-presentation was that Facebook posts were seen as being on record. Confirming other work [20,143] people also felt unsure of their exact audience leading them to worry about exactly who might be reading their posts.

"I don't know, [Facebook] feels way too public versus everything else. Like you can go and search anyone on FB and see a lot of information about them." (P36) "I would be paranoid of

somebody having something I don't want them to have or I'd think they would use in some other way." (P30)

Overall these concerns meant that for many Facebook was exclusively used for semi-professional purposes:

"I love using Facebook for like keeping a list of contacts and if someone needs to get in touch with me they can without my phone number. So that is great." (P05)

Others talked about Facebook interaction as a rather anonymous affair, characterizing Facebook as being an effective way to 'maintain contacts. Such usage constrained Openness by limiting what was discussed. Using Facebook in this uncontroversial way reduced the likelihood of appearing Neurotic or incurring negative feedback from other actors.

"So I use it a lot of promotions and stuff rather than like using it for close friends and people." (P18)

Snapchat also induced a controlled and uncontroversial style of self-presentation, but this was very different in tone from Facebook. Instead people posted self-generated content emphasizing positive daily experiences, such as meeting friends, eating out and having fun.

"I think that the people that add me on Snapchat see me more as like always going out and having adventures and fun and all that stuff and eating a lot of food." (P25)

However these chat experiences are deliberately crafted with a clear audience in mind, aiming to achieve a specific effect that may be slightly inauthentic:

"When I talk to people back home, they tell me, "Oh, it looks like you're having so much fun in [], like all the things you eat, and places you go", but in reality I feel like I don't do THAT much compared to how I portray myself." (P10)

Overall for both Facebook and Snapchat it seems that such careful curation of self-generated content is to avoid negative emotional displays. This desire to avoid controversy leads to less Neurotic online self-presentations.

Transience and Strong Audience Ties Promote Openness on Snapchat

The transient nature of Snapchat [15,50] led people to create self-generated content that expressed themselves more openly. Snapchat's lack of editing features also allowed them to let their guard down, presenting a more authentic multifaceted view of themselves.

"It's just, you can't really edit pictures and post things on there so that's like, it's ok to see things bad." (P29)

"I'll send it to my family, like 'this is a really funny filter' or it will be a really ugly picture of me in bed with my 3 double chins and just like, 'hi, good morning'." (P29)

The perceived audience also seemed to be another direct influence on Snapchat communication. With Facebook there are strong concerns about who might be reading, or that other actors might post negative feedback. Instead with Snapchat these revealing chats seemed to target small close networks of strong ties [15], overcoming worries about the audience who might be viewing potentially embarrassing content [20,144], or posting negative reactions. These close networks on Snapchat are unlikely to criticize or judge, making it possible to express oneself openly:

"Like if I'm Snapchatting my best friends they're going to see everything and that's completely genuine because there is no judgment there." (P30)

Known Audience Leads to Greater Extraversion on Snapchat

These same properties (transient communication to a known audience of strong ties) also seemed to promote a more active style of socializing in Snapchat. This led several participants to characterize themselves as being more Extravert when using Snapchat than offline. Some even felt it was easier to express themselves on Snapchat than when other people were present in person:

“Maybe I'll have conversations on SC more so than in person because it's behind a screen, it's not like in person. So if someone were to confront me about something or ask about how I'm feeling it's easier to say what you want to say on SC than in an in-person conversation.” (P30)

This greater expressivity seemed to make it straightforward to form new friendships. Snapchat allows a bond to be formed between relative strangers promoting offline social activities, which may later lead to friendships.

“some friends from here if I wanna start talking to them...I kinda just don't have another way to reach them...like I just send them something funny and we start talking and making plans about when we can hang out or stuff like that.” (P23)

Explaining Facebook and Snapchat Differences

Overall then, our interviews support and provide explanations for the personality differences observed in the survey data. Consistent with Study 1, we saw evidence in interviews that Facebook participants had concerns about their audience, arising because they were unclear about exactly who was viewing the content they were posting. Fear of being judged on social media therefore led participants to self-edit their posts making them uncontroversial and to avoid appearing Neurotic. On Snapchat we saw platform affordances being exploited in rather

different ways. Again we saw efforts to control self-generated content leading participants to avoid posting about negative topics. However, the fact that Snapchat is ephemeral and hence off-record reduces concerns about being judged by other actors. This, combined with the fact that the audience for chats is often intimate close ties, leads some to be more Open in their Snapchat than Facebook usage. In other ways we see Snapchat being used in hypersocial manner, with some characterizing themselves as even more Extravert in their usage than offline. This again seems to be mediated by platform affordances involving the ephemeral nature of Snapchat, and the prevalence of strong ties in the Snapchat audience.

3.4 Discussion

Our study is the first to directly compare personality traits across different social media with offline traits, aiming to explain these effects in terms of platform affordances. Two different studies show overlapping, largely consistent, strong effect sizes that are mediated by platform affordances. In both studies our results indicate that when online, users exploit the control that platforms offer over self-generated content to present a partial version of themselves. Users are extremely aware of their audience who may be making social judgements that are somewhat outside the poster's control. Hogan [107] argues this concern with how our audience perceives us is entirely understandable. Each public, relatively permanent profile is like a museum exhibit where the curious public can come and write directly about the work. This may explain why people show less Openness on Facebook in both studies.

This tendency to self-edit may increase as affordances offer users more control over social media. For example, a Facebook post is editable while words said offline are not. This greater control may lead to users becoming more defensive. This may be exacerbated by the very knowledge that one has more control. If a user is aware that others know they have control over a post, then there is even more pressure to make that post amazing. Or not post anything

at all. This caution seems very remote from Facebook's "what's on your mind?" prompt encouraging us to openly share our thoughts and opinions.

This caution is exacerbated by Facebook's feedback mechanisms which make it easy for other actors to offer evaluative feedback on every post. As we have seen, our users viewed their audience as often judgmental and were very concerned about avoiding online controversy. Users were clear that responsibility for such drama lies with the person making the original post. A strong desire to avoid being the scapegoat for a negative debate was a further incentive for our participants to tone down their posts.

Furthermore, this caution about audience perception may promote a different form of editing of self-generated content. Concern about negative audience reactions can lead users to downplay their emotions online for fear of social judgement. Users avoid posting negative emotions knowing that they themselves are quick to judge others who appear demanding or needy. This explains the Neuroticism results which indicate that users have an extremely strong desire to appear emotionally stable, regardless of social medium. People are aware that they need to protect their image; social judgment is everywhere when a sometimes ill-defined Facebook audience of family, friends, and strangers can see exactly what you did last weekend.

This is where Snapchat differs. Based on our survey data, Snapchat users reported more Openness and Extraversion. This seems to be because of ephemerality. If the image a user needs to protect will fade, then fear of social evaluation is much lower. There are also fewer feedback mechanisms on Snapchat reducing visible judgment by other actors. Confirming [15], participants frequently mentioned that they enjoyed the ephemerality of Snapchat and that it sometimes allowed them be their "true selves".

These explanations confirm prior work in arguing that platform affordances have direct influences on self-presentation and online behavior [15,26,63,64,222]. On Facebook, across two studies, we saw that having to present oneself on-record to a large underspecified audience which includes weak ties, engenders self-editing. Self-editing encourages a low-risk strategy of presenting an uncontroversial, constrained semi-professional persona. In Snapchat, ephemeral communication off-record with a known audience of strong ties leads to an equally uncontroversial but more Extravert and Open persona. Furthermore our Neuroticism results suggest intriguing parallels with prior findings suggesting that those who are less emotionally stable offline tend to be much more self-aware when using social media [50]. Prior work [3,89,162] also identifies connections between offline personality and online behaviors (likes, posts). In contrast our work indicates relations between online personality and behaviors. We intend to explore these connections in future work.

Our results have implications for personality theory [46,115]. We observed some base consistency across media, i.e. people who are more Extraverted offline also tend to be Extraverted in Snapchat and Facebook too. Nevertheless, there are large and reliable differences across platforms contradicting a notion of a stable media-independent self [9]. Rather our results are consistent with a situationist or role based theory, and many participants explicitly talked about using platform affordances to control and manipulate their self-presentation [85,230]. On Facebook they expressed concerns about making on-record posts to an unclear audience that included weak ties as well as parents and grandparents. This led them to present a professional, curated persona using the platform to post uncontroversial pictures or manage their professional image.

Such behaviors are partially consistent with social desirability accounts. However, on closer scrutiny our participants' goals seem rather different. Social desirability describes how people craft posts to engender a positive online image [64,144]. Instead our participants' goals seem

to be to avoid negative or controversial outcomes, even if this reduces the overall perceived positivity of their profile. Participants are careful to minimize the negative and emotional, but the consequence is that on Facebook they also edit out Openness and Extraversion which are often viewed as positive traits. On Snapchat they again want to avoid ‘drama’, but do so by exploiting the off-record transience of the platform to express their more offbeat and authentic side. In the same way they use the constant connection and ease of sharing to engage in hypersocial Extravert behaviors.

Our results also speak to work on authenticity of self-presentation online. Various researchers express concerns that there may be psychological well-being consequences to presenting an inauthentic self online [93]. One limitation of that prior work is that it tends to focus on a single platform. Our results offer a different perspective, by comparing personality across multiple platforms. Our findings indicate that people present different sides of themselves in different platform contexts. So while we could be concerned that a given user seems cautious and restrained on Facebook, it may be that they are able to express their Extravert, Open and quirky side when using Snapchat. From a theoretical perspective our work suggests that this work on online authenticity needs to consider multi-platform contexts.

There are also empirical and theoretical questions arising from our work. Our results provoke new empirical questions about other platforms, such as whether people also have distinct Instagram, WhatsApp, and LinkedIn personalities, and if so, from a theoretical perspective how their differences can be explained. In terms of personality theory, we can also ask how theory might be extended to cover the different expressions of personality across different platforms as well as the possible need to posit a ‘meta-personality’ that ensures consistency across these.

3.4.1 Limitations

Our participants were drawn from a very particular demographic (young adult students). It is likely that older or younger people use Facebook and Snapchat in rather different ways, possibly leading them to show different personality patterns. Young adults may also experience particular challenges in self-presentation. As they transition into adulthood they begin to encounter a need to manage self-presentation to discrepant groups of friends, parents and professional contacts. Another potential question about our study concerns the extent to which our particular interview questions might have primed participants to view their Facebook and Snapchat personalities in specific ways. However, if such priming occurred, we might expect that being interviewed about Facebook before Snapchat might lead people to characterize Snapchat differently than when interviewed about Snapchat first. However, our MANOVA trait analysis shows no differences between interviewed first or second about either Facebook or Snapchat. This suggests that participants were responding directly to survey questions and that interview experiences did not fundamentally alter ways in which people viewed their personalities. The discrepancy in results about Extraversion and Agreeableness between studies 1 and 2 demands further work. It may be that asking about both Facebook and Snapchat platforms in Study 2 caused participants to think differently about their social behaviors, but this requires further examination. Finally, participants' traits did not reverse between media. Our results do not suggest that participants are experiencing major personality shifts such as going from high Extraversion to low Extraversion, but rather that participants consistently emphasize different aspects of their personality across media. Furthermore, our research helps identify platform affordances that influence these different personality expressions.

3.4.2 Design implications

Turning now to design implications, one obvious observation is that participants have to manage multiple ‘selves’ across different platforms. In other words, they have to remember to be bubbly and open on Snapchat but more staid on Facebook. One technical possibility might be to encourage participants to explicitly construct personas to remind themselves about how they appear on different media. Text processing or machine learning methods [134,174] might be of assistance in maintaining and managing this set of personas, by identifying typical posts or representative topics broached in each platform. Other approaches might be to offer real-time feedback to people about the possible consequences for self-presentation of their posting behaviors. People are very concerned about controlling how they are seen on Facebook, and it might be that text processing methods could be used to prophylactically analyze posts to avoid posts that elicit controversy. Before committing to a post, participants could run the equivalent of a grammar checker which would determine whether their post is likely to be perceived as ‘needy’, ‘drama-inducing’, or to precipitate furious debate. Such analytics are quite plausible given the data under Facebook’s control, although they do contradict the current business model which seems to be to promote maximal interaction. Nevertheless, an argument could be made that those who suffer from too much drama are likely to leave the application and not return.

3.5 Conclusion

Two studies show novel findings documenting large, reliable personality differences in offline and online personality, and between social media platforms. On Facebook people perceive their personality as less Neurotic and Open, which seems to arise from a desire to avoid controversy. Snapchat, while also less Neurotic is used in an Open hypersocial manner, with

some seeing themselves as more Extravert than offline. These differences seem to arise from affordances of audience and ephemerality.

This project prompted further research questions. First, other platforms may have different patterns of self-presentation. Second, it is challenging to disentangle audience effects from affordance effects. That is, can we attribute the different patterns of self-presentation on Facebook and Snapchat to the audience, technical affordances, or both? The next project addresses these questions by investigating different account types on Instagram.

4 Are There Self-Presentational Differences for Different Types of Instagram Accounts?

4.1 Project Summary

The first project results could arise for multiple reasons, as they could be due to audience or affordance effects. Facebook and Snapchat differ in both of those dimensions. For example, connections on Facebook tend to be a larger group of less close people with the profile owner. In addition, posts stay on record unless intentionally deleted. An affordance-based argument would state that differences in self-presentation are primarily due to the technical affordances of the medium. In contrast, Snapchat tends to be to a smaller group, closer to the profile owner, while posts disappear by default unless intentionally saved. Both of these examples point to potential affordance and audience explanations for the differences between these media. To contrast these different explanations, I focused on Instagram as this social media platform allows for multiple accounts. This allows us to focus on differences within platforms instead of between platforms. The two types of accounts of interest to this article are called Rinsta ("real" Instagram), where people perform standard idealized self-presentation. The other type of account, Finsta ("fake" Instagram), is where people perform a more authentic, relaxed, contentious self-presentation. I looked at Instagram specifically because there are no policies against having multiple accounts, unlike on Facebook.

Personality is an intuitive psychological construct allowing us to understand others' behaviors. It assumes a relatively stable core, a "self", with generally consistent thoughts, feelings, social attitudes, and behaviors. Personality helps explain individual differences in people's expectations, self-perceptions, personal values, attitudes, and reactions to others. This work

examines whether and why personality differs between different accounts on the same social medium, Instagram, exploring the authenticity and social desirability of those different self-presentations.

Social media sites are common in people's daily lives [177,178], making them an excellent place to examine self-presentation and personality [120]. Social media platforms are distinct from, rather than a replacement for, more traditional forums for self-presentation (face to face, phone). A social medium's platform affordances potentially allow different types of self-presentation [50,74,211]. This is consistent with theories emphasizing performative self-presentation [85,107], where the self is situationally negotiated through different contexts and interactions with an audience.

Consistent with this situational view of the self, specific social media affordances like profiles allow people to control their online self-presentation [50,63,231]. For example, users can strategically curate their image by posting flattering personal photos [218]. Different social media also have different technological affordances [50,63,74] as argued by computer-mediated communication theory. For example, platforms like Facebook and LinkedIn allow for a detailed profile, while Twitter does not. Social media also allow users time to communicate in a deliberative way, crafting posts and responses as required [231]. Nevertheless, the results of self-presentation in social media are complex and difficult to predict; users are often unclear about exactly who reads their posts [20,34,144], which can lead to context collapse, where information can leak into unintended contexts [150]. Moreover, many social media allow contacts to comment on and quote one's posts, reducing personal control over self-presentation [50]. These perceptions also differ by technological affordances, e.g., Snapchat content disappears after viewing, which influences what people are willing to post [15,114,154,182,211,225]. Overall, results suggest that people present themselves rather differently across different social media [50,74,211].

Affordance explanations argue that differences in self-presentation arise when people exploit the technical affordances offered by different media [50,74,211]. For example, [211] found audience control to be important when comparing across multiple platforms. However, some people also have multiple accounts on one social medium, e.g., Instagram, and previous work hints that these accounts serve different functions [4,70,120]. This makes Instagram an excellent context to examine within-platform differences.

This work, therefore, examines whether there is within platform self-consistency. We ask: are self-presentations between different accounts consistent on the same platform, and if not, why do such differences arise? We address an important theoretical question; given that affordances are stable within the same medium, we might expect people to present themselves consistently.

A closely related issue concerns authenticity and whether people present themselves accurately on social media. Authenticity is important to resolve, as projecting a more inauthentic online self reduces social connections and decreases well-being [93]. Some work suggests that online profiles are authentic [9,89], and there are many demonstrations that, in specific contexts, e.g., online support, people will honestly disclose negative information about themselves [4,70,145,232]. However, many others have argued that outside online support settings, the social context of platforms like Facebook induces social desirability, trolling and deliberately obnoxious political behaviors notwithstanding. This results in a bias to post overly positive content [39,113,155,220,231,233,241]. For example, social media lead people to emphasize socially desirable personality traits (Agreeableness, Extraversion) while downplaying negative traits (Neuroticism) [211]. The weight of evidence, therefore, suggests that outside support settings, social media presentations are skewed towards the positive, tending to emphasize desirable characteristics.

We compare people's assessments of their offline personality for two distinct types of Instagram account. Instagram's technical affordances are similar to other permanent social media, e.g., Facebook, where users have a detailed profile posting to large networks of people, including strong and weak ties. We compare personality on people's main Instagram ("real Instagram," dubbed Rinsta by participants), with their "fake Instagram" (dubbed Finsta). Prior work suggests the Rinsta is a more polished 'vanilla' persona, whereas a Finsta, involves a more accurate self-presentation [120,180]. We compare self-presentations in these two accounts on the same platform with offline personality, exploring the differences we observe. Our Research Questions are:

- Given that users identify one account as "real" and another account as "fake", what personality differences do we see between these types of accounts?

- If accounts are different, what aspects of online platforms might explain within-media differences?

- How do users navigate authenticity between account types?

- What aspects of online platforms might encourage people to emphasize socially desirable traits and de-emphasize negative traits?

4.1.1 Contribution

Our work is the first to systematically document personality differences between different accounts on the same platform, findings which have important implications for affordance explanations. Contradicting social desirability bias, we find that Finsta accounts project negative self-aspects, including illegal behaviors, controversial opinions, and expressing negative emotions contrary to existing literature [233]. Within media differences seem to arise

from different goals between people's accounts concerning audience and self-presentation, leading to design and theory implications.

4.2 Related Work

We review personality theory, online versus offline self-presentation, and social desirability biases in social media. We summarize the impacts of authentic online self-presentation on well-being and affordance accounts of potential social medium differences.

4.2.1 Personality Theory

Personality theorists now generally agree on the "Big Five" personality trait factor taxonomy, known by the acronym OCEAN [46,55,115,204]. OCEAN consists of 5 dimensions: Openness to Experience: contrasting wide vs. narrow scope of interests; Conscientiousness: organization/punctuality vs. messiness/lateness; Extraversion: positive social interaction vs. preference for solitude; Agreeableness: altruistic/friendly vs. selfish/cold behavior; Neuroticism: anxiety/emotional volatility vs. stability. We can infer traits from observable behaviors [106,165], personal artifacts and physical spaces [88,90].

While trait theories assume stability, in contrast, situationist accounts of personality argue that social and environmental contexts elicit rather different behaviors in the same person [159,160]. McAdams [152] reconciles these different perspectives in a three-layer framework; actor, agent, and author, which is supported by empirical research [57,186]. The actor level captures trait and situational aspects of personality, the agent level concerns goals and future motivations, and the author level presents a life narrative that unifies the actions of the actor and the goals of the agent.

4.2.2 Identity Claims: Profiles and Personality

Much recent work addresses how people use digital media and tools like profiles to signal personal characteristics to others intentionally. People's Facebook and online dating profiles are actively crafted to signal personal characteristics [64], reflecting a desired personality [9], and this has been explained using Goffman's account of self-presentation [85].

Big Five personality traits also drive both social medium platform usage and self-presentation. These traits influence presentation strategy, such as posting behavior and reactions to other actors [112,193]. Higher-order personality constructs such as self-monitoring [144] and self-esteem [222] also influence online activities. People also present both different patterns of personality and different online activities that relate to media affordances [211,220]. Previous work has also found that people present different patterns of personality on different social media, with these patterns again being related to media affordances [211].

Prior work on online identities indicates that people can display multiple inconsistent identities, ranging from slightly misrepresenting their appearance in dating profiles [71], to completely fabricating an online identity [223]. Anonymity or pseudo-anonymity can allow for identity exploration, especially stigmatized identities [223]. Early CMC research indicates that anonymity can be freeing, but freedom from consequences can also induce negative behaviors [44,104]. However, modern social network sites are rather different from systems explored in those early studies. Most SNS are public and typically non-anonymous. SNS expect that people often interact offline with their online connections [27].

Despite opportunities to control online self-presentation, there are strong overlaps between offline and online self-presentations revealed in profiles [9]. One's online profile, such as the number of online friends, density of friendship networks, likes, or language used online, also

correlate with offline personality [112,133,174]. Offline personality also influences the amount and type of interaction within online profiles. For example, people with higher offline Openness are more willing to post personal information on Facebook [3], and those who are high on offline Extraversion use Facebook more often [89].

4.2.3 Authenticity and Well-Being

Another dimension to analyze differences between offline and online is through the topic of authenticity, and its relationship to well-being. One line of work in authenticity argues that social media can facilitate more authentic self-expression. On the one hand, media enable some individuals to overcome barriers of self-presentation online [187]. On the other, media allow those who express a more authentic self online to experience positive psychological outcomes [93]. People who present authentically on Facebook are more likely to post personally revealing and emotional content [193] and experience higher levels of positive and lower levels of negative affect [93,193].

While such research suggests benefits for presenting oneself authentically online, social desirability conflicts with this. Recent examinations of online social norms found a bias for presenting positive emotions, and this effect was stronger on Instagram than Facebook and Twitter [233]. This bias also has implications for those who read others' posts. For example, Facebook users assume that others on Facebook are happier, with better lives and more friends [39].

Users' self-presentations can be motivated by both authenticity and social desirability, depending on their specific goals. An analysis of Facebook showed that positive self-presentation was directly related to subjective well-being, while authentic self-presentation was indirectly related through perceived social support. In other words, if people are honest on

Facebook, their subjective well-being is based on how many friends respond. If they are not, then subjective well-being is based directly on their idealized self [128]. Authenticity also relates to the coherency of self-presentation; those who are less consistent offline tend to present a less authentic online self [156].

Motivational biases also influence how people seek out and interpret self-relevant information. These biases can serve to protect the existing or positive view of the self [209], and skew accuracy when assessing oneself [226]. These biases indicate that people will generally seek out positive information about themselves to preserve self-consistency. People also make efforts to self-present in ways that help maintain current self-perceptions and goals.

Much work on social media has focused on Facebook due to its ubiquity and ease of access. However, some studies implicitly assume that findings regarding Facebook reflect a generalized online or social media personality. This assumption led us to examine other social media to see what might differ and why. For example, other studies indicate how active use of Instagram influences authenticity and well-being. Intentionally presenting a false self on Instagram resulted in greater negative affect in response to imagined criticism, compared to those presenting a more authentic self [113]. Well-being on Instagram is nuanced, however, viewing positive Instagram posts can lower or heighten positive affect based on the viewer's frequency of self-comparison [229], although idealized images and frequent use of Instagram is linked to negative well-being for women [197]. Furthermore, image-based media (Instagram) users report less loneliness than text-based media (Twitter) users [181]. These results support a less monolithic view of social media use; implying that one's Facebook may be different from one's Instagram.

Overall, then, prior work suggests that while there are well-being benefits to being active and authentic online, there are also countervailing pressures of social comparison that may lead

people to control their online self-presentation. The current work contributes to this authenticity debate by exploring consistency between offline and different accounts on a single social medium.

4.2.4 Affordances

Affordances are used to account for behaviors on different social media [15,26,62,63,219]. Broadly, affordances describe how people perceive a social medium's features in terms of how they can interact with them [83]. Affordances are useful as they describe what users perceive to be possible, rather than capturing objective technical platform features [74].

Each social medium has distinct features that influence users' interactions with it. DeVito et al. [50] present a taxonomy of affordances for different social media. They identify three broad categories of affordances relating to self, other actors, and audience. The self describes aspects of presentation flexibility, content persistence, and identity persistence. Together these support the ability to present the self differently, how long content is accessible and editable, and the stability of presentation of self [231]. Other actors, or how other users can interact with the self, includes content association and feedback directness [26]. These aspects relate to how other people can link content (e.g., by tagging), and how direct feedback is. Finally, the audience is viewed through transparency, or awareness of who can view content, and visibility control, the ability to control who sees what [20,62,143]. The same framework also describes self-presentation as an interaction between the affordances of social media and individual differences. For example, users low on self-esteem examine audiences much more closely, while Neurotic users are more focused on content association by other actors [50].

DeVito's [50] participants characterized Instagram in a way that is relevant to the current study. Although other social media (Tumblr, LinkedIn, Facebook, Snapchat, and Twitter) were rated

as significantly high or low on multiple self-presentation affordances, Instagram was not. Is it that Instagram has no perceived self-presentation affordances? That seems unlikely, as Instagram is similar to Facebook in some ways. However, it differs regarding multiple accounts. In contrast to Instagram, Facebook strongly disincentivizes pseudonyms and multiple accounts in its terms of service, which impedes people from creating multiple account types. DeVito's findings may arise from conflating rather different styles of self-presentation across multiple Instagram accounts.

Overall, prior work identifies important theoretical and empirical questions about differences between online and offline personalities. It also suggests how a social medium's affordances potentially influence different online self-presentation and how this relates to questions of consistency, authenticity, and social desirability. Our work adds to this debate by conducting novel empirical work that directly compares online and offline personality across multiple accounts on a single platform, aiming to explain observed differences. Specifically, we use the framework of DeVito et al. [50] to analyze personality differences in terms of account and platform affordances. We examine how account differences directly influence people's Instagram self-presentation behaviors and personality presentation concerning: (a) users' ability to control self-generated content by creating profiles and carefully crafting posts, (b) reaching out for feedback from other actors and (c) users' understanding of their online audience.

4.3 Method

4.3.1 Participants

We recruited students from UCSC who participated for class credit. To be included, they had to have at least two Instagram accounts, a "real Instagram account" (aka Rinsta), and a "fake

Instagram” account (aka Finsta), as we wanted to contrast these. The final sample was 88 participants (65 women, 22 men, one preferred not to state), aged 18-35, (M=19.6, SD=2.06). Within our sample, there were: 38.6% Caucasian, 23.9% Asian, 21.6% Hispanic/Latino, 5.7% Mixed Race/Ethnicity, 3.4% Black/African American, 3.4% Native Hawaiian, Pacific Islander, and 3.4% who specified "other."

4.3.2 Procedure

Participants came into the lab and completed general demographic questions. We checked all participants had one Finsta, and one Rinsta. No participant had multiple “main” Instagram accounts. We next explored reasons for creating multiple accounts by asking participants about the main purpose of their secondary account. In the survey and interviews, we made it clear that we wanted to compare their behaviors in their Rinsta versus Finsta accounts.

Three phases followed. Participants first completed the regular 44 item BFI, which is a standard personality survey [116]. They then participated in two interviews about their Rinsta and Finsta behaviors, respectively. After each interview, they filled out a modified BFI corresponding to the interview topic. We counterbalanced the order of Rinsta and Finsta phases.

4.3.3 Materials

4.3.3.1 44 Item Big Five Inventory (BFI)

Participants completed the BFI three times. First, they rated their regular Offline personality by completing the standard BFI survey. The second and third times, we made a minor survey modification. Participants were asked to rate their personality as related to their specific role on their Rinsta or Finsta: “On my primary/main Instagram, I am someone who …” or “On my Finsta I am someone who…” respectively. We refer to these two surveys as indicating

participants' Rinsta and Finsta personalities. In each case, participants first completed the interview about their behaviors and then took the BFI survey.

4.3.4 Interview

The interview was semi-structured. Following [211], it aimed to understand whether and why participants thought that there were differences in personality and self-presentation between Rinsta, Finsta, and Offline. Participants were asked questions about their Rinsta and Finsta accounts that drew out similarities and differences, including: motives for creating different accounts, typical behaviors for each, their network of followers in each, how they used and managed the accounts, how they use each to communicate with people and what benefits they derived from each.

4.4 Results

We analyzed surveys using a MANOVA with Media (Offline, Rinsta, Finsta) as within-subjects, and Order (Rinsta first, Finsta first) as between-subjects variables. The 5 OCEAN personality traits were dependent variables. There was a strong main effect of Media: $F(10,76)=7.36$, $p<.001$, Wilks's Lambda=.51, partial $\eta 2$ =.49 and no main effect of Order: $F(10,158)=.70$,n.s.. There was also no significant interaction: Media x Order: $F(20,152)=.63$,n.s..

To analyze each trait across media directly, we conducted five univariate ANOVAs: each with three levels for media (Offline, Rinsta, Finsta) where media is a within-subjects variable, and the dependent variable was the OCEAN trait. See the main trait effects in Table 1. We see that some traits, particularly Extraversion and Neuroticism, have large effect sizes (as measured by $\eta 2$), suggesting that there are important differences between accounts.

Trait	df	*F*	*Partial* η^2	*p*
Openness	1,87	.257	.003	>.05
Conscientiousness	***1,87***	***14.87***	***.15***	***<.001***
Extraversion	***1,87***	***23.45***	***.22***	***<.001***
Agreeableness	***1,87***	***6.04***	***.07***	***<.05***
Neuroticism	***1,87***	***39.01***	***.32***	***<.001***

Table 1. OCEAN ANOVA. Conscientiousness, Extraversion, Agreeableness, and Neuroticism traits differ across different accounts. N = 88.

To further probe specific differences between Offline, Rinsta, and Finsta traits, we conducted Bonferroni corrected post hoc comparisons for each trait that was significant in the ANOVA. See Table 2 for post hoc comparisons. Despite Rinsta and Finsta accounts having exactly the same technical affordances, personality was very different in each.

Media	M1	M2	*LL*	*UL*	*d*
Conscientiousness					
Offline - Rinsta	3.39	3.51	-.28	.05	.18
Offline - Finsta	3.39	**3.03*****	.18	.55	.51
Rinsta - Finsta	3.51	**3.03*****	.30	.66	.68
Extraversion					
Offline - Rinsta	3.32	**3.58***	-.49	-.025	.29
Offline - Finsta	3.32	**3.98*****	-.87	-.43	.77
Rinsta - Finsta	3.58	**3.98*****	-.63	-.16	.43
Agreeableness					
Offline - Rinsta	3.89	3.94	-.19	.09	.09
Offline - Finsta	3.89	**3.67***	.035	.417	.31
Rinsta - Finsta	3.94	**3.67****	.07	.48	.35
Neuroticism					
Offline - Rinsta	3.21	**2.36*****	.62	1.086	.95
Offline - Finsta	3.21	3.21	-.21	.21	.00
Rinsta - Finsta	2.36	**3.21*****	-1.14	-.56	.76

Table 2. Pairwise post-hoc comparisons for Conscientiousness, Extraversion, Agreeableness, Neuroticism for Offline, Rinsta, and Finsta personality traits. *** = p < .001, ** = p < .01, * = p< .05. df = 87. Upper Limit (UL), Lower Limit (LL) model mean differences with Bonferroni adjustment for multiple comparisons and 95% CI. Rightmost column d shows effect sizes. There were no differences for Openness.

This analysis allows us to understand better where Media differences arise. Overall, Finsta seemed very different from Rinsta and Offline. For Conscientiousness, Finsta was significantly lower than both Offline and Rinsta. For Extraversion, Finsta was significantly higher than Rinsta, which was significantly higher than Offline. For Agreeableness, Finsta was significantly lower than Offline and Rinsta. Finally, for Neuroticism, Rinsta was significantly lower than Offline and Finsta. We saw quite large effects sizes overall, and a surprising similarity in Neuroticism between Offline and Finsta. This Neuroticism result contradicts previous research where Neuroticism is generally found to be lower for social media [211]. Furthermore, given general social desirability biases on social media, we were surprised to see that people were less Conscientious and Agreeable on Finsta than Offline. We now analyze interviews that suggest possible explanations for these results.

4.4.1 Interview Analysis

We first analyze primary motivations for creating a Finsta. Participants specified their reasons by selecting fixed options from a list and adding a free-write description. These responses fell into two broad categories: Managing Audience (51 instances) and Self-Expression (34 instances). Managing Audience included reasons like: “I want a different circle of followers on my Finsta” and “I want my Finsta to be more intimate”. Self-expression included reasons like “My Finsta is for memes/humor”, “I use my Finsta for venting”. Self-Expression was often Emotional (24 instances) and otherwise Aesthetic (10 instances).

We analyzed 75 interviews to examine people’s explanations of their behaviors on their different accounts and offline. Three coders, familiar with the hypotheses, used bottom-up coding to identify themes [29]. They discussed examples and reached agreement following inconsistency. These codes were subsequently related to DeVito et al.’s theoretical affordance categories of Self, and Audience [50]. We did not code any themes related to Other Actors, as

we did not see major differences between the accounts. The category of Self contains affordances of identity persistence, presentation flexibility, and content persistence. The category of Audience contains affordances of audience transparency and visibility control.

4.4.1.1 Self

Many interview comments related to DeVito's concept of control over self-presentation. The category of Self contains identity persistence, how long a presented identity remains, presentation flexibility, the ability of the media to present different kinds of selves, and content persistence or how long content stays on the media. This Self category was related to our coded categories of Authentic/Ideal Self, Post Control, Letting Loose, and Venting.

Authentic/Curated Self

241 comments from 55 participants related to the theme of authenticity. We coded comments with the theme of Authentic/Curated if participants mentioned 'being themselves' versus knowingly presenting a constructed self. In the Rinsta interviews, we noted 138 Curated and 35 Authentic comments. In the Finsta interviews, we see the reverse pattern; 6 Curated and 62 Authentic comments. The theme naturally relates to DeVito's concept of presentation flexibility as participants contrast an idealized, curated Rinsta self, with their authentic Finsta and offline selves [50].

Previous work suggests people are very careful about how they present themselves on social media [4,20,211]. This self-editing manifested itself most frequently on Rinsta, where participants were careful to censor self-presentations. For the following user, this involved presenting a 'wholesome' self to avoid controversy.

“Well, my thing has always been, I am strict about what I post because my parents are both in positions where they hire people in their jobs and go through their social media, so they are always telling me don’t post anything that you wouldn’t want your boss to see one day. That is why my Instagram page is very wholesome.” (P76)

However, this studious self-editing was not true of Finstas.

“On my Finsta… I’d say I’m the real me that I am in real life, I think my [Rinsta] account is more like… I don’t wanna say shallow, but like its not really like who I am. Like I don’t say everything I’m thinking. It’s still me but I can be more me on my Finsta.” (P33)

For this participant, their Finsta is their ‘real’ self, in contrast to the self they present on their Rinsta. Furthermore, in contrast to much other work [39,62,93,98,120,232], this authentic Finsta self has undesirable negative characteristics not found Offline or on Rinsta. Participants are aware of the discrepancy between their Rinsta and Finsta, using it to their advantage. The following participant describes slanting their Rinsta posts to emphasize a positive self.

“I feel like on [Rinsta] you’re gonna post something happy. You’re not gonna post a picture of you not having a good day or the bad moments. You’re most likely gonna post good memories or fun times that you’ve had or whatever you want, but in that it can represent a false image of who you are because people can’t see all sides of a person through their social media” (P36).

Participants are actively seeking to project a positively skewed self on their Rinsta, by depicting ‘good memories’ or ‘fun times’ and avoiding posts about ‘bad moments’. This is much like presenting a sanitized version of oneself to an offline acquaintance. However, in direct contrast, people characterized their Finstas as places to actively and deliberately express their negative side, breaching the social desirability bias that is common on social media. For the following participant, Finsta allows them to express a more authentic negative side.

“On Finsta it’s like here’s a photo of me crying or something and this is why... like this is how shitty my day went … Or like when my friends are homesick or got into a fight with their significant other… but like no one’s gonna post that on their [Rinsta] account… but if you’re ever wondering why someone disappears you could find out on [their Finsta]” (P53).

This authentic self is related to sensitive self-disclosure [4], yet also distinct. Prior work shows how people use social media or other online sites to share problematic conditions e.g. mental health that they would like to discuss or potentially address [70,145,232]. In contrast, our Finsta participants are not usually seeking help or information. Instead, they are presenting a more authentic persona with fewer positive aspects, expecting that their audience will accept these. The following participant characterizes this distinction. They state that their Finsta is a place to reveal sensitive things that they would categorically not share on their main account, while also laughing about this violation of typical social media norms:

“Like on [Rinsta], as does everyone, it is a little more polished, while on Finsta, it’s like ‘I’m crying in the library right now, I just want to let you all know!’[laughs]” (P87)

Our participants’ Finstas reveal a more authentic ‘warts and all’ presentation that is very different from their more controlled, positive Rinsta self. Another participant clearly describes the distinct codes of conduct across accounts:

“[Rinsta] feels like, a day at the office and the office has its own manners of how you have to act and talk and speak versus when you get home or go out to the bar afterwards with friends and you can kind of loosen your tie and like, relax. That’s the feeling. My main page is literally a business page and my Finsta is a party” (P7).

As summed up by P7, social context is critical when presenting oneself. These efforts to present an idealized self-image on Rinsta contrast with people’s Offline experiences. It is

challenging to control self-presentation in everyday face-to-face contexts, as it is hard to check and edit what one says and does in real-time. Offline, others can see non-verbal reactions, making it difficult to anticipate how others will interpret one's comments. However, on Finsta, people can deliberately choose to violate those self-presentation norms.

"it depends how close we are because some friends it's the same on the internet and in real life because we can say- we can comment 'Oh, you are ugly!' but in real life we are the same while other people will get all offended by that" (P70).

How then might these observations about Offline and online authenticity explain our personality findings? We observed that participants present a more polished self on Rinsta, but express a more genuine, but coarser side on Finsta. People are strategically authentic on Finsta, whereas it is harder to be inauthentic Offline. In contrast, people actively curate their Rinsta. This pattern of expression may explain why Rinsta shows reduced Neuroticism compared with Finsta and Offline. Next, we looked at other types of curation, where participants took great pains to block any non-ideal affective self-presentation on their Rinsta.

Blocking Emotional Content

A related but distinct theme concerned the care participants took with the emotional content of their Rinstas. We called this theme Blocking Emotional Content, relating to tight control of one's self-presentation and "aesthetic", to prevent emotional content from appearing in their Rinsta posts. This code appeared less frequently (58 instances from 34 participants, 52 found in Rinsta interviews and 6 in Finsta interviews) compared to others. This theme again relates to the Self, specifically elements of content persistence and identity persistence. By manipulating how and what content stays on their page, participants can manipulate their Rinsta self-presentation.

“For my [Rinsta], the captions I post are important. Yeah you can post a picture but what are you saying about it, what's the tagline? A lot of times, it's a song lyric even on my art. I'll post a song lyric or something shorthand, something nonchalant. I feel like if a caption is too long, even on my main, it comes off looking desperate - like, "please like me!" or "I really care!" Like I do, but I don't want people to know that I care. On my Finsta, that goes out the window” (P7).

This participant spent a great deal of time massaging ratios of likes and comments, trying to balance these, while quickly cutting content that did not meet their standards. Other participants focused less on editing, but were reflective and analytic about exactly what they posted on Rinsta. In contrast, their Finsta is much less controlled:

“With my [Finsta] it’s like I don’t care I’m just gonna post whatever I want … if I wanna post the same artist like three times a day, I’m gonna do it but [on Rinsta] I like … think about it like ‘do I really want to post that many pictures a day of just one artist’… I think twice what I’m gonna post on my [Rinsta]” (P18).

Again, there are contrasts between Rinsta and Offline, where it is harder to control emotional leakage. Once said, Offline comments are hard to retract, and Offline contexts do not allow one to peruse past conversations to set a tone or engineer the overall tenor of one’s statements. These restrictions are much less stringent online.

“[…] through social media as opposed to in real life you are given more time to think about things, be wittier/funnier, I maybe do that in a way that I express myself, I take more time to think of something funny to say” (P87).

This desire to avoid potential emotional leaks into their posts leads to people carefully edit what they post on Rinsta. Such suppression of affective content may induce significantly lower reported Neuroticism on Rinsta compared with Finsta and Offline; people invest efforts to

portray a positive, emotion-free Rinsta self. However, the polished Rinsta self is harder to achieve Offline, while one of the main goals of Finstas is to promote emotional self-expression. For example, our participants also often described both Letting Loose on their Finsta documenting taboo behaviors, as well as Venting, a form of emotional release. The presence of a trusted Finsta audience seems to promote these behaviors.

Letting Loose

This category refers to occasions when people describe behaviors or offer socially taboo opinions. They might, for example, discuss illicit activities or portray themselves as careless, spontaneous, or otherwise unconcerned with social norms. We coded 111 statements from 52 participants with this theme, which exclusively referred to Finsta activities. Letting Loose seemed to be related to Self, specifically presentation flexibility. Again, participants seem to exploit the media to present very different sides of themselves. Unlike their law-abiding Rinsta selves, Finsta participants often post about taboo behaviors like illicit marijuana smoking or underage drinking.

“Yeah! Let me pull up my Finsta and give you an example. Ummmm, ok, one of my posts is there's a video of me outside of my house on the patio, smoking a joint, watching friends through the window, saying, ‘this is one of the more genius ideas that I've had’. But it's not something I would want the entire world to know about” (P11).

In addition to taboo behaviors, other participants revealed controversial opinions. Again, these were unanimously associated with Finsta:

“I went to a Catholic school, there’s this thing that somebody else posted on their Finsta, a video of me in mass, you’re supposed to say ‘Amen’, but I would say ‘Hail Satan’” (P78).

These examples again show a key difference between Finsta and other social media [120]. We do not see a carefully edited, idealized, upstanding self, expressing uncontroversial opinions [180]. Instead, on their Finstas, people go out of their way to display conventionally undesirable behaviors. This studied carelessness and courting of controversy we believe contributes to the lower Conscientiousness demonstrated in Finsta compared with Rinsta and Offline. As with Authentic/Curated self, Offline is a mixture of different social contexts. On Finsta, the social context is to let loose.

Letting Loose differs from Venting, which we now discuss. The taboo activities that characterize Letting Loose are not portrayed as negative by participants. Venting, on the other hand, explicitly concerns being able to talk freely in a negative way about things that bother participants.

Venting

Participants also used Finsta to explicitly express negative emotions. Comments were coded as venting when they specifically mention: complaining, sounding off, expressing irritability, bitching, petulance, crankiness, or other negative emotions. These were observed frequently, with 98 instances over 41 participants. Venting comments were exclusively associated with Finstas. Venting was related to the Self category [50] and was again only possible because of identity flexibility.

“I use my Finsta mostly to vent … if I need to sort something out … I don’t care about punctuation or periods or grammar or anything and then I send it out so it’s kind of a release of what I’ve been feeling “(P38).

Again, there is no attempt to self-edit, with Finstas directly expressing quite negative emotions compared with Rinsta and Offline.

“I use it mainly for ranting— when I feel annoyed. That is my main purpose because a lot of other times I can’t relieve my stress or anger or sadness because I don’t like showing a face where I curse a lot, but sometimes I really want to. That's an important part of my Finsta, to let go and not have repercussions” (P83).

Having a space to vent allows people to show something closer to their actual feelings when stressed, and to let off steam when upset or annoyed. They can do this because they do not fear ‘repercussions’ from their audience of intimates.

Again we see an interesting contrast with Offline. Despite such negative comments being deliberate and on-record, the Finsta setting makes them acceptable. A Finsta audience is generally trusted and, therefore, likely to be accepting and sympathetic. As venting is delivered online, readers can choose whether or not to acknowledge it. The situation is more fraught Offline than online. Offline, a vent may be delivered at an ill-chosen time or to an ill-judged unresponsive audience, or that audience may feel compelled to respond sympathetically.

Participants enjoyed the relief of a place where they can directly vent about life's little or big annoyances. These expressions of negative emotions may account for the significantly lower Agreeableness and significantly higher (compared to Rinsta) Neuroticism seen in the Finsta ratings. In contrast to Offline interactions, these posts are permanent and on-record. Nevertheless, the sympathetic context of Finsta means that participants are still comfortable with leaving venting visible for others to see.

Why then do we see self-presentation differences in authenticity and emotional expression between Rinsta and Finsta accounts? To examine potential reasons, we next explore themes related to Audience. It seems that the different Audiences that participants choose on Rinsta versus Finsta help shape these distinct behaviors.

4.4.1.2 Audience

Multiple comments related to the Audience category. Following [50], this category includes both audience transparency, i.e., user knowledge of who is viewing their posts, and visibility control, user control over who can see their posts. Participants frequently discussed this theme, yet in different ways for Rinsta, Finsta, and Offline.

Audience Members and Intimacy

55 participants made a very large number (184) of Audience related comments. The perceived Audience was very different for Rinsta versus Finsta accounts. We noted 158 comments about smaller intimate audiences on Finsta and 26 comments about larger unknown audiences on Rinsta. Participants were clear they generally had larger groups of people on their Rinstas compared with their Finstas. This larger audience is also more heterogeneous, confirming general observations that social media are susceptible to context collapse where people from multiple aspects of one's life appear in a single setting:

"So with my [Rinsta] it's more like diverse I have my really really close friends, I have my close friends, friends, acquaintances, family members too, yeah its more of open for everyone that wants to follow me" (P28).

However, because one's Rinsta is so open, participants noted that they were 'not that close' to this large audience, or even aware of exactly who comprised it:

"Honestly, [I'm] not really that close to the majority of them. Most of my close friends have [Rinstas] and follow me but the rest are people that I knew in high school or in some point of my life - or people who know people that I know, that type of thing. But I'm not really close to most of them" (P34).

Quantitative data confirm these impressions; we asked participants to report the number of people following their Rinsta and Finsta profiles, with significantly higher numbers ($t(87)= 4.14$, $p<.001$) of followers on Rinsta ($M=1001$, $SD=2284.6$) than Finsta ($M=166.47$, $SD=606.9$). In other words, Rinstas had six times more followers on average.

What then is the consequence of interacting with a small set of Finsta intimates versus a larger, more heterogeneous Rinsta audience? Our participants felt freer to express themselves with this tight-knit group of intimates on Finsta:

“Because I think when you are being vulnerable like that in front of a larger audience, I’d be putting myself at risk for people to— well, with my friends I know that I trust them, I know I trust their opinions and feedback….” (P65).

The trust and intimacy we observed on Finsta contrast with the judgmental nature of Rinsta.

“Because a lot of people are judgmental. […] If I were to post the content from my Finsta to my [Rinsta], people that don't know me like that would think "Oh, he's weird." I don't wanna deal with that” (P58).

Participants were also aware that employers and other authority figures can and will access public accounts. This awareness motivated participants to create a separate Finsta.

“I think it's just the way that [Rinsta] is and that's how everyone does it and especially if your account is public you have to think about who is looking at your account that you don't know. Like employers or other people like adults and your family members so you have to put on your best self out into the world the way that you want people to perceive you, I guess as long as you know that other people that you don't know are looking at it- best foot forward” (P54).

This last participant is very clear that Rinstas are the place to put their ‘best foot forward’ for employers and adults, reserving their Finsta for more private feelings. Other participants see audience selection on Finsta as a way to reassert control over this social medium.

“Social media in a lot of ways, even when it's private, don’t feel that private anymore. So, a lot of people feel that if you are in a public eye, people have a right to see what you're doing. I personally like that I get to decide who I share my content with. That is what I like about Finsta” (P66).

Again, we see overall differences with Offline where there is even less opportunity to control one’s Audience than Rinsta. Offline participants can sometimes actively select an intimate Audience, e.g., choosing to spend time with friends and family. However, they often spend time Offline in situations with less Audience control. For example, they have limited control over who makes up their work team or their classmates, and far less control over unplanned social encounters, e.g., who they meet while shopping. When they lack audience control, they struggle to manage self-presentation.

“I think those people that follow me on my [Rinsta] I don't have that same connection in real life so I wouldn't want to say anything that I wouldn't in real life, on both accounts. I wouldn’t be super vulnerable with people I just met, but I would be with my close friends” (P65).

Having a familiar, intimate, non-judgmental Finsta audience encourages self-expression, which we believe explains the greater Extraversion scores on Finsta than Rinsta. However, the social desirability bias of online pushes people to exhibit positive, social selves on Rinsta, which explains the greater Extraversion scores for Rinsta over Offline. At another level, using different Rinsta and Finsta accounts can finesse context collapse. By restricting their Finsta audience, participants control self-presentation, avoiding accidentally posting inappropriate content to the wrong people.

4.5 Discussion

Our study is the first to directly compare personality traits between different accounts on the same social medium, also contrasting these with offline traits. We found strong effect sizes mediated by different perceived affordances of self-presentation and audience. Participants present a more authentic negative self on Finsta, contrasting this with a more curated Rinsta self, with some going further to block emotional content on Rinsta. However, although participants characterized Finsta as more authentic and Rinsta as more curated, this was not exclusively the case. We noted instances of the reverse appearing in the Authentic/Curated themes, indicating that the perceived authenticity of the two accounts resides on a continuum. Furthermore, our results do not support the view that one account is the 'real' self-presentation, nor that we have the ability to determine a 'true' authentic self. Instead, our results are based on how participants characterized their self-presentation.

These self-presentation choices seem to account for the personality differences in Neuroticism seen between Finsta, Rinsta, and Offline. A small, intimate Finsta audience engenders greater Extraversion than both Rinsta and Offline. The same non-judgmental Finsta audience also encourages participants to let loose with taboo, controversial pictures and opinions and vent for cathartic release, which helps explain the lower Conscientiousness and Agreeableness on Finsta compared to Rinsta and Offline.

These within-media differences have significant implications for both media and personality theory. On Rinsta, people exploit technological affordances to communicate in a deliberative way, carefully presenting an inoffensive self. This presentation confirms prior work showing that social media are often actively curated to show a positive self-image [113,155,220,231,233,241]. In contrast to that work, however, we also saw the same social medium being used to reveal a more authentic but negative Finsta self. Past research

examined people navigating multiple identities in an anonymous world, but the current social media context comparing Rinsta and Finsta is a new iteration. Participants are not strictly anonymous with their Finstas; rather, they control who has access to it. While people felt comfortable sharing silly or goofy moments on their Finsta, it is also a place for ranting, venting, and posting their wild side. Interviews indicate that these differences arise because participants are addressing different audiences. A small group of Finsta intimates encourages more authentic and sometimes deliberately negative self-presentation. This supports results from previous research [211] looking at between-media differences in self-presentation, further supporting general research [85] that managing the concerns of different audiences is a persistent issue in self-presentation on social media.

These within-media differences present interesting challenges for affordances, as the technical affordances of each Instagram account were identical. The only differences were the social norms associated with each account type. Much prior work argues against technological determinism, showing that users appropriate media to achieve specific social goals [7,11,166]. In this work, perceived social norms around the different accounts could help explain our results. In the same way, affordance explanations should consider social norms as important influences on behavior. For example, such norms may explain why media such as SnapChat are not used for venting, although its transience would seem to make it ideal for expressing negativity off-record. Extending social affordances to characterize within-media behaviors may also explain puzzling findings from prior studies. DeVito found no significant perceived affordances for Instagram [50]. However, their results could be explained by a confound; their Instagram participants may have had multiple accounts and rated their overall Instagram experience, eliminating differences. Even perceived affordances may not be able to capture how people view social media if they have multiple ways to view those media.

Our findings also address online authenticity. There is a consensus that social media generally emphasize positive and, therefore, somewhat inauthentic self-presentations [113,220,231,233,241]. These findings are accompanied by concerns that inauthentically presenting oneself has negative implications for well-being [93,187]. Our Finsta results speak to these issues in two important ways. First, we saw that social media do not always present a positive self, with Finstas being deliberately used to express undesirable behaviors. Although negative, however, this Finsta self is often authentic. Overall, then, people may be counteracting their desire to appear positive in more anonymous contexts while showing more authentic selves in less judgmental settings. This discrepancy has implications for media theory, which often considers people's online behaviors by examining media in isolation. Theories need to consider both within and cross-media behaviors. By simultaneously analyzing multiple accounts we draw rather different conclusions about self-presentation. One analytic approach could be to look at how people create an 'ecology of selves' for their overall social media narrative. We need to move beyond one social medium representing one's entire online presence. More radically, future theory should also question whether offline behaviors represent a person's authentic 'true' self.

Results are informed by psychology theories [152]. Much of our discussion involves the trait and situation aspects of personality, McAdams' actor layer. By considering the goals motivating people's use of affordances and social media, we may better explain personality differences appearing in the same medium. The goals of Rinsta and Finsta accounts are vastly different, and participants were very aware of this.

Different goals may help explain how participants deal with a well-documented aspect of social media behavior, namely context collapse, where a lack of clarity about one's online audience leads to accidentally posting inappropriate content to the wrong people. Our results show how using different accounts finessed context collapse by strategically partitioning one's audience.

Because people knew very different audiences were viewing content, they could use Finsta for relatively authentic negative content, while reserving Rinsta for general, inoffensive curated posts. Future affordance research could look to include a perceived goal and/or social norm dimension to explain differences in account types, especially for media with high presentation flexibility like Twitter [50].

Our study also potentially addresses mental health. Our participants disclosed sensitive and controversial matters in a mainstream social medium to their close friends. Previous research indicates that people use specific mental health communities to share personal information anonymously, but these tend to be targeted inquiries or specific help requests [232]. Our participants instead vented without soliciting direct responses or even knowing someone would read their post. Furthermore, while previous research shows that some people document their everyday mental health on Instagram [70], our participants were not doing this. Rather, Finsta represents a safe space to vent about a hard day to supportive and trusted friends.

4.5.1 Design Implications

One obvious design observation follows from the fact that people manage multiple different ‘selves’ across a platform. One technical possibility might be to encourage participants to explicitly construct personas to remind themselves about how they appear on different media or accounts. Text processing or machine learning [134,174] might help maintain personas by identifying typical posts or representative topics broached in each account. Other approaches might offer real-time feedback about the possible consequences for self-presentation for specific posts, potentially addressing context collapse. People are concerned about controlling how they appear on Rinsta, and it might be that text processing could prophylactically analyze posts to minimize controversy or reduce anxiety about inappropriate Rinsta posts. Before posting, participants could run the equivalent of a grammar checker to determine whether their

post might be perceived as venting, inappropriate, or simply inconsistent with previous posts. There is a strong motivation for social media providers to provide such services; those who suffer difficulties in self-presentation are likely to leave the application and not return.

4.5.2 Limitations

Our participants were all young adult students attending a West coast university. While our sample generally fits Instagram's demographics [177,178], users of different ages or different socio-economic backgrounds could reveal rather different patterns of use. Furthermore, the young adults we studied could experience unique challenges in self-presentation. As they transition into adulthood, often moving away to college, they begin to encounter a demand to manage self-presentation to discrepant groups of friends, parents, and professional contacts. This demand could be a driving factor in the adoption of Rinsta/Finsta use. Our study also assesses participants' self-perceptions, and future work could look at how others perceive media behaviors.

4.6 Conclusion

We find large, reliable personality differences between different profiles on Instagram and Offline. On Rinsta, people perceive their personality as less Neurotic and Extraverted, presenting a positively curated version of themselves. On Finsta, people see their personality as more Extraverted and Neurotic, but less Agreeable and Conscientious, as a result of presenting a more authentic yet also negative and taboo self. These differences seem to arise from differences in audience, allowing for vastly different self-presentations. Results have important implications for the theory and design of social media.

4.7 Open Questions

This work examined what happens when technical affordances are held constant but the audience changes. This leaves open questions about how changes to the overall context of use affect self-presentation. We decided, having interviewed students about their use of video in 2018, to see how a large scale event like a pandemic may have shifted the context of video use for students, and if different users such as office workers had similar patterns of self-presentation. This addresses differences on social/communicative media in the overall context as well as social norms at different times.

5 Are There Self-Presentation Differences on Video Before and During the Pandemic for Different Groups of Users?

5.1 Project Summary

This research project arose during the COVID-19 pandemic. I had previously gathered data from college students in 2018, looking at how they present themselves over video calls and texting and comparing this with their offline self-presentations. However, once the pandemic started and social norms around face-to-face interaction, video calls, and texting underwent a sudden, massive shift, I repeated this study with college students and professional office workers. Since social distancing was in place, it reduced face-to-face interactions with others to those one is living with. Instead, video calls became the norm for many work interactions. I wanted to understand any differences between 1) college students pre/during COVID-19 and 2) between college students and working professionals during COVID-19. This natural experiment allowed me to hold technical affordances relatively constant while observing the effects of changed use contexts. In addition, I was able to capture changes in social norms around using video calls and texting. Again I assess these changes using personality surveys combined with qualitative probes.

5.2 Introduction

The COVID pandemic and social distancing have induced radical disruptions to work and learning practices. Working from home (WFH) has reduced offline interactions while increasing digital communications, especially video. Pre-COVID, work teams often combined digital communications with various offline interactions, including formal meetings, water-cooler conversations, and impromptu chats [105,135,163,164,169]. In educational settings, Pre-COVID learning often took place in physical classrooms and small group settings that promoted informal offline interactions [49,175,179]. During COVID, people attempt to replace these heterogeneous forms of offline communication by combining videoconferencing with other digital tools. These changes have promoted speculation about the impacts of this transformed media usage, specifically whether WFH has blurred boundaries between home and work roles. The current study examines how these changes affect people's self-presentations in video and offline communications.

The shift to digital interaction has led many recent popular media articles to speculate about the difficulties of WFH [47,207,234]. These articles identify potential issues surrounding "context collapse" [150], as WFH makes it challenging to maintain clear separations between home and work personas. Context collapse was first observed in social media settings, where a mixture of audiences and contexts means that posters can lose sight of their intended audience, leading them to post inappropriate material [22,140]. These challenges of retaining distinct boundaries across settings are exacerbated by the pandemic. People are now forced to appropriate domestic spaces for work while negotiating childcare and dress code, all of which potentially compromise their professional persona. The widespread use of video in home settings means people also have to deal with unexpected intrusions from pets, children, and other household members. WFH also means that video is now being deployed in multiple, potentially confusable, ways. Other articles note additional challenges with video

communication, documenting “Zoom fatigue” [73], resulting from incessant video meetings, as well as distractions arising from constantly seeing one’s image while talking [10].

This work explores the challenges of WFH by examining video versus offline self-presentations before and during COVID, for students and office workers. We evaluate changes in students’ self-presentation as WFH radically reconfigures interpersonal communications by increasing their reliance on video for formal instruction. WFH students experience video in large impersonal groups through Zoom classes, contrasting with the small intimate online audiences they videoed with pre-COVID. We also examine how self-presentation is influenced by job type by comparing students with office workers working from home during the pandemic. In contrast to students, office workers have greater pre-COVID experience using video in professional settings. However, WFH means that workers now experience video more extensively and for new functions such as work check-ins. For both groups, pandemic social distancing now restricts offline communications to familiar audiences, primarily involving family or housemates.

Following prior work [211,212], we assess self-presentation differences between video and offline communications using a mixed-method approach that combines standardized personality surveys and qualitative probes. We use personality surveys to quantify self-presentation and systematically assess how people present themselves offline compared to using video programs such as Skype, Facetime, and Zoom. Personality is an intuitive psychological construct that allows us to interpret others' behaviors and understand how we present ourselves [115,204]. We combine personality surveys with follow-up probes that explore exactly how media use affects self-presentation.

Research Questions: We explore the following questions:

Media differences: Do people present themselves differently when interacting offline versus using video, and if so, how can we explain these differences?

Effects of WFH: Are self-presentations affected by WFH, and what strategies do people use to navigate potential context collapse?

Occupational differences: Are there differences between office workers and students in their media self-presentation when WFH?

We hypothesize the following effects of WFH. We expect that radical reconfigurations in media use will elicit challenges in video self-presentation. Prior work suggests that people tend to present themselves more positively over digital media [39,113,155,220,231,233,241]. Furthermore, pre-COVID students mainly use video to interact with intimates such as friends and family. We therefore anticipate that pre-COVID students will project an affirmative self-image over video that emphasizes positive personality traits compared with offline. Following WFH, however, students will encounter challenges adjusting their self-presentation. Their video experiences now include larger groups of unfamiliar people through Zoom lectures, which threatens context collapse [150]. We anticipate that this new professional context will make it harder to project positive traits, reducing differences between video and offline self-presentations. Despite the new challenges of context collapse, we nevertheless anticipate that office worker's prior experiences with video will lead them to be more successful in projecting a positive professional work persona when WFH.

These are important questions to address; if self-presentation is changed by enforced use of video when WFH, this has practical implications for how and when we use video. It should also lead us to adjust our expectations about online communication when WFH and suggest ways to redesign video tools.

5.3 Related work

Here we review self-presentation, context collapse, and how personality psychology and affordance theory can contribute to how we understand these concepts. We also review how different aspects of media influence communication.

5.3.1 Self-presentation

Self-presentation is a complex construct. We define it here as how people present themselves in order to influence how others see them [139]. One well-established account of self-presentation is provided by Goffman, who describes a dramaturgical approach. This views interaction as a performance, where an actor performs some sort of self for an audience [85]. In this perspective, the actor may not always present themselves entirely consistently. Instead, the actor reveals or hides different aspects of themself in response to their audience's expectations, which Goffman calls impression management. The performance is an act of self-presentation because it is intended to convey something to the audience about the person performing. Goffman notes that the awareness of this fact often leads performers to become "merchants of morality", concerned with presenting the impression of a moral and upstanding idealized persona when it may be too difficult to present an impression authentically. In other words, an authentically moral person naturally gives off impressions of such, while others may simply perform that impression. Goffman also characterizes two performance spaces, the front stage, where audience directed impression management happens, and the backstage, which the actor does not intend the audience to see.

While this performative perspective works well for in-person self-presentation, where the audience is co-present, social media's asynchronous nature may necessitate a new metaphor. Hogan therefore describes self-presentation on social media as an exhibit instead of a

performance [107], distinguishing between the audience (who one interacts with in real-time) and artifacts (saved performances that a chosen audience view at their convenience). Artifacts in an exhibit are curated before being consumed by an audience, just as a person proactively chooses which photos to post on their social media profile. Likewise, one can control the audience who sees these photos. The dramaturgical perspective also argues that there are multiple realizations of the self, as people present different facets of themselves flexibly depending on the situation or the self-presentation they want to convey. Such performances are subject to warranting, so that online dating profiles make it possible for people to fib about hard-to-validate attributes so as to appear more desirable [100], an example of an idealized presentation.

Another perspective on the multifaceted nature of online self-presentation comes from Baym, who notes another critical attribute. Digital identities are distinct from one's embodied self, yet still represent facets of the person [17]. For example, one might have a self-presentation of an effortlessly cool consumer of coffee on Instagram, while maintaining this as entirely separate from one's professional self-presentation on LinkedIn. Both might be true of the person, but they become separated, "disembodied" identities. Said media presentations are disembodied because they are separate from the physical bodies (as in Hogan's actor/artifact distinction), made up only of the information that the presenter chooses to share. This shared information forms the entirety of the identity, meaning that simple cues such as photographs [18], types of information included on a profile [1], and social group membership [25] can be artfully curated to convey something particular about a disembodied identity. Ironically, such a paucity of cues can also mean that it becomes more difficult to convincingly present an entirely inauthentic self, as the audience looks to unintended, as well as intended, signals when interpreting identity [64].

These performative perspectives are important because they help speak to context collapse, a self-presentational issue on social network sites, arising when people are unclear about their exact audience [27,150]. Context collapse occurs when multiple contexts intersect, and performances begin to mix across audiences. For example, if a worker brought their child to work, their typical “office worker” performance would begin to collapse into their “parent” performance, potentially altering how their co-workers or their child understand them. If we accept that self-presentations are performances tailored to specific audiences and contexts, how can one person maintain separate performances for every potential online audience? One approach is to present a bland, vanilla self that is acceptable to the broadest possible audience [107,180]. Another might be targeting specific presentations to media that have restricted audiences [211], or by maintaining separate accounts on one media where each account has its own specific audience [212]. While these perspectives help us understand self-presentation, it can be challenging to measure self-presentations using only these theories. To help us quantify self-presentation, we look to personality theory.

5.3.2 Personality

Another common framework for analyzing and measuring self-presentation is personality theory. Here, we review personality psychology (and specifically the Big Five [115,204]). In trait-based personality psychology, traits are considered relatively stable predictors of behavior. For example, if someone is extraverted, they are likely to behave in an outgoing and gregarious manner across different situations. We see traits and self-presentation theories as working together. Self-presentation theories are helpful because they create a conceptual lens to understand how a situation might constrain and influence people’s behavior. Traits are helpful because they allow for the quantification of stable behaviors.

Personality theorists generally use the “Big Five” taxonomy, using the acronym OCEAN [115,116,204] to characterize 5 main traits: (O)penness to Experience, related to intelligence, aesthetic sensitivity, and curiosity; (C)onscientiousness, related to productivity, time-keeping, and organization; (E)xtraversion, related to sociability, energy level, and assertiveness; (A)greeableness, related to trust, compassion, and warmth; and (N)euroticism, related to anxiety, depression, and emotional volatility. Traits are assessed using surveys asking people to rate their agreement with self-descriptive statements such as: “I am someone who is emotionally stable, not easily upset” (assesses Neuroticism trait) or “I am someone who makes plans and follows through with them” (assesses Conscientiousness trait). Appendices A and C provide details of the exact survey questions that probe the behaviors that are relevant to each trait. These traits have been validated across many studies, and shown to be reliable predictors of people’s behavior [115,116,204]. A common criticism of traits is that they are typically self-reported, leading to a social desirability bias [60,132,149]. However, there is a large body of work on stranger ratings (where people who do not know the person rate their traits), which are largely consistent with self-reports [23]. Observers can also infer traits from objects and environments, whether physical [88,90,165] or digital [89,91]. Thus it is possible for strangers to accurately infer traits from the layout and objects in a student’s dorm room as well as their Facebook profile [89,90,227].

The current study uses personality measures to examine behavior in video versus offline settings as WFH changes important aspects of the interactive context. To illustrate how traits may be affected by different conversational settings, Figure 1 provides trait definitions offering examples of how the expression of big 5 traits may be manifested for different contexts, audiences and topics.

The Openness to Experience trait is realized through behaviors that reveal curiosity, creativity and imagination, but the exact expression of these behaviors might be influenced by different

types of video conversation. A video conversation about an unfamiliar topic with an unknown audience might stimulate greater curiosity and imagination. In contrast a conversation about a known topic with a familiar audience is much less likely to promote novelty and creativity. Signature behaviors that reveal Conscientiousness are being careful and diligent. Such behaviors are more likely to emerge when conversing over video in professional contexts where there is a need to project an organized and well-prepared persona. In contrast, there is less need to appear well organized when holding personal, casual conversations which are impromptu in nature. Extraversion is signaled by outgoing social behaviors where one actively enjoys interactions with others. Such gregarious behaviors are likely to be more prevalent when talking to familiar people such as friends and family. In contrast outgoingness may be reduced when talking to strangers which may induce inhibition. Agreeableness is revealed through interactions that are warm and trustful. These behaviors are more likely in settings that are comfortable and intimate but decrease when the setting is unfamiliar, where conversations may instead be seen as shallow and impersonal. Finally Neuroticism is signaled by behaviors such as being anxious, moody or negative, all of which are more likely in conversations featuring unpredictable topics such as when talking to strangers. Feeling anxious awkward and self-conscious is more likely when talking to large groups of strangers about unfamiliar topics.

Extraversion is signaled by outgoing social behaviors where one actively enjoys interactions with others. Such gregarious behaviors are likely to be more prevalent when talking to familiar people such as friends and family. In contrast outgoingness may be reduced when talking to strangers which may induce inhibition. Agreeableness is revealed through interactions that are warm and trustful. These behaviors are more likely in settings that are comfortable and intimate but decrease when the setting is unfamiliar, where conversations may instead be seen as shallow and impersonal. Finally, Neuroticism is signaled by behaviors such as being anxious, moody or negative, all of which are more likely in conversations featuring unpredictable topics

such as when talking to strangers. Feeling anxious awkward and self-conscious is more likely when talking to large groups of strangers about unfamiliar topics.

Our work explores behavior on communicative media using traits to quantify and compare self-presentations. However, if we want to understand elements of the environment, situation, or media that people may find themselves in, we also need a way to theorize about these. Furthermore, since we want to investigate how context collapse might alter self-presentation, we need a way to characterize and compare contexts. Media can influence how people self-present [17,211,212]. Personality alone can't fully explain why people might act one way when in person and another when on a video call. To better understand this difference, we now discuss media affordances, as they provide specific ways to theorize about and understand differences between media in different settings.

5.3.3 Affordances

We can use affordances to understand behaviors on different social or communicative media [17,50,74,230]. Affordances describe how people perceive a medium's features regarding how people interact with them. Affordances are helpful ways to analyze social/communicative media since they describe what users perceive to be possible rather than capturing objective technical features that might change over time. Communicative media each have distinct affordances that influence users' interactions with the medium. DeVito et al. [50] present a taxonomy of affordances for different social media, which is general enough to apply to other communicative media types. They identify three broad categories of affordances related to the Self, Other Actors, and Audience. The Self includes subcategories of presentation flexibility, content persistence, and identity persistence. These subcategories relate to the ability to present the self differently, how long content is accessible and editable, and self-presentations' stability. Other Actors, or how other users can interact with the self, includes content association and

feedback directness. These aspects relate to how others can link content to us and how direct that feedback is. Finally, Audience is viewed through transparency and visibility control, addressing how easy it is to understand who sees content and control over who sees which content. Although DeVito et al. apply this framework exclusively to social media, we explore whether affordance frameworks can also be applied to other communicative media such as Video calls or Offline conversations.

Early research on Computer-Mediated Communication also used an affordances perspective. A long history of work explains differences in communication processes and outcomes resulting from media differences [42,79,135,236,238]. For example, researchers used analytic frameworks such as grounding [42] to explain how media such as texting with affordances of being asynchronous lead to more verbose conversations because of the absence of incremental feedback [172]. In the same way, differences between video and phone-based conversations are explained in terms of the non-verbal information offered by the visual channel about important objects [82,239] and other participants [168,169,194].

Based on affordances theory, a large body of work has assessed differences between mediated and offline communication for collaborative work. Despite many potential benefits of online tools, prior work shows that offline collaborations are more efficient and productive. Sharing a physical environment makes it possible to have impromptu conversations, engage in frequent rich informal interactions, and straightforwardly share visual resources. In contrast, mediated communications are less frequent, more formal and task-oriented [135,169]. And while dedicated video and object sharing environments have been designed to share rich visual information [79,82,237], these do not fully emulate offline interactions [135,169].

Fox and McEwan [74] examined the impact of affordances on video calls and several other forms of social media such as Facebook. They compared a broad set of media, including

offline, having people rate different media for a set of ten affordances identified in prior literature. The affordances were: accessibility, bandwidth, social presence, privacy, network association, personalization, persistence, editability, conversation control, and anonymity. They used confirmatory factor analysis to check fit and found a range of Cronbach's alphas from .78-.95, indicating that an affordance framework is broadly applicable to social media [211,212] as well as communication media. Fox and McEwan [74] also found that offline communication had perceived drawbacks compared to other media. For example, it was seen as ephemeral, less accessible, and providing reduced control.

Affordances, therefore, provide a valuable and productive way to conceptualize and quantify the social environment of media. The current work applies generated themes of Control and Expressiveness to video calls. Control relates to the user's ability to manage aspects of the conversation, particularly how information is shared with the other party and the ability to view and edit content before it is sent. Expressiveness relates to the ability to convey rich emotional information through a channel.

Overall, prior work discusses essential differences in media self-presentation and how these might be expressed through personality [50,211,212]. We extend that prior research by directly comparing self-presentation across media, across settings and for different types of occupation using mixed methods. We conduct three studies, one with a sample of pre-COVID students and two others from students and office workers doing WFH. We examine differences in how people view self-presentation through communication media in different work/study contexts in order to investigate potential effects of context collapse.

5.4 Study 1: pre-COVID students' self-presentations in video and offline

We begin by assessing students' pre-COVID video self-presentations. Self-presentation on social media platforms exhibits a social desirability bias compared with offline, emphasizing positive personality characteristics like Extraversion and Openness while de-emphasizing negative ones such as Neuroticism [211,212]. Therefore, we wanted to know whether such positivity is also present in video.

5.4.1 Method

5.4.1.1 Participants

Our first study was conducted pre-COVID during Spring 2018. We drew student participants from UCSC who participated for class credit. There were 73 participants (53 women, 19 men, 1 preferred not to state), aged 18–25, (M = 19.89, SD = 1.77), 32% Caucasian, 28% Asian/Asian American, 24% Hispanic/Latino, 9.5% Mixed Race/Ethnicity, 5.4% Black/African American.

5.4.1.2 Survey and interviews

Participants first assessed their regular offline personality using the 44 item Big Five Inventory (BFI) [115]. The BFI is a standard personality survey deployed widely and has been used successfully in similar work [211,212]. People rated their agreement with self-descriptive statements such as: "I am someone who makes plans and follows through with them" (assesses Conscientiousness trait). The 44 Item BFI questions are listed in supplemental material. We also modified the survey to probe self-presentation when using video. The second

time participants completed the BFI survey, we modified each question to assess personality using video. Participants, therefore, answered the following question: e.g., “On video, I am someone who makes plans and follows through with them” (assesses Conscientiousness trait on video). Previous studies show that participants can interpret modified survey questions [211,212] straightforwardly.

Before responding to the modified personality questionnaire, participants discussed their behavior over video in an offline semi-structured media interview. The interview probed self-presentation on video and offline, again based on questions used in prior work [211,212] (see Appendix A). These questions addressed: how participants generally use video, which people they interact with using video, how video influences their relationships, if participants feel they can control their self-presentation when using video, differences between offline and video self-presentations, concluding with questions addressing unique attributes of the medium (the self-facing feed on video). Participants were encouraged to expand upon their responses by follow-up questions. We contextualized these questions by asking about the use of common apps such as Skype, Facetime, or Zoom, both on phones and computers.

Figure 2. Personality survey differences for pre-COVID. Over video, participants report higher extraversion and agreeableness ratings but lower levels of neuroticism and openness.

Trait	Finding	Offline Mean	Video Mean	d (effect size)
Openness	**Offline > Video**	**3.73**	**3.59 ****	**0.36**
Conscientiousness	No differences	3.29	3.32	0.08
Extraversion	**Offline < Video**	**3.46**	**3.90 *****	**0.63**
Agreeableness	**Offline < Video**	**3.71**	**3.82 ***	**0.30**
Neuroticism	**Offline > Video**	**3.29**	**2.65 *****	**1.12**

Note: Asterisks show statistical significance levels. *** p < .001, ** p < .01, * p < .05, df = 74. Rightmost column d shows effect sizes.

5.4.2 Results

5.4.2.1 Survey analysis

We first analyzed the surveys using paired sample t-tests for each of the five OCEAN traits (See Figure 2). Results largely confirm our expectation of greater social desirability when using video. Compared with offline, people accentuated positive traits. Their ratings indicated lower Neuroticism, but higher Extraversion and Agreeableness scores when using video. Openness was an exception, as ratings were lower for video, and we discuss this below. There were no differences in Conscientiousness ratings between offline and video. We now turn to the interview analysis, which offers potential explanations for these results.

5.4.2.2 Interview analysis

To probe these survey differences, we analyzed 64 semi-structured interviews. First, we transcribed and analyzed interviews using reflexive thematic analysis following Braun et al. [29]. Four trained analysts conducted an inductive, exploratory analysis to identify initial codes relating to participants' self-presentation and how the facets of video/offline influenced that self-presentation. Next, we transformed codes into themes over subsequent rounds of analysis by clustering codes expressing similar meanings, phrasing/language, or related ideas [29]. For example, participants repeatedly mentioned using video to interact intimately with family and friends but talking to a broader set of people when offline. These codes coalesced into the Audience theme. We then linked themes to specific personality traits to explain the differences seen in the surveys. For similar examples of this analysis process, see [32,211,212,241].

After identifying and discussing recurring themes, the four analysts defined a codebook. The codebook contained descriptions of each theme, inclusion criteria for codes, as well as representative examples for each theme. The codebook went through 4 revisions until it was finalized, with themes refined and disagreements about examples resolved by discussion between analysts. The analysts reached complete agreement on each revision. The lead analyst frequently re-familiarized himself with interviews and checked analysts' codes to ensure that data was consistently interpreted, bringing up inconsistent items in regular discussions.

5.4.2.3 Interview findings

Participants discussed the specific video technologies they used. They talked almost exclusively about two technologies: Skype and Facetime, and almost never mentioned Google Meetings or Microsoft Teams. Furthermore, participants did not describe using Zoom, although, as we shall see, they discussed it much more frequently in studies 2 and 3. Participants also made few distinctions between how these technologies were used, with the one exception that participants mainly used Skype with family members and used Facetime for peers, including friends and romantic partners.

We now present the main interview themes and explore how these relate to the self-presentational differences identified in the survey analysis. Our interviews identified three main themes that participants felt influenced their self-presentation, which concerned Expressivity, Control, and Audience. We supply frequency counts for each of these.

Expressivity: Video supports rich interactive multimedia conversations.

Confirming many prior studies [79,131,135,169], participants noted the expressive affordances of video. We coded comments with the theme of Expressivity if, for example, participants mentioned being able to easily elicit or express emotional information and avoid misunderstandings. These comments highlighted how video provides rich visual information

about other conversationalists' reactions and their context. Interviewees also talked about how straightforward it was to communicate with others. They observed how video allowed them to directly express their emotions or see the real-time reactions of others. Twenty-five (40%) participants made a total of 37 comments discussing such properties. Several noted how this led video communications and their resulting self-presentations to be direct, unambiguous, and authentic.

In the following interview, P17 notes that using video makes it straightforward to express multiple types of rich interpersonal information. Video not only provides context but reduces ambiguity and miscommunication. Many participants discussed the importance of seeing others' emotional reactions, making conversations expressive and more easily interpretable: "you can show a lot more emotion and feel more- and express your feelings and there's less miscommunications." Using a rich Expressive medium such as video also seemed to make the communication feel "personal":

"Yeah, it just kind of helps to have that more personal experience of talking to someone and being able to see their face and maybe show them something or just be able to see their reaction instead of just a text that you can't really tell what's going on and I feel like you can show a lot more emotion and feel more- and express your feelings and there's less miscommunications" (P17).

P62 also observes the direct benefits of seeing the other person's facial expression. Tone can be difficult to convey effectively or even hidden in other media, whereas our participants described that video seems to have an intrinsic Expressivity that can be difficult to replicate in other media.

"Just because you can see their faces, and kind of see their expressions and when they talk about things, you get more out of it by seeing how they talk about certain things, and like, so,

if my friend is stressed out, and she were to say that email or texting, even phone call ‘cause like, tone doesn’t always mean what it is, but when you look at her expression you can kind of see how stressed out she is, versus if she was like, “hey, I’m stressed out,” but either you think she’s really stressed out or not so much, so you get more context of what’s going on” (P62).

Video Offers Self-Awareness that Supporting Enhanced Control.

These observations suggest that video has much in common with offline communication supporting rich, expressive synchronous interactions. However, confirming other work [131,168,169,194], it was clear from participants' comments that they did not judge video and offline communication to be equivalent. Many participants observed key attributes that differentiated video from offline communication. In particular, they drew attention to the additional Control video offered over their self-presentation, which seemed to be mediated by enhanced self-awareness.

One pronounced difference is that on video, unlike offline communication, people can often see themselves. Our participants were very aware of this, with 42 of them (65%) making a total of 72 Control comments describing how the self-facing video increased their self-awareness and sensitized them to how they appeared. We coded instances of this theme when participants discussed knowingly using elements like the self-facing video feed to alter their self-presentation. For example, the following participant talks about the self-facing video. She jokes about how enhanced awareness of how she appears allows her to actively modify her self-presentation.

“Normally, I guess, when you’re talking to someone face-to-face you’re not that aware of your own facial features or like your body language. But when there’s something to stare at constantly reminding you and you’re like, ‘Oh my God, I look ugly right now.’ (laughs). And then you will shift to adjust however you’re looking right now” (P8).

Somewhat counterintuitively, this self-awareness did not seem to promote negative self-consciousness. We already noted that survey scores for Neuroticism were lower over video than offline, and self-presentations over video perceived to be more Extraverted and Agreeable. Why then was video perceived so positively? As we see in the above interview, while potentially distracting, the increased self-awareness afforded by self-facing video nevertheless enhanced participants' Control over their self-presentation. Consistent with other social science research [39,98,156], real-time visual feedback enabled participants to be more strategic about their self-presentation, to performatively control what they wanted others to see. For example, on seeing how she appeared on video, P8 responded by: "shift[ing] to adjust however you're looking right now."

The following participant P14 also describes how video enhanced control over self-presentation. For example, it allowed her to show just her face or her entire room. She contrasts this with offline communication, where people in the conversation can freely choose where to focus their attention: "in person it depends on whatever that person wants to focus on."

"you get to choose what to show on Facetime and what that person is going to see from you. So if I just wanted them to see like my face or if I wanted I could let them see my whole room. Like compared to in person it depends on whatever that person wants to focus on" (P14).

In extreme cases, participants used such editorial control to keep important aspects of their appearance secret from potentially judgmental audiences. For example, the following participant dyed her hair and often wore make-up but made extensive efforts to prevent her conservative parents from knowing this. She used the additional control offered by video to carefully plan how she would appear when Facetiming her parents, even restricting how much she moved her head so they wouldn't see her blonde highlights! It is hard to imagine being able to keep these key features of one's appearance secret when meeting one's parents face to face:

“Yeah, also, well, also my parents didn’t know I had blonde hair for a long time. So I would also have to tie my hair back and like, sometimes wear a hat, but that’ll look kind of sus [suspicious]. So I’ll try not to move my head left or right, so I’ll tie my hair back when I know I’m going to see them. And they don’t like when I wear makeup, so I wouldn’t wear makeup when Facetiming them” (P7).

However, such control is not limited to physical appearances. For example, the following participant first describes how video helped control insecurities about their body, but then observes how it allows them to actively moderate conversational behaviors and appear more outgoing over video.

“Um, I mean all a person can see is like how you present yourself so I feel like any insecurities you have like if you don’t want to show your body or whatever, you don’t have to. I don’t know. I guess you have to be kind of . . . you have to be mostly who you are, but you could be more enthusiastic” (P65).

P65 also notes that disengagement is a potential strategy if one feels insecure in a video communication: “if you don’t want to show your body or whatever you don’t have to.” In addition, one can present oneself more enthusiastically if needed. P65 and the interview with P3 below show that participants tended to use the latter tactic when they talked to intimates. Thus, disengagement is a possible strategy if someone is feeling insecure. However, with friends and family, it makes more sense to instead be more performatively cheery in communicating positive emotions over video:

“If I’m excited about a certain thing and I want to tell my family or my boyfriend through text, then I’ll probably just use capital letters or emojis. But through video calls I can show through my face how exciting something actually is and raise my voice or use a higher pitch than I would usually use in person” (P3).

Additionally, video communication often takes place in a personal space, potentially reducing worries about self-presentation. The effect of a personal, controlled space reducing inhibition echoes other work characterizing how people feel that they can be more authentically "themselves" when online [211,212].

"When I'm talking on Facetime, I'm usually in my room by myself, so I can be as weird and goofy as I want. While in person, I'm not going to expose yourself in person like that [laughs]" (P7).

As P7 states, having a comfortable, controlled environment lets them feel more confident in their interactions. This enhanced confidence may arise because participants feel relaxed in a familiar environment, reducing inhibitions when expressing themselves. The reduced inhibitions may explain the increased Agreeableness and Extraversion we observed in video compared with offline communication.

Audience: Video is used for Intimate Conversations with Strong Ties.

The next theme identified how participants deployed video communication; serving to characterize the primary audiences and types of conversations held over video. Students typically used video for targeted types of intimate communications. These usually involved a familiar, trusted audience, with the goal of maintaining relationships with a small group of friends and family. We coded statements with this theme when participants discussed using video to communicate with strong ties: significant others, friends, family, etc., or described how offline was used for a broader audience. Thirty-nine (60%) of participants made a total of 80 comments describing how they deployed video differently across these different Audiences.

The following participant discusses how conversations with a known trusted audience promotes a sense of togetherness, engendering an intimate communication style that partially helps compensate for reduced offline contact with people they'd like to see more often. Of

course, P16 sees no need to be self-conscious or project a persona with this audience because they know them so well.

“So I guess it’s just nice because it feels like very personal, like you guys are there together. I think it just helps communicate with people that I can’t see as often as I’d like to, it feels like you’re staying up to date when you’re able to see them and they can see you so it is more of an intimate conversation to be able to have with them when you can see them via FaceTime” (P16).

Target audiences for video communication were highly delineated, however. Pre-pandemic students offered stringent guidelines about who they communicated with over video, carefully managing the contexts in which they used video. Participants saw video as appropriate only for intimates, whom one is “close to” or “comfortable with.” Such context-dependent use seems to arise from video’s Expressivity, which participants felt should only be deployed when there is intimacy and trust. Using video outside this context for weak ties was “uncomfortable.,” leading the following participant (P38) to observe: “I couldn’t imagine doing it [using video] with someone I’m not really close to.” They then explain why they do not Facetime with acquaintances such as classmates, preferring instead to text them, so as to avoid “having to see them in person or actually speak to them”:

“I just feel like it’d be like uncomfortable to FaceTime just because I’m not close to them. . . . I usually just do it with my best friends or like my family, and usually we’re just like doing weird things we usually just do with each other. I couldn’t imagine doing it with someone I’m not really close to. I don’t know why, it’s just easier to text someone that you’re not close to rather than having to see them in person or actually speak to them” (P38).

5.4.3 Discussion

In this pre-COVID study, students report significant differences in self-presentation between offline and video in their survey responses. Overall, video self-presentations are more positive than offline, confirming a social desirability bias when digital, which has been observed in prior work on social media [39,61,107,211,212]. Interviews suggest that this may be because video is primarily used in restricted contexts with familiar audiences for positive intimate conversations while also allowing control over self-presentation.

However, this data was collected in 2018, before the pandemic reconfigured work and communication. We therefore conducted a natural follow-up study to investigate how profound changes in media use following COVID have affected people's self-presentation and perceptions of video. The next two studies were conducted in 2020 during pandemic social distancing when participants were experiencing WFH. Data collection was done remotely, and surveys replaced interviews, but the experimental procedure was identical otherwise.

5.5 Study 2: WFH students' self-presentation on video and offline

Study 1 showed that pre-pandemic students predominantly use video in a limited set of contexts for intimate conversations with friends and family. This trusted audience potentially explains why video engenders positive self-presentations. However, the pandemic radically changed students' video audiences. WFH and having classes through Zoom mean that students are exposed to new video experiences with larger groups of unfamiliar people, potentially leading to context collapse [150]. However, Study 1 also revealed that video enhanced self-awareness, which promoted greater Control over self-presentations, and it may

be that such enhanced Control may at least partially compensate for these challenges of managing multiple contexts. Our second study set out to explore this.

5.5.1 Method

5.5.1.1 Participants

We again recruited participants from UCSC who were experiencing Working From Home (WFH). Although these were different participants, they were drawn from the same university and cohort as the participants in Study 1. They completed the study online and received a chance to win a game code or $10 Amazon gift card. The final sample was 51 participants (25 women, 25 men, 1 preferred not to state), aged 18–48 (M = 23, SD = 4.5). Within our sample, there were: 43.1% White/Caucasian, 29.4% Asian/Asian American, 11.8% Hispanic/Latinx, 9.8% Mixed Race/Ethnicity, 3.9% Black/African American, 2% Native American. Responses were gathered approximately two months into the COVID pandemic, when participants had a chance to adjust to new video experiences induced by WFH.

5.5.1.2 Survey and interviews

60 Item BFI2

As in study 1, participants answered the personality survey twice, with open answer prompts interspersed between each survey to replicate the interview process. We switched our survey to the BFI-2 [204] as the original BFI had been updated (see BFI-2 items in supplemental material). As in Study 1, participants first rated their regular offline personality in the initial survey. The second survey was again a modified version of the standard survey, with questions changed to include references to video. As the pandemic precluded offline interviews, we asked probe questions as open survey prompts where participants answered textually. We added a

WFH question, asking if participants were using video to replace offline work conversations and what adjustments they were making in these situations (See supplemental material). All participants again completed both surveys and the open answer prompts in one session.

Trait	Finding	Offline Mean	Video Mean	d (Effect size)
Openness	No difference	4.06	3.90++	0.36
Conscientiousness	**Offline < Video**	**3.54**	**3.83****	**0.45**
Extraversion	No difference	3.06	3.12	0.09
Agreeableness	**Offline < Video**	**3.72**	**4.04****	**0.53**
Neuroticism	**Offline > Video**	**2.81**	**2.32*****	**0.69**

Figure 3. Survey differences for WFH students. Over video, participants report higher Agreeableness and Conscientiousness ratings but lower levels of Neuroticism. Note: *** p < .001, ** p < .01, ++ p =.051, df = 51. Rightmost column d shows effect sizes.

5.5.2 Results

5.5.2.1 Survey analysis

We first analyzed the surveys using paired sample t-tests for each of the five OCEAN traits (See Figure 3). We see that Conscientiousness, Agreeableness, and Neuroticism were significantly different for video while Openness was close to significant.

There are direct similarities to Study 1 in these survey responses. Again, we see a social desirability bias for video compared with offline. Video is again significantly more Agreeable and less Neurotic than offline. These results again suggest a positive online persona, even though media usage and audiences have shifted dramatically with the onset of WFH. However, there were also differences between studies. Unlike Study 1, Conscientiousness on video when WFH was significantly higher than offline. In addition, the differences in Extraversion observed pre-COVID was not present for WFH students, although Openness was trending in the same

direction as study 1. Overall the survey results of our natural experiment suggest that participants retained their positivity; Neuroticism and Agreeableness are relatively unaffected by WFH-induced changes in audience and contexts of use, while Openness is marginally influenced. In contrast, Conscientiousness and Extraversion are both clearly changed by WFH, suggesting that new audiences and contexts influenced these traits.

We again analyzed participants' qualitative responses to probes to understand the survey responses. Two researchers analyzed probe responses from 51 participants, using the same inductive thematic coding approach as Study 1, beginning with the codebook and themes used in that study. Analysts again identified themes, categorizing participants' responses to media and how they affect self-presentation. In addition to the themes identified in Study 1, analysts also documented specific adjustments that participants described having to make when using video when WFH. We noted experiences of context collapse or when participants talked about using video in new ways or with different audiences.

5.5.2.2 Open answer prompt responses

Study 2's qualitative analysis revealed some overlapping themes with Study 1, with discussions of Expressivity and Control again being prevalent. These themes again seemed to relate to positive self-presentations for video compared with offline, as revealed by greater Agreeableness and reduced Neuroticism. However, there were also differences between the two studies. These centered around participants' descriptions of how they adjusted to WFH, particularly their experiences of using video in large online classes. These forced adaptations may explain differences between the survey results across the two studies, specifically the increased Conscientiousness for WFH video and the disappearance of the Extraversion results in Study 1.

First, participants confirmed the expected expansion of contexts when WFH using video. Many participants discussed how they had extended the audiences and settings in which they deployed video. Twenty-four participants reported using video both professionally (for school and/or work) and socially, while 14 mentioned using it mostly professionally and 12 mentioned using it mostly socially. These heterogeneous contexts stand in contrast with the highly restricted uses of video seen in Study 1. These new contexts largely mentioned new uses of Zoom for largescale lectures, with FaceTime and Skype being talked about less often, and exclusively for intimate conversations.

Nevertheless, when using video for WFH, as in Study 1, people again discussed self-monitoring issues and how achieving an acceptable self-presentation was a primary concern. Participants were again highly self-aware over video, with 27 participants (53%) mentioning this on 28 occasions. They described how they exploit the greater self-awareness and Control afforded by video to engender positive self-presentations. However, their strategies for doing so were very different from the pre-pandemic setting. In contrast to Study 1, the demands of presenting to a broader unfamiliar audience meant participants had to work harder to achieve an acceptable professional self-presentation. The following participant, P81, clearly describes the performative nature of their WFH self-presentation elicited by this new professional video context. They also contrast professional with personal personas. Their carefully cultivated “positive and hardworking” WFH persona is very different from that used with friends, where it’s more acceptable to “show weakness.” Such a positive professional video persona naturally leaves little room for displaying less positive traits.

“I only communicate with coworkers on video so of course I present a positive and hard working version of myself with no flaws. [I] can’t show weakness like around friends” (P81).

In particular, participants acknowledged potential for awkwardness and embarrassment when using video in large class settings. They therefore adopted two very different WFH strategies,

performative cheeriness, and disengagement that were intended to address this. Performative cheeriness involved exerting effort to smooth rough conversational edges, by keeping the conversational tenor enthusiastic and positive. Disengagement took the opposite approach, seeking to avoid negativity by withdrawing from impersonal discussions. These strategies were also mentioned in Study 1, but in that context participants were free to choose the contexts and audiences in which they used video. Such choices were removed when WFH, since video was often required for school or work, so refusing to use it for that context was no longer possible. Overall, 16 people (31%) made 26 comments about performative cheeriness, while 8 (16%) people made 11 comments about disengagement.

Participants' comments offered important details about each of these strategies for dealing with potential context collapse when using video. The following participant describes how they actively project cheeriness by "smiling more" and making an effort to "sound more enthusiastic." They also note that this active strategy is needed to counteract challenges arising from others' disengagement. P74 describes effortfully projecting a positive outlook to help keep others engaged and on task. Such performative strategies may help to explain why WFH video still showed enhanced positivity compared with offline.

"For example, I put more effort into acting 'cheery' over video calls. When I would host meetings, I would try to smile more and sound more enthusiastic. I had hoped that this would help keep people engaged, although I admit that our brains were all a little scattered" (P74).

Other WFH participants addressed potential video awkwardness in the opposite manner. Rather than proactively addressing it, they opted out, using the Control that video gives them. Such disengagement took different forms. Some avoided the awkwardness of WFH video by turning off their personal video channel unless they had to use it. This response is in direct contrast to Study 1, where we saw no examples of participants opting out. In extreme cases, participants totally disengaged, by never using the video channel for any of their video calls:

“I’ve never used the video feature while on a call, I used the text option. I think [using video] would make me insecure and feel a bit uncomfortable [. . .] I’d rather text or have a phone conversation or have an in person visit with people. [. . .] I would be very shy while using it (video calls) and a bit anxious and uncomfortable so I don’t think I would come off very well” (P92).

Others only used video intermittently when they felt a “need to engage,” trying as much as possible to avoid using video in this now uncomfortable context.

“I try to turn on my camera give facial cues to respond to the speaker when I feel I need to engage. If I don’t feel that I need to engage, I do not turn on my camera and will use the text chat features if I have any questions” (P66).

The overall result of disengagement was that professional WFH video conversations felt less interactive. Because of this, some WFH conversations came to seem superficial, with participants noting a general lack of involvement that is very different from the rich person-focused interactions we saw in pre-pandemic video. The following participant describes only using video to maintain “surface level relationships” and only interacting when explicitly requested to do so by their superiors.

“I use video chat for professional and educational reasons. The people I interact with are people I only have surface level relationships with. This means that I only interact with these people if I need to as requested by superiors. Otherwise, I won’t do it” (P72).

Consistent with this disengagement, WFH participants were generally more conservative about how much they interacted, often hanging back and waiting to see whether others responded to a general question before contributing. For example, the following participant describes themselves as being “shy/introverted” when using video in classes:

“I’m noticeably a lot more shy/introverted on video calls since it feels more awkward. An example being when a question is posed and I often wait to see if anyone else has any ideas before I volunteer myself to go. [. . .] This is often because I can sometimes be the only one on video in a whole room full of people” (P66).

Other participants confirmed the effort needed in taking conversational turns and managing enthusiasm over video. Some were struggling to get through the barrage of meetings. Others tried to amplify their enthusiasm to keep a conversation going, but were concerned about overwhelming others when talking over video. This effort required to get through long meetings and avoiding “sticking out” may also reduce the Extraversion we saw in video during Study 1. The following participant describes moderating the effort they invest in the conversation to avoid being drained: “I get tired easily because there isn’t a way to just sit with people in silence without it feeling awkward.” At the same time, they are cautious about expressing their enthusiasm and inability to relax over video:

“I feel more cautious about being excitable because that can be overwhelming in a video conversation, and it is harder to relax into the space with people I don’t know as well. I also find that I get tired easily because there isn’t a way to just sit with people in silence without it feeling awkward, and it can be hard to address people individually on a group call (to have a side conversation for example)” (P91).

WFH participants in large classes also mentioned being very aware of the differences between communicating offline versus over video. Comments in Study 1 emphasized the straightforward and natural Expressivity of video when talking to a small, trusted audience. But reactions were very different in Study 2, when interactions involved strangers. Here participants noted how much effort was required to focus on others’ video conversations, with 14 mentions of investing additional effort from 12 participants (24%). Participants also noted how video technology such as Zoom makes additional demands even when engaging in simple conversational processes

such as attending to the speaker or turn-taking. In the following quote P78 notes: “the social cues as to when you’re done talking or if you’re pausing are more difficult through video call so there’s more interruptions.” This additional effort may explain the increased Conscientiousness scores that we saw for video compared with offline in Study 2.

“For instance, when you’re in person, you’re up close to the person you’re talking to and can notice certain behaviors such as if they’re listening to you and paying attention. But with video chat, you have to make more of an effort. For instance, sometimes you can’t tell if a person is listening to you when you’re talking or if they’re having technical difficulties. In addition, the social cues as to when you’re done talking or if you’re pausing are more difficult through video call so there’s more interruptions” (P78).

As in Study 1, participants wanted to Control video self-presentation while also contending with video’s technical issues in a new, broad, less forgiving, professional domain. Issues with navigating turn-taking and paying demonstrable attention to the speaker led participants to describe how they were putting extra effort into appearing “normal” over a different medium, which again may contribute to the increased Conscientiousness scores observed for video compared with offline:

“I try to come off as normal as I can in video chats but sometimes it can be hard. For whatever reason gaps of silence become very awkward during video chats where it would be natural if everyone was together in person. Sometimes this makes it more forced to try and keep conversation going where I would not normally do that in real life . . . I may try to be more talkative and be less comfortable with silence in video chats versus real life, but I think that is just an issue with video conferencing in general that people are not yet used to” (P75).

5.5.3 Discussion

Study 2 allowed us to probe further into the self-presentational differences observed in Study 1. Despite radical changes in contexts of video use, we confirmed important aspects of Study 1 in replicating positive self-presentation. Even when WFH from home and confronting the challenges of communicating professionally with larger, more anonymous audiences, participants still scored lower on Neuroticism and higher on Agreeableness over video, suggesting that self-presentations over video remained positive overall. Participants' comments indicate that they used video's affordances and enhanced Control to embrace two very different self-presentation strategies to meet the demands of their newly expanded professional context. Some used this enhanced Control to project a professional persona that is deliberately cheerful. Others address interactive challenges by actively disengaging from the conversation or exploiting Zoom's text channel rather than communicating over video. Both strategies may enhance positivity and avoid awkwardness leading to reduced Neuroticism and enhanced Agreeableness scores over video. In other respects, however, WFH seemed to change media perceptions. Possibly because of the more significant efforts involved in managing basic communication processes with an unfamiliar Audience, WFH led participants to rate higher Conscientious scores over video than offline. The enhanced Extraversion scores observed for video in Study 1 also disappeared, which may also result from having to communicate with unfamiliar Audiences about diverse topics. This pattern of changes suggests that these responses are affected by the different settings and audiences engaged when WFH.

These impacts of contexts and audiences led us naturally to Study 3, which compares WFH students with WFH office workers, who have very different prior experiences with video. Unlike students, office workers have extensive prior pre-COVID experience using video communication technology in formal, work-related situations such as meetings but are increasingly using video for more informal work conversations during COVID. Workers are also

confronting new challenges in managing their professional persona in domestic settings that may be vulnerable to interruptions. Study 3 examined whether these prior experiences led WFH office workers to present themselves differently from students when using video and whether they were better able to cope with potential context collapse. Again, we conducted a natural experiment following up on our prior findings. Studies 1 and 2 confirm that positive self-presentations over video persist despite radical changes in audience and context following the pandemic. We anticipated that these effects would still emerge even though office workers constitute a very different population using video for very different purposes.

5.6 Study 3 WFH office workers' self-presentations on video and offline

Study 3 was another natural experiment. As with WFH students, these workers face new challenges of context collapse, potentially undermining their ability to project a professional work persona. However, we anticipated that, like WFH students, office workers would be able to strategically adapt to these challenges, again leading them to present positively over video, with increased Agreeableness and higher Neuroticism scores. At the same time, given their more significant experience of using video for WFH, we expected their use to be less effortful, so we did not anticipate the elevated Conscientiousness scores we saw for WFH video in Study 2.

5.6.1 Method

5.6.1.1 Participants

The pandemic made it harder to solicit participants using standard methods such as posting flyers and in person solicitation. We therefore recruited 70 Mechanical Turk workers currently employed fulltime and residing in the United States. They received $7.50 compensation. The final sample included 28 women, 41 men, 1 Non-Gender Binary, aged 23–59, (M = 37.7, SD = 9.09): 77.1% were Caucasian, 11.4% Black/African American, 4.3% Hispanic/Latino, 4.3% Mixed Race/Ethnicity, and 2.9% Asian/Asian American. In addition, we used screener questions to determine that participants were currently using video to work from home. The study was conducted three months into the pandemic giving participants a chance to adjust to the demands of WFH. Participants used the following to describe their jobs: 7.1% Accounting and Finance, 4.3% Administrative, 2.9% Arts and Design, 10% Education and Training, 4.3% Engineering, 37.1% Information Technology, 12.9% Management, 4.3% Marketing, Sales, & Business Development, 10% Operations, 7.1% Other.

5.6.1.2 Survey and interviews

60 Item BFI2.

As in Study 2, participants completed the 60 item BFI-2 [204] twice, with open-ended probes administered between the two surveys. Due to social distancing limitations, as in Study 2, we used open-ended survey questions to probe personality trait responses instead of an in-person interview. We asked the same questions as in Study 2, with one addition. We asked WFH office workers if they had ever had their home context intrude upon their work context and how they had responded to this situation. All participants again completed the surveys and questions in one session.

Trait	Finding	Offline M	Video M	d (Effect size)
Openness	No difference	4.05	4.03	0.05
Conscientiousness	No difference	4.11	4.23	0.23
Extraversion	No difference	3.32	3.47	0.26
Agreeableness	**Offline < Video**	**3.76**	**4.03****	**0.58**
Neuroticism	No difference	2.18	2.04++	0.30

Figure 4. Survey differences for WFH office workers. Over video, participants report higher Agreeableness ratings. Note: ** p < .01, ++ p =.051, df = 70. Rightmost column d shows effect sizes.

5.6.2 Results

5.6.2.1. Survey analysis

We first analyzed the surveys using paired sample t-tests for each of the five OCEAN traits (See Figure 4). The survey results largely confirmed our expectations. As in the first two studies, for Agreeableness, video scores were significantly higher than offline. A statistical trend emerged for Neuroticism, which follows the pattern in studies 1 and 2. As we expected, there were no differences in Conscientiousness, in contrast, to study 2.

5.6.2.2 Open answer prompt response

Two analysts, familiar with the method used in Studies 1 and 2, analyzed all participants' open responses using the Study 2 codebook. Overall, participants used various video platforms, including Facetime (one mention) and Skype (two mentions), although Zoom was the primary video platform mentioned for work contexts (79 mentions). We again saw familiar themes of Expressivity and Control. Again, echoing student comments in Studies 1 and 2. Some office

workers noted the self-depicting video window increases self-consciousness, leading them to be more deliberately positive and performative. The following participant describes making efforts over Zoom to be “presentable and seen and smart and funny.” She contrasts this with in-person interactions where she can just “relax and not think about it”:

“I would say I’m slightly more positive and upbeat when I am on a video call. I feel like I have to be ‘on’ almost like when you are at work in a meeting that requires participation, if that makes sense. I feel like I need to be presentable and seen and smart and funny. If we were in person I would just relax and not think about it, but something to do with the nature of a video call being right in someone’s face, and seeing my own reflected back at me, makes me more self-conscious” (P2).

In contrast to Study 2, however, fewer participants in Study 3 explicitly mentioned a need to Control their self-presentation in video, with just 8 (11%) stating this. But although office workers seemed less self-conscious than students overall, they were nevertheless definitive about the need to manage video interactions actively to ensure they go smoothly. We saw two main strategies used to achieve this. As in Study 2, office workers engaged in ‘performative cheeriness’ to smooth over conversational rough edges. However, unlike Study 2, these participants did not use a disengagement strategy; instead, they strived to proactively control their environment to reduce the possibilities of context collapse. Together these strategies may explain the increased Agreeableness and lowered Neuroticism scores for video compared with offline. The following participant describes performative cheeriness, noting that Video calls are vital for keeping everyone’s spirits up while WFH. Here we see a crucial role for video calls in enhancing positivity by “shar[ing] some laughs”:

“Video chat plays an important role for our team in the fact we can stay connected. It makes us keep up with each other and we can share some laughs and continue our relationships. We would not be able to have such a close relationship without it we would lose out team drive and

spirit and since we are in sales we need to focus on keeping the team motivated and we can do that with video chat" (P28).

These active efforts to project positivity over video confirm the behaviors we observed in Study 2. However, in contrast to that study, we saw little evidence of office workers deliberately disengaging from video conversations. Just one office worker mentioned turning their video off altogether during a work call, and this was the unusual context of an "all hands" meeting where senior management gave an informational presentation to a vast audience. This difference points to a potential skill gap between participants in Study 2 and Study 3. Unlike WFH students, office workers' response to potentially awkward encounters was usually not to withdraw.

Comments that referred to Control were also different between Studies 2 and 3. Study 3 office workers were less likely to mention controlling physical appearance or emotional expression but were instead focused on managing physical space. Workers were very aware of the possibility of context collapse; WFH means that dogs, cats, and family members may all make unplanned video appearances, making it hard to project a professional persona. Workers were therefore more explicit about the need for careful planning to prophylactically avoid intrusions. At the same time, however, concerns about context collapse were also assuaged by colleagues forgiving attitudes when intrusions inevitably occurred. Even when plans fail and the home context inevitably intrudes, participants noted that coworkers generally responded sympathetically, which helped dissipate any potential embarrassment. The following participant tried to guard against interruption by locking their door and muting their mic. Despite their best efforts, the domestic environment nevertheless intruded in the form of their cat. But despite their being "slightly embarrassed," their coworkers actually welcomed the interruption:

"I usually lock my door so that [context collapse] doesn't happen. And I mute my mic when I'm not talking. But on one video conference for work, my cat jumped up in my lap, got on the desk,

put his face in the camera. I was slightly embarrassed, but my co-workers thought it was the cutest thing" (P21).

Others repeated this observation, 35 workers (49%) mentioned experiencing some form of outside interruption, but this seldom seemed to promote embarrassment. Rather than inducing the awkwardness we saw in study 2, the enhanced Expressivity of video seemed to allow participants to navigate thorny interruptions with consideration and grace. The following participant describes a clear example of context collapse when their baby cries, momentarily conflating the parental and work personas. And although they feel compelled to apologize, the experience does not become problematic, as P38's coworkers respond with sympathy and understanding:

"[. . .] if my baby is crying in that background which is something that would never happen if not working remotely. This will sometimes make me laugh or apologize to everyone on the staff. Everyone is very understanding though and knows that we're not working in ideal circumstances due to COVID" (P38).

Overall, this combination of performative cheeriness, careful planning, and other conversationalists' forgiveness seems to increase Agreeableness and lower Neuroticism scores. Workers worry less than students about context collapse as participants are all aware that this could happen to anyone. Workers also seemed to feel more relaxed being in their own space.

"I might have a little bit of a different personality when on a video call because I am in my own comfortable home environment where I can feel more at ease when expressing myself and safer since I am home" (P37).

5.7 Discussion

We first summarize the findings and then explore practical implications for the Future of Work and design implications. We conclude by linking results to computer mediated communication (CMC) theory.

Although we observed two different professions before and during the pandemic, it is striking that many results are consistent across all three studies, indicating that participants were able to adapt to WFH. Overall, we found a bias toward positive self-presentation when using video communication. Compared with their offline behaviors, participants in all three contexts reliably rated themselves as less Neurotic and more Agreeable on video calls. Qualitative analyses bore this out, indicating strong consistencies across studies, as participants repeatedly explained their behaviors in terms of the Expressivity and Control that video offered. Overall results suggest that participants can strategically exploit these affordances to overcome some of the challenges of WFH.

In contrast, other effects of video differed across our studies. In particular, WFH seemed to induce new student behaviors in response to difficulties of managing video in new settings. As expected, we saw that WFH students felt that using video demanded greater Conscientiousness than offline, as they began to use it for novel learning goals with broader audiences. Pre-pandemic differences in Extraversion scores additionally disappeared when students began using video for educational purposes. These changes may arise from the broader set of contexts in which students are using video when WFH. Students now need to appear more professional, which can sometimes lead them to withdraw from video in situations when Expressivity is uncomfortable. Overall, office workers showed less variability in their self-presentation when using video, except Agreeableness and potentially Neuroticism, where we saw the same trend toward positive self-presentation as for students. It may be that their more

comprehensive experience with video allows them to adapt to the challenges of managing different contexts when WFH.

What are the practical implications of our results? There has been much recent speculation about the impacts of ubiquitous video on work, with many popular press articles enumerating the challenges people may experience [47,73,207,234]. These articles discuss 'Zoom fatigue' and the problems of context collapse that undermine a carefully crafted professional image. However, systematic studies of these phenomena and their consequences for students and office workers have been few. Our findings are therefore notable because they challenge some of these speculations. If these speculations are correct, then Zoom challenges should lead WFH participants to have a predominantly negative view of video communication. Worries about the need to remain professional should make using video a stressful and challenging experience. Instead, our participants essentially judged their video experiences positively. They consistently judged their self-presentations to be more Agreeable and less Neurotic than Offline, suggesting that video experiences are usually pleasant and not generally marred by emotional extremes. And while student participants made many comments indicating they were conscious of their appearance on video, this did not negatively affect the overall experience. Their reports instead suggest that they can harness this self-awareness to exert more control over their self-presentation. In particular, office workers successfully adopted strategies of "performative cheeriness" and active planning to manage different contexts and avoid negative video experiences. Workers also noted how others make allowances and are generous when context collapse inevitably occurs. One exception is some WFH students who withdrew from calls by turning off their video, and we return to this topic below.

And while WFH students frequently noted the challenges of retaining focus and turn-taking in large Zoom classes, this led to a greater perception of Conscientiousness rather than negative emotions. These participants simply felt that they had to work harder when using video in these

new contexts. However, office workers with more digital media expertise at work seemed to have successfully adapted to the demands of video. Their experiences suggest that, given time, students may also develop strategies to engage in active video conversations. Overall, these positive results confirm other studies showing workers' flexibility in adopting new strategies in response to changing contexts [22,140].

Our results also suggest design implications. The self-depicting video seems to increase self-awareness, which can facilitate active self-editorializing. Nevertheless, some participants found the video distracting, which increased self-consciousness, as noted in our interviews. Given our repeated findings that participants want to exercise control over their digital self-presentation, future technical work might explore new designs that offer users ways to better control this video to moderate potential awkwardness, in particular for students.

Existing video communication systems often make default design decisions about the image they present, but providing greater ability to control one's image may have implications both for self-awareness as well as resulting self-presentation. For example, some WFH students went to the extreme of entirely disconnecting their video channel to reduce self-consciousness. However, this has the disadvantage of decreasing engagement for others in the conversation. Alternative designs might allow these "shy" participants to retain their video feed while alleviating their self-consciousness. Such designs might involve providing video image controls that support more fine-tuned virtual proxemics [96]. When offline, some students prefer to sit at the very back or front of a large lecture hall, and current video designs don't permit visual representations of such choices. Enhanced presentation controls could emulate these offline situations by allowing video users to choose where they "sit" in a virtual room, who they sit next to, their proximity to influential people in a meeting, and whether they are in the line of sight of these important people. Other designs to minimize self-consciousness might allow participants to "melt into the crowd," making their image part of a sea of faces in a manner similar to designs

deployed in Microsoft Teams. Researchers can potentially design and explore many such experimental interfaces, but of course, it is essential to subject these designs to empirical testing.

Other technical solutions to visual self-presentation are also possible. For example, more speculative AI solutions could generate personalized avatars to convincingly simulate a participant's visual presence, actively following along with the conversation, while at the same time removing people's concerns that live video can lead to embarrassing self-presentations (for an example from NVIDIA, see [195]). Other multimodal solutions are also possible for those who don't want to visually reveal themselves, while still allowing them to signal their engagement. Solutions might include alternative non-verbal ways to show one's presence and engagement, e.g., active cursors that follow along with the speaker's slides can serve as helpful presence indicators, and active user edits or texting show involvement [235,237]. Again, researchers should evaluate such designs, as our results suggest that non-verbal self-presentations may make conversations less positive when one can't see other people.

Post-pandemic, it seems likely that many people will continue to collaborate and learn virtually via video, even if there is a partial return to offline work. Therefore, users of video technologies should be informed about the consistent self-presentation differences we observed across three studies for increased Agreeableness and reduced Neuroticism. A greater understanding of video impacts should allow users to make better-informed decisions about their media choices for specific audiences, contexts, and tasks. Users could also be informed about the successful strategies that more experienced office worker participants employed to enhance their video experiences, which resulted in positive self-presentations. Future empirical work could also address whether employing these proactive strategies is also successful in addressing the disengagement observed by some students.

Turning next to theory, we have identified both context-independent and situation-specific video effects. We first discuss context-independent effects, i.e., compared with offline, we see increased Agreeableness and decreased Neuroticism scores over video across all studies. We had initially hypothesized that enhanced Agreeableness and reduced Neuroticism scores might be audience effects engendered by pre-pandemic students using video exclusively for intimate conversations for strong ties because such conversations are affirming, comfortable, and intimate. However, these two effects persisted even when students began using video for large anonymous classes, where the tone, content, and conversational audience were very different. We also observed these same effects for office workers who were also using video for a wide range of professional and social audiences. In both these WFH cases, participants described exploiting the additional affordances and Control offered by video to deploy new strategies to achieve these positive self-presentation effects [17].

In contrast to these stable, situation-independent phenomena, we saw other context-dependent effects. Some of these are intuitive. It is no surprise that shifting contexts from using video for intimate family conversations to large anonymous lectures led students to see WFH video as more Conscientious than offline. As discussed with the dramaturgical view of self-presentation, different contexts necessitate different performances [85,107]. We offer similar explanations for the greater Extraversion seen in the pre-pandemic video. Students who were conversing over video with trusted, strong tie audiences about intimate topics likely feel more outgoing. In contrast, they are far less likely to feel as Extraverted when WFH using video in large student classes, where much of the interaction involves presentations and where they have problems maintaining focus and gaining the conversational floor. Finally, pre-pandemic students saw offline as more Open. Unsurprisingly, this effect is reduced when WFH, as many activities are drastically curtailed for WFH students and office workers.

These findings also have general implications for CMC and media theories. Prior research has taken a similar approach using personality surveys to examine self-presentation over social media [211,212], and there are significant overlaps with our current findings. Most strikingly, prior research demonstrates a bias for positive self-presentation, with participants stressing positive and de-emphasizing negative traits when using social media [15,39]. These prior findings are consistent with our observations across the three current studies. Specifically, our participants scored consistently less Neurotic when online than offline, a result that also occurs across multiple social media platforms, including Facebook, Instagram, and Snapchat [211,212]. This consistency suggests a potential media-independent effect. It seems that regardless of the different affordances, audiences, and contexts of these platforms, people can exert more control of their emotions when online. This reliably leads to reduced Neuroticism when online, unless the purpose of the social media account is directly supporting emotional posting, i.e., an account created just for “venting” [212]. This effect seems to be independent of whether people communicate using typed text or speech and whether the medium is synchronous or asynchronous. Such consistency across media indicates a potential avenue for future work to better understand how people use the control offered by digital media to manage how they present their emotions.

We also confirm other work showing a social desirability bias when using media [15,39,93,187], and there are also overlaps with other theoretical accounts. DeVito et al. [50] offer a framework for analyzing self-presentation in social media that relies on affordances for Identity, Feedback, and Audience elements, arguing that participants are reflective in how they actively exploit these affordances when self-presenting. Our work confirms this and other performative explanations [17,85,107], as well as the importance of audience in shaping self-presentation. However, we also extend that framework by identifying the importance of Control, which allows participants to strategically choose media that allow them to manage potentially emotionally

fraught situations or editorialize how they appear. Our explanation here is closer to Fox and McEwan [74], who also argue for the importance of Control in their analysis of media affordances. Finally, results support psychological theory [58,192], confirming that self-depicting video may increase self-awareness, helping people present a more positive, socially acceptable self.

What other lessons might we draw about the Future of Work? While the long-term impacts of the pandemic on work practices remain unclear, it seems likely that some organizations at least will persist with WFH in some form. Our research speaks directly to that possibility. As noted above, despite the distractions of seeing oneself, communicating over video is generally rated as a positive experience that is not emotionally fraught. However, one intriguing question for future research concerns potential negative consequences for experiencing these predominantly pleasant interactions given the ubiquity of video communication. Are there projects where it is crucial that participants express fewer positive emotions, actively airing their disagreements to resolve them, and where participants must resolve conflicts for projects to progress? By relying exclusively on video, are we preventing such projects from making progress?

5.7.1 Limitations

Our work has several limitations. First, our method relies on self-report through surveys and interviews rather than direct behavioral observation. Therefore, it is essential to confirm our participants' self-reports, e.g., to behaviorally assess the impact that using video has on the presentation of negative emotions. There is a long history of empirically studying video to determine effects on conversational processes and productivity [169,194,236,238], and researchers could use methods used in that research to assess behavioral indices of positivity, emotions, and personality factors. Furthermore, our survey responses asked general questions

about video, which participants can use for many purposes. How then can we be sure that participants were responding to survey questions in consistent ways? Of course, it is possible that some participants were thinking about obscure or unusual contexts of video usage, but interview comments along with our consistent survey results suggest that esoteric interpretations are unlikely.

Another potential question about our approach concerns the extent to which our particular interview questions might have primed participants to view their video personalities in specific ways. However, prior work across multiple studies has shown that such priming effects do not occur [211,212]. We also studied two specific user samples, namely students and office workers, and follow-up studies could focus on much more targeted questions about how results apply to a broader set of professions, as well as different contexts of usage. These two user groups may not represent all students, and there are many types of office workers. We recruited our office worker sample through Mechanical Turk. We confirmed that they are office workers by establishing that they are working full-time and working remotely. However, office workers working from home and using Mechanical Turk may not be representative of all office workers working from home. Finally, our work assesses self-presentation on different media, leaving open critical questions about broader media choice impacts on productivity, employee retention, and even employee mental health. All of these are important issues for future research.

5.8 Conclusions

We assess the effects of changing digital media use on people's self-perceptions when WFH. We use personality surveys and qualitative follow-up probes to examine self-presentation in video, before and during COVID, comparing samples of students with office workers. Despite the challenges of using video in new contexts, we find reliable positive effects of self-

presentation using media. Even during the pandemic, people generally present a more positive self-image when using video than their offline selves, being less Neurotic and more Agreeable when using video. Probes suggest these media differences arise from performative strategies users adopt to address the challenges of WFH. Office workers and some students exploit the Affordances and Control offered by online media to engage in active efforts to appear positive over Video. When WFH, students grappling with the challenges of using video with larger unfamiliar Audiences avoid social awkwardness by disengaging from video. There are important implications for future media designs, theory, and deployment.

5.9 Open Questions

The project compares students and office workers in two different time contexts (pre-pandemic and during a pandemic) on two different communication mediums. This work helps elucidate the effects of social context on how people present themselves through communication media. When social contexts shift, such as a pandemic forcing people to use video calls for many work-related conversations instead of close social bonds, people's self-presentation on a medium can shift.

Thus far, my work has focused on direct comparisons between two media and one's offline self. However, people who use social media do not only use two media; they often use a variety [213,242] each with different features, affordances, goals, and social norms. From previous studies we know that self-presentation can depend on elements of the audience, and the affordances of the social media. But what if we try and rotate this perspective? Given a specific self-presentation goal, what media might people choose to help achieve that goal? The following study examines this question through giving users of four specific media (Twitter, TikTok, Snapchat, and Instagram) scenarios and asking them where they think someone should post.

6 How Do People Make Social Media Posting Choices?

6.1 Project Summary

This project was created to explore social media ecologies; to understand how people navigate where they post among the multiple social media they likely use. Rather than allow people to answer based on the set they actually used, we instead sought out people who were current users of ¾ of the following social media: TikTok, Instagram, Snapchat, and Twitter. We chose these social media because they have very different features, affordances, and social norms. Instead of using personality surveys in this study, we instead created posting scenarios for participants that they responded to by selecting which social media the protagonist of the scenario should post to. The goal of this study was to build and evaluate a model of how people make social media posting choices. We started with a model based in literature (see Fig XXX below), evaluated it based on the results of this study, and updated with the insights gained from participants. We found that the intended Goal and Social Norms on a social medium were the most important drivers of participants' choices.

6.2 Introduction

Many people use multiple social media in their daily lives. In 2021 Pew research found that 72% of American adults have used at least one social media site, while younger adults are often active on multiple social media sites concurrently, such as Instagram (76%), Snapchat (75%), Twitter (42%), and TikTok (55%) [6]. But given the multiplicity of media, how do people

decide exactly where to post? According to previous research, users consider multiple related factors [21,213]. Decisions often involve balancing Goals [24,120,206], media Affordances and Features [26,50,67,74], and Social Norms [14,41,220]. This work derives a media choice model from previous literature and evaluates it using scenarios, flowcharts, and interviews to examine how users interpret these different factors when choosing where to post.

Prior work argues the following factors influence media choice: Goals, Affordances, Features, and Social Norms. There are many potential user Goals for social media use [24,117,196,201] but these often relate to self-presentation [15,39,85,107,156,211]. Given the prevalence of self-presentation as a Goal, this work evaluates social media choices for two specific self-presentation Goals, Idealized and Authentic self-presentation. Both these Goals are common on social media but have different outcomes [39,93,128,156,193,220,231,241]. Affordances and Features are also important determinants of media choice [15,16,21,26,63,219]. Affordances are how people perceive a social medium in terms of interacting with it, i.e., what users perceive as possible on a given medium [80,81,83,167]. In contrast, Features are the immutable, objective properties of the technology that cannot be changed without transforming the medium [148,201,219]. For example, speech technologies like the phone call have different Features from video technologies such as Zoom because video provides information about participants' gaze, facial expression, gestures, and posture is unsupported by the phone [82,236]. Social Norms are another determinant of media choice. Social Norms are defined as general, often implicit group rules for what is acceptable on a specific social medium [41,59,158,220]. Social Norms help regulate behavior and manage user expectations [108]. Success in a social medium necessitates following Norms due to the penalties for Norm violations [32,185].

The research described above generally investigates the impact of a single factor on a single social medium rather than how multiple factors might influence medium posting choice

[14,15,39,117,120,123,150,196,206,225]. However, a few exceptions consider a media ecology perspective, choosing between multiple media depending on underlying factors [21,213]. These studies argue that users choose a social medium to fulfill a particular Goal while navigating the Features, Affordances, and Social Norms of their social media ecology. For example, given the Goal of presenting oneself Authentically, Snapchat is a better medium to choose than Facebook, as it allows posting to a small Audience of known intimates [21]. However, these works do not evaluate the relative importance of these factors when people make media choices. We developed an initial conceptual model based on existing literature using these factors to address this. We call this the Features, Affordances, Norms, and Goals (FANG) model (see Fig 1). Based on prior research, this model assumes that Goals drive media choice. Given a Goal, users evaluate where to post by comparing the Features, Affordances, and Social Norms of available media. Furthermore, the model implicitly assumes that all three factors are equivalently weighted. This work aims to deepen our understanding of how people choose between media, using scenarios to build a conceptual model of that choice process.

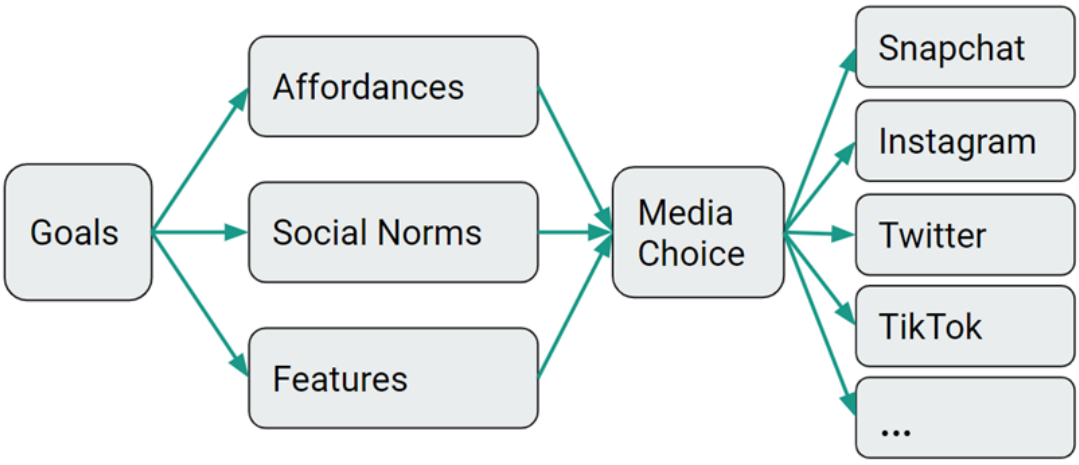

Fig. 1. FANG model of Social Media Choice. Users start from a Goal, consider the Affordances, Social Norms, and Features needed, then choose the best social medium for a post

To clarify the FANG model, let's consider what a user with an Idealized self-presentation Goal might consider when deciding where to post. Abby wants to show friends and family photos of herself and her friends on a nature hike, to meet an overall Goal of showing an Idealized version of herself on social media. According to the FANG model, Abby is influenced by three factors, Affordances, Social Norms, and Features, when choosing where to post between various available media shown on the right-hand side of Fig 1. For explanation purposes, we begin with Features, although this is arbitrary. Abby considers which media have Features that accept photos. Since they all do, Features don't help her narrow her choices. Next, Abby considers media Affordances, i.e., what Abby thinks is possible to do on those media. Abby wants her post to update most of her friends and family in one shot which eliminates Snapchat since most of her friends and family do not use it, and it's difficult to send to a large group of people quickly. She is not interested in other potential Affordances such as Anonymity or Personalization since she does not want to post anonymously and does not need to tailor this post for multiple groups of people. Next, Abby considers Social Norms. Since everyone looks good in the photos and the activity is broadly appealing, Abby wants to post on a social medium where such a positive post is encouraged. This decision rules out Twitter and TikTok as they can have negative commenters. It does support Instagram, though, as she's seen precedents of other people posting such content, which received praise there. After Abby considers these different factors, she chooses a medium to best support her Goal, in this case, Instagram. Note that the FANG model is agnostic on whether this is a conscious choice process.

This work assesses the FANG model by assessing how users make posting choices between media. To do this, we recruited 19 current users of at least three of the following media (TikTok, Twitter, Instagram, and Snapchat). We presented multiple scenarios, asking participants to make a posting choice. They both explained their decision processes in an interview and used a flowchart-building task to help clarify their mental model of social media choice (similar to

[51]). We use scenarios as these are a well-established method for eliciting participant reflections on their usage and underlying conceptual models [37,52,183]. As stated above, we constructed the scenarios to reflect Authentic and Idealized self-presentations. Authentic scenarios reflected Goals where the protagonist desired a genuine connection with others. Idealized scenarios reflected Goals where the protagonist wanted to express their best self. Our research questions are:

1. Does the FANG model reflect how participants actually choose between social media?
2. What factors influence participants' posting choices on social media?
3. Are any factors more important than others?
4. Are participants consistent in their media choices?

6.3 Literature Review

6.3.1 Goals and Self-Presentation

Goals of social media use broadly incorporate different motivations and motives, such as social connection, sharing identities, entertainment, etc. [24,117,196,206]. We use the uses and gratifications theory to help explain why people might have specific Goals on social media [24,117]. Early research on uses and gratifications characterized media such as television or books [121], while more recent research has expanded to include social media [24]. Examples of uses on social media include Goals such as entertainment [196], social connection [173], and self-presentation [38]. However, little research uses this framework to examine how users navigate multiple media to fulfill gratifications. One exception is a recent study by Tandoc et al., who looked at "poly-media swinging," or how people move (swing) from one medium to another and for what [213]. In particular, it revealed that users could and do swing to navigate different barriers to fulfilling their Goals. Users media swing to fulfill self-presentation needs

more holistically, such as by sharing opinions on Twitter and activities on Facebook. Swinging also allows them to overcome audience or Social Norm barriers to achieve their Goals. Their research also identifies two main Goals that media swinging can address: self-presentation and relationship management. As self-presentation is a common social media Goal, we now discuss self-presentation, specifically Authentic versus Idealized.

Self-presentation is a complex process for people, such that sometimes they use different accounts for different types of self-presentations [15,39,85,107,156,211]. For example, studies of Instagram usage show people present a more Idealized version of themselves on one Instagram account while using another to present a more Authentic version [111,120,136,212]. Because of this, a major factor in determining self-presentation is whether the Goals appear Authentic or Idealized. In this study, using scenario prompts and flowchart building, we explore two general self-presentational Goals that users often attempt to achieve, Idealized and Authentic self-presentation.

Idealized self-presentation is often driven on social media by social desirability or a bias to present oneself through positive and socially acceptable content [39,220,231,241]. For example, on Facebook, Twitter, Instagram, and WhatsApp, there are Social Norms for presenting positive emotions over negative or neutral emotions. These Norms are stronger for Instagram than for Facebook and Twitter [233], indicating Idealized self-presentations can vary. Authentic self-presentations are also desirable at certain times and in specific contexts. Previous research has found positive outcomes for those who can Authentically express themselves online such as less negative and more positive affect [93,128,156,193]. However, expressing such Authenticity on social media is often fraught [14]. For example, a recent study comparing Finsta vs. main Instagram accounts found that the more Authentic Finsta accounts were less satisfying and useful due to receiving fewer comments [111]. Authentic self-presentations allow users to fulfill needs alongside Idealized self-presentations with different

accounts or media, allowing users to achieve their self-presentational Goals. However, outcomes can be complex and reliant on multiple factors; another study found greater negative affect from imagining criticism for Instagram users who present a false self on Instagram than users who present a more Authentic self [113]. We chose to evaluate Authentic and Idealized self-presentations because they represent drastically different Goals, with different potential presentations related to them.

6.3.2 Affordances, Features, and Media

Affordances are a useful lens to understand how and why people use different social media [15,16,17,26,63,219]. To reiterate, Affordances relate to how people understand how to interact with something, in this case, a particular social medium. By contrast, Features are the technology's basic, immutable, objective properties that cannot be changed without fundamentally changing the medium. Affordances allow people to understand the possibilities of interaction with a technology [50,67,74]. For example, users may feel that Snapchat has greater Anonymity than Facebook due to differences in sets of Features (i.e., using a real name on Facebook vs. not on Snapchat, snaps disappearing by default instead of staying by default, less vs. more control over who sees a post, etc.) [15,67,146,182]. This relationship between Features and Affordances is not one-to-one; a set of Features (i.e., all of the Features in Instagram Stories) may lead to an Affordance rather than a single Feature (i.e., posting photos).

There are a variety of Affordance frameworks that describe Affordances specifically on social media [50,67,74]. We use Fox and McEwan's Perceived Social Affordance framework [74] in this study to help describe the Affordances people use on social media. For example, Personalization (the ability to focus messages to a specific person or group of people) or Anonymity (the ability to keep oneself anonymous when interacting with others through the

medium). Such Affordance frameworks are useful conceptually as they allow for comparison across media, helping to support research that examines multiple media.

The current study looks at four media (Instagram, Twitter, TikTok, and Snapchat) with the following Features. Instagram is image-based, focused on creating albums of pictures or videos that go to a large group of people [4,212,241]. Twitter is primarily text-based, although around 2015, short video posting was added as a Feature [103]. Tweets go out to large groups of followers and can easily be retweeted to others, allowing a post to have a vast potential audience [150]. Snapchat is image and video-based, but its key Feature is ephemerality. Posts made to it by default disappear after a certain period, and posts generally go to a smaller audience, with the poster having more control over who sees what posts [15,182,225]. Finally, TikTok is the newest social medium of this group. As of 2020, it has recently exploded in popularity in the US. The content is primarily short form (15-60 sec) videos where users can add videos or audio of themselves to an existing video as a response or "duet" [14,123]. Also of note is the "For You" page, where users can view a stream of algorithmically selected content based on their viewing preferences [200]. Next, we will discuss an important element of the social space of social media: Social Norms.

6.3.3 Social Norms

Social Norms are broad, often unstated rules for what is acceptable on a specific social medium [41,59,158,220]. Social Norms are vital for communities as they help regulate behavior and manage expectations in social spaces [108]. However, Social Norms can be complex, especially in social media, and sanctions for violating Social Norms might be implicit. For example, on TikTok, it is socially acceptable to present a wider range of emotions, even negative ones that would be self-censored on other media. These Norms allow users to express different Social Norms around Authenticity [14]. However, a similar post on another

medium such as Facebook might be ignored or sanctioned subtly [185]. Social Norm sanctions are important for maintaining communities; pushing back against non-normative behavior helps reinforce existing Social Norms [141]. Another study found that people have complex and often implicit strategies for seeking social support, as overtly seeking support is a Social Norm violation on Facebook [32].

Due to this complexity there may be issues with navigating a complex web of Social Norms across different media. The theoretical concept of profile work [199,220] helps capture this issue through conflicting Goals, where people's desires run against the Social Norms of a medium. As discussed, an example of one's Goal conflicting with Social Norms can take the form of sharing overly emotional content in a place where other users will not accept it. The person posting may know they are violating a Social Norm but still proceed because the support they could receive is worth it. Another issue is that Social Norms are dynamic, and it can be difficult to navigate the variety of contextual Social Norms layered into a medium. This issue can lead to context collapse [150], where the unclear boundaries between communities can unintentionally lead to Social Norm violations; a college student sharing photos of drinking with friends on Facebook might get disapproving messages from family members [32].

Another factor that could lead to differences in media choice is tie strength. Social networks (both online and offline) have differences in the strength of a person's connections to others they know, also known as tie strength [26,62,92,138]. Social networks on social media sites can differ depending on the site, such as having a larger group of weak and strong ties on Facebook while having a smaller group of strong ties on Snapchat [15,211,222]. Although this could be a factor that leads to differences in use and social media choice, we chose to focus on Social Norms as these encapsulate broad sets of behaviors related to Goals.

Overall, prior work identifies important theoretical and empirical factors in how social media users make choices between different social media. It also suggests that Goals, Affordances, Features, and Social Norms potentially influence different choices in a user's social media ecology. Our work adds to this by identifying multiple important factors in social media choice and empirically evaluating them through posting decisions for different self-presentation Goals. We examine how people's evaluations of these different factors lead to different posting choices, which factors people use more in their decision-making process and evaluate the initial FANG model based on participant experiences to capture better how people make their decisions.

6.4 Method

6.4.1 Participants

To evaluate the FANG media choice model, we recruited participants using Prolific [244], an online participant recruitment site. All participants met the following criteria: graduate or undergraduate student, users of at least three of the following four media (Snapchat, Instagram, TikTok, Twitter), aged 18+, and currently in the US. Participants were required to be in the US by IRB, and participants were students to help with sample consistency. Participants received $14 compensation upon completion and completed the interview in ~1 hour. The final sample was 19 participants. They self-identified as 12 women, 5 men, and 2 non-binary, aged 18-37 (M=24.11, SD=5.37): 42.1% were White/Caucasian, 21.1% Asian/Asian American, 15.8% Mixed Race/Ethnicity, 10.5% Hispanic/Latinx, 5.3% Black/African American, and 5.3% Native American, Alaska Native. The average duration of the study sessions for participants was 1:09:30, with a range of 46:11 to 1:46:24.

We asked participants about their posting and viewing frequency for each social medium. Table 1 shows participants were frequent media users and, as expected, more likely to view media than post. All participants should therefore be familiar with typical posts on each medium, with some higher-intensity users posting and viewing very frequently. Participants did not describe themselves as business owners or influencers, but average users of the media. They did not mention in interviews that they had an unusual number of followers or followees on any of the social media discussed. The study was reviewed by the first author's university IRB and was approved as exempt.

Table 1. Reported Frequency of Social Media Posting and Viewing

Media	I've never (posted/viewed) it	I've (posted/viewed) once or twice	I (post/view) it infrequently (~1-2/ month)	I (post/view) it frequently (~1-2/week)	I (post/view) it very frequently (>= 4-5/week)
TikTok Posting	9	4	5	0	1
TikTok Viewing	0	0	3	0	19
Twitter Posting	2	5	7	3	2
Twitter Viewing	0	0	8	0	11
Instagram Posting	0	3	9	5	2

Instagram Viewing	0	0	5	0	14
Snapchat Posting	1	6	5	2	5
Snapchat Viewing	2	0	10	0	7

6.4.2 Procedure

After completing a consent form, participants were interviewed online following a structured protocol. Four phases followed: (1) four choice scenarios in which participants were asked to choose where to post between four target media, (2) creating a flowchart to represent decision processes, (3) presentation of four further scenarios, (4) revisiting and modifying the flowchart.

First, we presented participants with 4 hypothetical posting scenarios in one of two different categories: Authentic or Idealized self-presentation. The overall objective of the scenarios was for participants to choose a medium or multiple media, provide a justification for their choice, and explain why they did not choose other media. We designed the scenarios over multiple rounds of revision based on examples from each medium (see Appendix B). Scenarios were agnostic about media formats as pilot testing revealed that explicitly describing posts as text/photos/video biased participants' choices. We deployed a within-subjects design. Participants were randomly assigned to receive four Authentic or Idealized scenarios first, and we randomly presented scenarios within these categories to eliminate order as a possible confound. The protagonist's gender in the scenario was matched to the gender of the participant to increase participant engagement and to avoid potential cross-gender effects

[147]. Participants read each scenario and were asked, "Where do you think [the scenario protagonist] should post this?". Responses took the form of a conversation, allowing both participant and interviewer to clarify. The interviewer verbally listed potential social media at the start of each phase. Participants were encouraged to choose one social medium but could choose multiple if they made an argument for this. They then answered follow-up questions, such as "Why do you think [protagonist] would choose to post to that medium?" (See Appendix C for list of questions). Participants were given four scenarios before constructing a flowchart, as we wanted them to first experience making decisions and thinking about media.

In the second phase, participants created a flowchart that identified and organized elements influencing their media choices (See Fig. 2). Elements represented concepts written on virtual cards, such as **audience*, going viral, or present a perfect self** (*bold indicate the text of an element). Participants responded to the prompt "What do people consider when making a post" by creating a flowchart. They generated their flowchart using a Miro board [245] (a shared whiteboard space where participant and interviewer can simultaneously write and move virtual cards freely) to write elements and draw connections between them. The interviewer first created an initial set of unorganized elements, describing concepts the participant mentioned when discussing the scenarios during phase 1. The interviewer then encouraged the participant to edit, supplement and organize these initial elements as they saw fit. We explicitly told participants to place more important elements at the top, with less important elements below. Following similar studies [65,66], participants were asked to think aloud while constructing the flowchart, and to review their completed flowchart. This process follows existing work to construct conceptual hierarchical flowcharts (see [52,118,122]).

The third and fourth phases repeated the first two phases. In the third phase, participants answered scenarios from the category they had not seen previously (i.e., those who first saw Authentic would now judge Idealized). In the fourth phase, participants revisited the flowcharts

generated in phase 2. We encouraged them to add, change, or remove any elements from their existing flowchart based on the new scenarios that they had just discussed. We also presented participants with additional elements to consider based on Affordances drawn from previous work [74]. As before, we asked participants to think aloud while they arranged the elements and explain the construction of their flowchart once completed. Finally, they answered some demographic questions and finished by debriefing.

6.5 Results

6.5.1 Classifying the Elements Influencing Participants' Decisions

We first analyzed users' conceptual models of media choice, represented in their final flowcharts. Our process for categorizing flowchart elements was top-down, using concepts drawn from previous literature: Goal, Social Norm, Feature, and Affordance over multiple rounds. We aligned each element in the flowchart with the interview discussion of that element and any related elements. This allowed us to categorize the element into one of the four categories. As described above, we asked participants to put the most important flowchart elements at the top. If a flowchart contained multiple top elements, we determined the most important element based on how they ranked those elements in the interviews.

After identifying the most important elements in people's hierarchical flowcharts, we confirmed the importance of Goals and Social Norms in the FANG model. Participants overwhelmingly identified Goal or Social Norm based elements as the most critical determinants of their media choice. Participants frequently felt that a user's overall Goal is a critical determinant of where to make a post. However, despite this strong focus on Goals, many others mentioned Social Norms as their most important element. Out of the 19 participants we have flowchart information for, 13 of the most important elements were Goal- and 6 were Social Norm-based.

Additionally, flowcharts were complex, with nearly twice the number of elements in the second compared with the first flowchart version. Flowcharts in version 1 contained M=12.3, SD=4.4 elements, whereas flowcharts in version 2 had M=22.9, SD=8.7 elements. The following sections will first clarify the importance of Goals and Social Norms and then elaborate on the role of Affordances and Features in media choice.

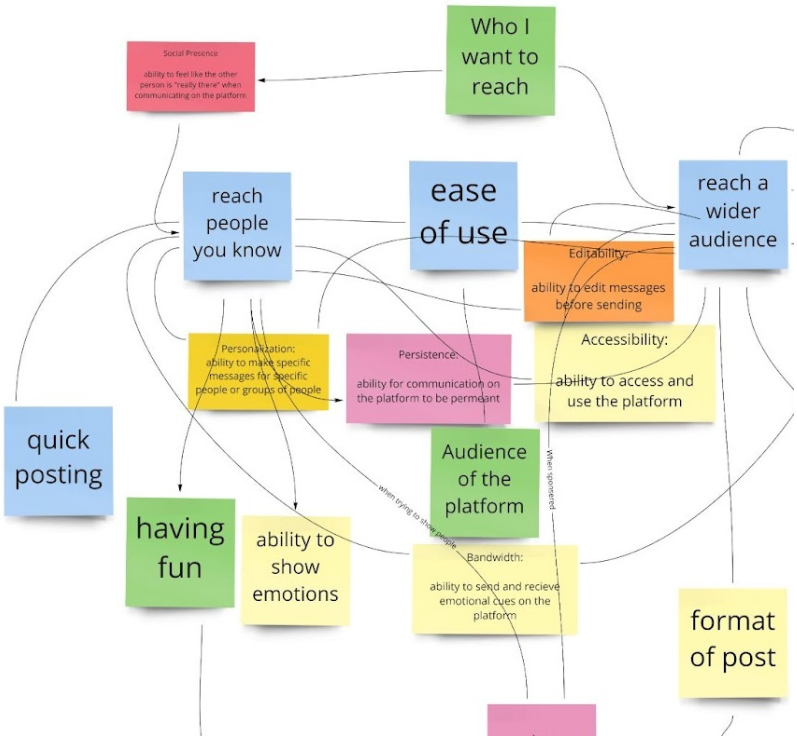

Fig. 2. The top-left section of P14's flowchart. The entire flowchart represents people's conceptual model of factors determining where to make a social media post, with the most important elements shown at the top. At the top is **Who I want to reach**, indicating that is the most important element for this participant. Flowcharts often had high degrees of interconnection, containing many elements. Color has no meaning, they were chosen at random.

6.5.2 Goals Are Important, And Drive What Factors Users Attend

The FANG model argues for the importance of Goals, and evidence from the flowcharts and interviews confirms this. As discussed earlier, a Goal is a broad motive for why a user might use a particular social medium, usually to achieve some sort of gratification [24,121]. In Fig 2,

they represent their Goal of “influencing specific audiences” in the element **Who I want to reach**. Participant P14 explicitly discusses their choice process; they describe how they subclassify their broad Goal depending on the specific post context. The underlying Goal is more complex than the simple textual labels of their flowchart elements, and the interviews provided disambiguating context.

"I think primarily you have to figure out who you want to reach. And if you're posting for social media you can have multiple reasons, but if you're just posting for people you know, you're gonna have different motivations than if you're trying to reach a wider audience. So I would think for people you know, you want to be doing things like having fun, showing emotion, and even getting attention from that. The wider audience I would think you're going to be building brand, monetizing" (P14).

For P14, their primary underlying Goal is to influence specific audiences to achieve different gratifications. Each audience they mention identifies a sub-Goal, which invokes different sub-elements. If P14 wants to **reach people they know**, then the sub-elements of **quick posts, showing emotions,** and **having fun** become important. These sorts of Goals fulfill a gratification of social connection. In contrast, if P14 wants to **reach a wide audience**, **monetization**, **building a brand**, and **connectivity** become useful for achieving said Goal. The gratification here would be **making money** or **gaining influence**. This nuanced presentation of Goals confirms their importance in the FANG model. By showing that users break Goals into sub-elements, it affirms that Goals are a strong motivator in media choice. Subdividing a Goal indicates that Goals are a flexible factor that can drive choice towards different media. In P14’s example, “influencing different audiences” breaks down into different Goals for different audiences. By choosing which sub-elements a particular medium best supports, users can navigate the flowchart to decide which medium best supports their overall Goals.

For more support of Goals' importance, let's examine another example. A different participant identifies the Goal of communicating **Perfection and Good Times**, where the main motivation relates to self-presentation. Although we focused scenarios on self-presentation, some participants considered other Goals when making their flowcharts. Compared to the previous example, this participant felt that it was critical to use media to offer a specific, highly positive, Idealized self-presentation.

"[...] I was like 'perfection'. So that probably would be my top. Because, you always want to show the best side of yourself on social media. Just because nowadays, social media is everywhere and you always want to make sure it doesn't really bite you in the butt afterwards. [...] And then probably the second one [in the flowchart hierarchy of elements] would be good times because I mean, it also ties along with perfection, because you always want to seem like 'hey, I'm having the time of my life'. It's always like… to me with social media, you're kind of bragging about your accomplishments, or anything that's good happening in your life" (P3).

As in the previous example, the participant clarified the Goal during the interview. Their most important element was to give off a specific self-presentation, that of perfection. Showing their Idealized, perfect side also protects them from online criticism or scrutiny. This example again supports the FANG model's claim that Goals are an important determinant of media choice. For this participant, if a social medium did not support their Goal of showing perfection, they would not want to post to it.

6.5.3 Social Norms are Important and Sometimes Drive Media Choice

We also found evidence that Social Norms (the general unstated rules for what is acceptable on a given medium) were important and also drove media choice. For example, the flowchart

element Ability to show emotions describes how comfortable P14 was with sharing their emotions on different media (see the lower center of Fig 2). As discussed in the Introduction, different social media have different Social Norms regarding posting emotional content, especially negative emotions. P14 in the figure uses this element to represent how Reaching the people you know is associated with Social Norms for expressing emotions on this social medium. Another participant (P7) also discusses Social Norms, arguing that these imply direct consequences for suddenly changing the type of content one is posting:

"You know, it's like somebody one day, you know, being a nonstop comedy blogger, or Vlogger, some sort. And then out of nowhere, they're posting really deep, really emotional stuff, crying all the time, when you have a whole bunch of followers who follow them to be laughing all the time. And now they're just sad when they watch everything, which is fine. It's up to you, if you want to post that kind of stuff. But if you're wanting people to stay with you, you can't just out of nowhere, poof, and switch everything" (P7).

While this participant discussed the ability to show emotions in the context of being a consistent poster, others shared concern about suddenly changing one's posting by describing their experiences. Even though a poster might in reality feel emotionally negative, their posts on a medium with positive Norms such as Instagram should not reflect this unless that poster no longer cares about having followers. This and other examples confirm the importance of Social Norms in the FANG model. Participants were aware of a variety of Social Norms in different media and knew that violating them could lead to consequences such as negative feedback or suddenly losing followers. Users needed to carefully negotiate Social Norms, so much so that Norms sometimes seem to be the main determinant of media choices.

Recall that in addition to creating flowcharts, participants also reflected on hypothetical scenarios involving media choices. These scenario choices also affirmed the importance of

Social Norms. Scenario 1 (see Appendix B for the full text) featured a protagonist who enjoys dancing and wants to show off their skills. Participants were extremely consistent in their responses to this scenario; all stated that the protagonist should post on TikTok (see Table 2 for more details). One participant notes that, due to Social Norms about what content is encouraged, TikTok is the best medium to post dancing:

"Oh, that's definitely TikTok. [...] Dancing videos are all the rage on Tik Tok. So, you would definitely get the most engagement and shares and views there" (P19).

When participants were asked why they think this post is most appropriate to TikTok, they generally discussed Social Norms. For example, P19 noted that Social Norms on TikTok encourage posting fast, kinetic content, with slower-paced content seen as violating Norms. P19 explained other media Social Norms but noted that since the scenario so clearly matched TikTok, TikTok would be the best fit. Although it's possible to post videos to other media such as Instagram, Snapchat, and Twitter, they are definitely more common in TikTok. This automatic matching based on Social Norms suggests a modification to the original FANG model, suggesting higher precedence for Social Norms. When scenarios matched existing media Social Norms, participants made that choice directly without stopping to consider Affordances and Features. However, when no such direct Social Norm match existed, their decision processes were more complex and incorporated those factors.

For many of the Authentic scenarios, participants did not see an exact match between the scenario and existing Social Norms, which led them to reflect on the scenario in more detail. Scenario 6 features a protagonist whose ex-partner has started seeing other people, and the protagonist wants to post about their feelings (see Appendix B). P13 gravitated towards Twitter in their response based on Social Norms around what people post there:

"I feel like Twitter because I see a lot of people posting their feelings on Twitter. Versus Instagram because [...] it's more of a picture place. If I wanted to see written posts about something I'd go to Twitter. Snapchat is the same thing, I kind of go to Snapchat for pictures and happy experiences. For Tik Tok, I mean, it could be appropriate, I guess. Um, I just feel like it's just a bunch of different people will see it… maybe you just want your close friends to see it" (P13).

This participant wrestled with where this post could fit and used Social Norms to help resolve their conundrum. They first noted that Twitter could be appropriate based on prior Norms about people posting their negative feelings there. Next, they evaluated Snapchat and Instagram. Either could potentially be appropriate, except that Norms for both tend to emphasize positive picture posts. TikTok could work as a medium to discuss negative emotions, but for this participant, TikTok tends to target a large group of strangers, whereas such messy, negative feelings would be better for close friends. P13's reaction first invokes respective media Norms, thinking about what people typically post on each. They finally opt for Twitter; even though it's not a perfect match, it doesn't egregiously violate P13's understanding of the Norms there.

P13's quote further supports the need to modify the original FANG model. When the scenario fails to elicit the Social Norms for a specific medium directly, the participant reverts to considering the Goal (here, posting feelings). They then evaluate Social Norms and Affordances to find the medium that best matches that Goal.

In this example and many others, we found that Affordances and Features were accorded less importance in the choice process than the original FANG model proposes. Participants evaluated Affordances only insofar as they supported Social Norms but did not view Affordances as primary determinants of media choice. Features had an even more minor role in their decisions. We now describe this.

6.5.4 Affordances are Less Important than Goals or Social Norms

The FANG model (see Fig 1) proposes a key role for Affordances. **Personalization** (see middle left of Fig 2) is an example of an Affordance, reflecting a participant's perception that the medium can be configured to restrict messages to specific people. For example, for some users, Snapchat offers more Personalization than Twitter because they can restrict a particular message to a particular audience on Snapchat. However, participants making choices did not generally imbue Affordances with equal importance as Goals or Social Norms. Instead, participants described Affordances as parasitic on the Social Norms they support. For example, P5 describes how Snapchat does not have certain Affordances because of the Social Norms in place there:

"Yeah. I think for Snapchat privacy isn't really an issue because only people are your friends can see it. I don't think you can be anonymous on Snapchat as well. That's not something that you can be. I think with Snapchats usually you are the one that's dictating the conversation. If you're the one that's posting your story, people usually respond back to your story, usually not the other way around" (P5).

P5 describes how for them, Snapchat doesn’t possess certain Affordances related to Privacy and Anonymity due to Social Norms around its usage. Suppose a user is posting their story. In that case, because "only people who are your friends can see it", it eliminates Privacy or Anonymity concerns because these intimate people can be trusted. This participant's view of Snapchat is typical of how participants saw the role of Affordances in media choice. Participants mentioned Affordances, but only in service to Social Norms or the Goal of the post. These observations suggest the current FANG model needs revision, with the role of Affordances being downgraded. We now discuss Features, which were again only considered in terms of how they affected Social Norms.

6.5.5 Features are Necessary but Not Sufficient to Determine Media Choice

When participants referred to Features (i.e., the objective technical properties of a medium), they typically focused on the type of content found in different media. Many media allow posting in multiple formats, e.g., while users typically see Twitter as being text-based, it also supports video and pictures. Nevertheless, users tend to post the type of content that Social Norms dictate typically appears on that medium. The example below shows that Features are necessarily considered when people use a medium. However, they are not sufficient to explain media choice, instead being subsumed by Social Norms. For the following participant, the Type of Content element is related to whether the post is a photo, video, or text. This element appears to be a Feature as it is related to what people can technically do on the medium. However, the interview clarifies that rather than their choice being based on what is objectively possible on a given medium (i.e., Features), that choice is driven by how others typically use that medium (Norms). In other words, their choice is actually driven by Social Norms:

"[...] I think the type of content would be the primary thing people take into consideration. Just because of what's most normally seen on those things, I think people have a tendency to fall into kind of what other people are doing. Don't want to stick out necessarily" (P11).

The critical part of this statement is that the participant feels usages tend to "fall into what other people are doing". Even though the Type of Content sounds like a Feature from the flowchart element's text, the interview clarifies that Social Norms actually determine choice. Instead of representing what the user can technically post on a medium, this element represents general rules about what is appropriate to post to avoid "stick[ing] out necessarily". In other words, Features are a necessary but insufficient step in decision processes about where to post.

These examples suggest that as with Affordances in the FANG model, Features should be downgraded as they seem to be dependent on Social Norms.

6.5.6 Goals Revisited When No Matching Social Norm

In a further deviation from the original FANG model, participants often revisited the Goal of a scenario when there was no clearly matching Social Norm. As in the example from P13 discussed in Social Norms, we saw other participants enacting this process. For example, in the Upset scenario, the protagonist of the scenario is disturbed and wants to honestly share their feelings so that a friend will comfort them. In this case, P12 is trying to choose between TikTok and Snapchat, thinking about how to contact a specific person without having others interfere. However, because there is no direct match based on Social Norms, they revisited the original Goals and broadened their choice processes to include other factors:

"I'm not sure if you can make an individual TikTok just for your friends to see. But if it did that feature where you can you can just set a video to just a certain friend group then maybe TikTok? Snapchat... I know you can send it specific friends, but she didn't mention a specific friend. So … because she just wants any friend, [...] so I wouldn't necessarily choose Snapchat maybe TikTok "(P12).

P12 concluded that TikTok or Snapchat were viable choices after evaluating the Social Norms around sharing emotional content and other people seeing potentially sensitive information. However, P12 could not decide between these choices, as neither was an exact match. P12 then returned to the initial scenario to confirm with the interviewer that it involved "wanting a friend". P12 then revisited their choice, now considering the Affordances of TikTok and Snapchat. In other words, only after the participant determined that Social Norms were not directly helpful did the participant revisit the protagonist’s specific Goal. This then informed the participant's evaluation of which medium was most appropriate.

This data again suggests a modification of the original FANG model, indicating that when there wasn't a Social Norm match, participants needed to revisit the Goal after narrowing their choices based on potential media Affordances and Social Norms. Participants seem to use all the factors to some extent, but Social Norms and Goals were more important than Affordances and Features. We now discuss the scenarios in more detail, examining consistency and inconsistency in media choice.

6.5.7 Scenario Results

Table 2. Medium Choices in Scenarios

Scenario	Scenario Goal	Instagram	TikTok	Twitter	Snapchat	Multiple
1: Dancing	Idealized	0	19	0	0	0
2: College	Idealized	14	3	1	0	1
3: Amusement	Idealized	11	1	0	4	3
4: Fitness	Idealized	9	5	0	1	4
5: Identity	Authentic	0	15	2	0	2
6: Degree	Authentic	11	2	0	0	6
7: Ex-Partner	Authentic	7	2	5	4	1
8: Upset	Authentic	5	2	4	8	0

Note: The 'Multiple' column header refers to participants who said the scenario could elicit posts for multiple listed media

Participants' responses to each scenario are shown above in Table 2. Note that for some scenarios, such as Dancing, Identity, and College, participants were highly consistent, with the majority choosing the same medium. However, there was less consistency for other scenarios such as Ex-partner, Fitness, or Upset. As with flowcharts described above, Social Norms seemed to be the driver of consistency or inconsistency in selection. Participants described explicitly thinking about these other factors when a scenario did not match an existing Social Norm for a medium, thus reducing consistency. Consistency of selection was also influenced by scenario type, with Idealized scenarios being generally more consistent. We now discuss the different reactions to these types of scenarios.

6.5.7.1 Idealized Scenarios

Scenarios that fit existing media Social Norms showed far greater consistency. For example, scenario 1 (see Appendix B for the full text) featured a protagonist who enjoys dancing and wants to show off their skills. Participants all chose TikTok. One participant notes that, due to Social Norms about popular content, TikTok is the best place:

"Oh, that's definitely TikTok. [...] Dancing videos are all the rage on Tik Tok. So, you would definitely get the most engagement and shares and views there" (P19).

Such consistency driven by Social Norms provides further evidence that Norms are more important for choice than Affordances and Features. For another example, consider scenario 2. The protagonist was a college student taking videos and pictures of a friend with a nice backdrop, which fits a typical Social Norm for Instagram. P6 describes their reaction to the College scenario as perfectly matching Social Norms for Instagram over other social media:

"It's the type of content that works well on Instagram, people like to see a pretty person, nice background, specifically post[ing] photos, like it's perfect for the platform. [...] And it [Instagram]

has now gotten to the point where your newsfeed is just… you just keep scrolling and you want photos to catch someone's eye if you want them to stop and like it, and look at your profile" (P6).

The scenario description directly matched P6's understanding of Instagram's Social Norms, where a post must have an attractive background and subject to get someone's attention. Other participants seemed to agree, with around 74% selecting Instagram. These examples further substantiate Social Norms' importance compared with Affordances and Features. Participants first evaluated the scenario to determine whether it reflected an existing Social Norm for a particular medium. When such direct matches occurred, selections were consistent across participants.

6.5.7.2 Authentic Scenarios

However, scenarios that did not directly match social media Social Norms made choices harder. Authentic scenarios often did not appear to fit existing Social Norms. Some participants even mentioned feeling uncomfortable with these scenarios, e.g. when they violated Social Norms about only posting positive emotional content.

In one Authentic scenario, Ex-Partner, participants utilized both Social Norms and Goals to understand what social medium would least violate Social Norms. Recall that in this scenario, the protagonist has an ex-partner who has started seeing other people and wants to make a post related to their feelings (see Appendix B). When P7 heard this scenario, they chose Snapchat:

"I would think that be private... So I would say Snapchat. [...] Yeah, you can post it on TikTok, but usually the other party doesn't really appreciate it. [...] Also it's audience tends to have a bit of an issue when things get a little too real. [...] And, to a point you can do it to relate to people

and be a little more down to earth. But when it comes to [...] letting yourself out there… unless you've built the audience support. It's good to keep it close to home, because that's where you're going to get the most genuine support "(P7).

This participant chose Snapchat as they felt it was important to keep the sensitive topic of relationship drama to a smaller supportive group rather than show something "too real" to a larger group who might not appreciate it. Incorrectly choosing a group could violate a Social Norm around what topics are appropriate to post for other media such as Instagram.

As we saw before, P7's discussion of Snapchat first identifies the Goal, then evaluates Social Norms and Affordances of different media and finally revisits the scenario Goals. The example again shows that if there is no clear Social Norm match, the selection process becomes more challenging and involves revisiting Goals. In P7's view, Snapchat is a place where people can have the Affordances of closeness and Privacy with reduced risk of violating Social Norms around posting negative content. Previous research identifies Snapchat as a place where users can be Authentically vulnerable [15,225] due to the ephemerality of posts and the ability to control who sees what. P7 then revisits the Goal of the scenario as a motivation to seek support. Since the Goal is to seek support, this is best supported by the Social Norms and Affordances of Snapchat.

As discussed above, Authentic scenarios often invoked negative emotions and vulnerability, violating existing Social Norms for some media. However, there were some discrepancies in how participants viewed the scenarios. For example, scenario 6 featured a protagonist who wants to post about how they struggled in college but was eventually able to get their degree (see Appendix B). We had initially created this as an Authentic scenario since the protagonist is openly sharing a painful time, but multiple participants noted that it could also induce Idealized self-presentation. The specific narrative of a “success story” was seen as matching

Norms on Instagram, with others indicating that the scenario was Idealized enough to post to multiple 'positive' media (i.e., Instagram and Snapchat). This adds further support for the importance of Social Norm matching. If a post matches existing Social Norms, especially if they are Idealized, then participants were more consistent in rating it.

We found participant responses were generally more consistent with Idealized scenarios than Authentic due to varying views of Authenticity related to Social Norms. For Authentic scenarios, the inconsistency with Social Norms required participants to consider more aspects, such as where violations would be less likely to be sanctioned or where the benefits of posting might outweigh the drawbacks.

6.6 Discussion

Overall, the above data reveals that media choice processes are quite complex. Specifically, we need to revise the original FANG model to emphasize the importance of Social Norms while downgrading Features and Affordances. Users are very aware of Social Norms, and these can sometimes override the Goal for scenarios that strongly match a specific Social Norm. The decision process is more complex for cases where the Social Norms do not exactly match. Here participants revisit the scenario's Goal, then determine which media fit based on their Social Norms and Affordances. Participants also accorded Features less consideration than the FANG model proposes. Instead, participants seemed to consider them to the extent that they primarily supported Social Norms and secondarily Affordances. The interviews indicate the pre-eminence of Social Norms compared with Affordances or Features; violating a Social Norm could lead to sanctioning, negative feedback, or a loss of followers. Participants only revisited the Goal of the scenario after they had failed to match Social Norms directly. At that point, they would then consider both Norms and Affordances, and occasionally Features. We

now discuss our revised model as well as implications for social media research and systems design.

6.6.1 Revised FANG model

Our interviews and scenarios make it apparent that the original FANG conceptual model failed to capture the complexity of participants' media choice processes. To address RQ 1, we revised the FANG model in important ways (see Fig. 3). First, the revised model reflects that Social Norms often trump Goals in driving decisions. Second, Affordances mostly influenced choice by supporting Social Norms with Features hardly being discussed separately from Social Norms. Overall, Norms are more important to posting decisions than Affordances and Features. Features were even less influential than Affordances, and only mentioned in the context of other factors. Another major modification concerns when Goals are invoked. If participants failed to find a direct match based on Norms, they then revisited Goals to re-evaluate Norms and Affordances to determine how they supported that Goal.

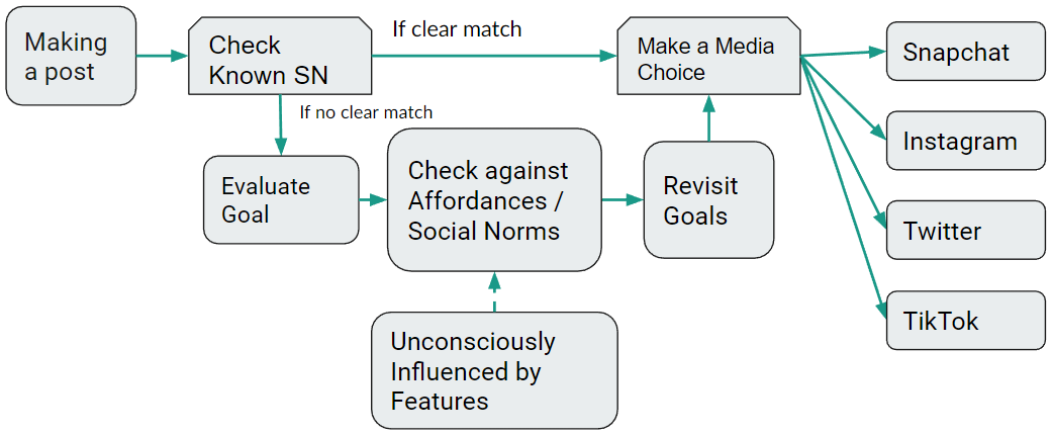

Fig. 3. Revised FANG Model: Users start by evaluating if their intended post matches an existing Social Norm. If there is an exact match, they post it on that social medium. If not, they evaluate their Goal, check Social Norms and Affordances (influenced by Features), revisit their Goal based on their thoughts, then choose a medium.

We revised the FANG model to rework the role of Social Norms significantly. The revised model now involves an initial choice based on Social Norms. If the scenario triggers Social Norms for a particular medium, then that directly drives media choice. For example, in the TikTok dance scenario, Abby wants to make a post featuring herself showing off a dance. According to the revised model, Abby does not consider the post's Features, Affordances, or Goals. Performing a kinetic dance directly fits the Social Norms of TikTok, so she should just post there. Although historically, Norms may have arisen because of Affordances and Goals, these are not considered in the revised decision process. Using Social Norms here is like a heuristic that allows one to navigate posting decisions without needing much conscious thought. However, users can evaluate the reasoning behind such decisions. When a potential post does not match existing Social Norms, a user would need to evaluate how to make the post more consciously.

Let's illustrate another aspect of the revised model by examining a contrasting example using the Ex-Partner scenario. Bob is feeling down, seeing that his ex is dating again. His Goal is to reach out, discuss his feelings, and receive social support or advice. This Goal does not match any Social Norms on any social medium he uses, so he must think more consciously about where to post. He, therefore, revisits his Goal, clarifying that he wants to ensure that his relatives and ex do not see the post while targeting a large enough group to respond with advice or support. Considering this Goal causes him to reflect on more detailed media Affordances to determine which social media options have better Personalization and Connection Affordances. He also needs to choose a medium that does not have Norms that preclude Authentic posts, as he plans to be very honest about his feelings. Revisiting his Goal of eliciting advice and support confirms his potential choices, TikTok and Snapchat. He decides on TikTok, which allows him to reach a broad audience, which people he knows are unlikely to see (his ex has no idea what TikTok is). He's also seen people post Authentically on TikTok while receiving support, suggesting this would not violate a Social Norm. In this example, Bob

makes his choice after carefully reflecting on his options. Since this is also a potentially vulnerable post, he must deliberate more consciously about which medium would allow him to avoid potential embarrassment or Social Norm violations.

The two pathways of the FANG model are similar to Kahneman's concept of Type 1/Type 2 thinking [119]. Type 1 thinking relies on heuristics and is much quicker (being almost automatic) than Type 2 thinking. Type 2 thinking is slower and more conscious but often solves problems that Type 1 thinking cannot. Consistent with this, participants made some selections extremely quickly and confidently (e.g., the Dancing scenario). Although we do not argue that established Social Norms lead posting decisions to be entirely automatic, we note there was a high level of consistency for such scenarios. This pattern suggests opportunities for future research, potentially testing our tentative model in more controlled settings to enhance our understanding of media choice processes.

6.6.2 Implications for Social Media System Design and Theory

The results suggest implications for design of social media systems, in particular the introduction of new Features and new social media technologies. Given the importance of existing Norms, it may be hard for new Features to impact media usage. Rather than exploring new Features, users may be content to continue with those supporting existing Norms. New Features that replicate existing Features on other media must compete with existing Social Norms. For example, in late 2020/early 2021, Twitter began to roll out a new ephemeral Feature ("fleets"): tweets that would expire after 24 hours. Twitter intended fleets to be a way to allow people to tweet more frequently without making a full post, like Snapchat or Instagram stories. However, this Feature failed to gain traction, as Twitter removed it in August 2021, replacing it with Features that would encourage people to tweet more [101]. The revised FANG model could explain this in the following way. In this case, if users have the Goal of making an

ephemeral post, they already have at least two other ephemeral options with existing Social Norms (Instagram stories and Snapchat). In this case, Twitter must overcome users' pre-existing perceptions of Social Norms within people's social media ecologies if they are to exploit this new Feature. It may be difficult to break down existing Social Norms. People already understand how Twitter fits into their social media ecology, so adding a new Feature replicating other social media may not be enough to change their understanding of the Social Norms and subsequent posting behavior.

Conversely, the influence of Social Norms may make it difficult to introduce entirely new social media into a user's social media ecology. There are no pre-existing Norms for new media, as people usually do not start with a clear understanding of how to use those media. This problem was finessed in the case of TikTok, which is an excellent example of launching with a clear set of Social Norms. TikTok had already launched in the Chinese social media market as Douyin in 2016, where it had millions of users exploring its Affordances and building Social Norms around its use before it launched in Western markets. This allowed TikTok to launch in Western markets with clear expectations of Social Norms. The Western launch included examples of Social Norms provided through advertising and influencers, allowing new users to straightforwardly integrate TikTok into their social media ecologies. New users could instantly see people dancing, using the "duets" Feature, sharing audio, etc., and could build Social Norms quickly, especially since these Social Norms did not compete with existing social media within their ecologies.

Such successful adoption contrasts with launches of different products, where potential users are presented with a new set of Features and must organically derive Affordances and Social Norms. For example, when Facebook first launched to general audiences in 2006, it only had one direct competitor (Myspace). Although college students had already been using it, Facebook had few developed Social Norms, so users and companies explored different

behaviors exploiting Facebook's Features and Affordances. Since parents and authority figures often did not use it, high school and college students would post themselves doing illicit things or baring their souls semi-publicly. Now, ossified Social Norms mean that 14 years later, young users would never think to post anything similar on Facebook. Not only have Social Norms shifted around what is appropriate to post, but Facebook's role in users' social media ecologies has solidified, allowing other social media to address different Goals and Social Norms.

We also present implications for social media ecology theory. This study provides evidence for the importance of Social Norms and Goals in making social media posting choices. It's not just Goals that affect how people use social media but also how users interpret its Social Norms. Social Norms are a powerful tool for communities to shape member behavior. Social Norms are challenging for people to overcome, even when inconsistent with user Goals. Furthermore, our findings motivate new research evaluating user social media ecologies and how these affect posting choices. Many prior studies have focused on individual media, which oversimplifies key aspects of social media use, including how users contrast and navigate between multiple media. Multiple social media enhance opportunities for achieving Goals while offering different Social Norms around what is appropriate and where. Future research could examine how users choose among media, extending our largely qualitative findings using more controlled methods.

6.6.3 Limitations

Our participants were all young adult college students in the US. While we selected this sample to fit within the expected age range of people who use at least three of the four social media of interest, there may be differences in how people make posting decisions between those who are at college and those who are not. Selecting a less WEIRD [102] sample could lead to different results. For example, young adults in college might have different self-presentation

challenges compared to those who are not, such as trying to keep friends and family updated about their life while attending college far from where they grew up. Another limitation is that the perception of Authentic and Idealized presentations may not be universal. The author's biases in the perception of Authentic and Idealized presentations likely influenced our construction of the scenarios. As noted in the scenario section, one scenario the authors considered to be Authentic was actually perceived as Idealized by participants. Future work could evaluate this model with a broader sample and investigate different self-presentation Goals drawn from participants' perceptions of these concepts. It could also expand the set of Goals beyond self-presentation.

6.7 Conclusion

We propose a new conceptual model of social media posting choice that emphasizes Social Norms and Goals that help users determine between competing media. Users first evaluate Social Norms to determine immediate fit. If there is a fit, then the choice is easy. If there is no match, they revisit Goals and then consider media Affordances and Social Norms. These results have implications for social media design as well as social media ecology theory.

6.8 Next Steps

Thus far, my work has mainly focused on the person self-presenting and not addressing how an audience perceives the presenter. From these studies, I know that when using media, people believe that they are conveying a self-presentation, and that others correctly perceive this self-presentation, and that these self-presentations are distinct from their general offline personality. How accurate are these assumptions, however? I examine this, considering how

an audience assesses the self-presentation of others, to understand if all these assumptions hold. One way to evaluate this would be to ask audience members to interpret a presenter's self-presentation over social media. Can people accurately interpret these presentations? If so, are an audience's attributions about a presenter closer to the presentation or the presenter's general personality?

7 How do Others Interpret Someone's Self-Presentation on Instagram?

7.1 Project Summary

7.2 Introduction

Social media form an important communication tool for many people. According to a Pew Social Media report, in 2021, 72% of American report using social media of any kind, and between 46%-70% of users of different media (ranging from Twitter to Facebook) visit the platforms at least once a day [6]. Due to the prevalence of use, it is important to understand better how people present themselves on social media. Previous research on self-presentation has investigated how people exploit different affordances of different platforms to present themselves in different ways [14,15,16,26,50,63,67,74,210,211]. Self-presentation is typically focused on how the presenter sees themselves, rather than how they are understood by others. However, less research examines how observers understand and interpret those social media self-presentations. In this study, we investigate how observers (people observing and

interpreting a social media profile) interpret Instagram profiles. We wish to understand how accurate observers' perceptions are, and what cues from the profiles might influence their perceptions. We focus on Instagram since Instagram is a popular site for various self-presentations [4,70,113,120,130,196,212,241].

Social media have a variety of cues or elements of the medium that a profile owner can use to express their self-presentation. On Instagram, cues might be things like the photo the profile owner has for their profile, how many posts show them doing activities, or the number of followers they have. Profile owners can use these cues to signal different aspects of their intended self-presentations, such as expressing their friendliness through posts that feature them smiling. This attribute is called cue validity, or what cues profile owners use to express their personality traits [97,170]. We want to know more about specific cues profile owners used to express specific personality traits. For example, does having a lot of followers express a profile owner's Extraversion? Cues are also critical for the perception and interpretation of profiles. Another question we have is to what degree do observers correctly use those cues when rating the profile? This attribute is called cue utility, or cues observers use to rate someone's personality [97,170]. It is important to analyze both since there may be mismatches between what cues profile owners used to present themselves and what cues observers used to interpret the observers.

Prior work investigating how observers interpret others' personalities has mostly focused on offline self-presentation and used an approach called zero acquaintance, so named because people observers have no prior knowledge of the person they are rating [23,90,125,188]. Studies investigating how observers interpret personality investigate observer accuracy (by comparing personality ratings of observers and self-ratings from those being observed), cue validity, and cue utility. These studies have investigated a variety of media for self-presentation, e.g., whether observers can make accurate personality assessments by listening to a recording of someone speaking [23], seeing a photograph of them [23], watching a short video [23],

looking at their playlists [188], and even looking through their living or working spaces [88,90]. From these studies, observers were most accurate for Extraversion across media (identifying the trait from audio, still images, videos, playlists, and spaces), but had more trouble identifying Agreeableness without audio, or Conscientiousness without movement. Openness was more easily identified in playlists or spaces compared with audio, video, or still images, while Neuroticism was best detected through spaces and video.

Social media profiles are often a place where people do complex profile work [56,199,218,220], such as presenting more Idealized [39,176,222,231] or Authentic [14,93,136,187] versions of themselves. For example, recent work has found that people have different self-presentations on their main (general use) Instagram accounts compared to their Finsta (alternative, usually for venting or ranting) accounts, where the main account is typically more Idealized, and the Finsta is typically more Authentic [212]. However, other research identified that the more Authentic Finstas are also less satisfying to use than their main accounts, partially due to receiving fewer comments [14]. Of note here is that we can conceptualize the different accounts as different self-presentations, as measured by personality surveys, allowing us to quantitatively compare and contrast medium-specific self-presentations to one's Offline self [210,211]. Because people are navigating how best to present themselves in different contexts, it is important to investigate how accurately others interpret these self-presentations.

Osterholz et al. [171] conducted an important study into how observers interpret one's personality through viewing information that had been scraped from their Instagram profiles. Their research questions addressed understanding cue validity, cue utility, and observer accuracy. Based on previous research and qualitative analysis of interviews with profile owners, the authors created a list of cues, which are observable attributes that people use to present and interpret presentations on Instagram. With permission, they gathered 102 Instagram profiles. They also gathered 102 self-ratings of personality from the owners of those profiles. They presented the profiles to 100 independent observers, and every observer rated

the personality of every profile. Profiles were gathered by taking screenshots of the Instagram profiles, including the profile information at the top (i.e., username, name, bio, story icons, etc.) and the most recent 100 posts. The screenshots of the posts showed observers rows of three post images each, continuing until 100 posts were shown. The researchers evaluated two groups of cues that they hypothesized signaled important information about personality. One group of 12 cues was objective (i.e., based on directly observable properties of the profile, such as the number of followers, following, or the total number of posts). A second set of cues was based on subjective ratings made by research assistants who assessed each profile by answering questions such as “The profile owner was physically attractive” on a Likert scale. From these sets of cues, they could investigate cue validity and utilization. First, looking at the average individual observer, they found statistically significant accuracy for all personality traits studied. Extraversion and Openness were more accurate (.22 and .23, respectively) compared to Neuroticism, Agreeableness, and Conscientiousness (.15, .10, and .11, respectively). Second, they identified differences between cues on validity: 6 statistically significant trait/cue validity correlations, three for Openness and three for Extraversion. None of the cues examined were statistically significantly valid for Agreeableness, Neuroticism, or Conscientiousness. Third, they found differences between cues on utility. Observers used more cues than were valid: there were 13 statistically significant trait/cue utility correlations, now including Conscientiousness, Agreeableness, and Neuroticism. There were more cues utilized for all traits compared to those that were valid; in other words, observers were basing their ratings on cues that profile owners weren’t using. They also found that observers and owners had statistically significant agreement for all traits, i.e., that observers’ judgments did align with profile owners’ self-ratings.

Despite Osterholz et al.’s promising findings, there are some limitations to that study. First, observers did not interact with a live version of Instagram and so they could not actively explore the profile to access different posts and sources of information. Second, the main focus of their

study was on offline personality, i.e. how well observers could interpret profile owners offline personality based on observing Instagram information. It did not examine how personality differs across mediums. Our study addresses these limitations. We built an interactive simulated social media website that allows for active exploration of Instagram profiles (by clicking on posts to expand them, liking posts, etc.) to see if user behavior changes how they might interpret these cues. We call this Trumangram, as it is a mixture of the Truman simulated social media [53,54] and Instagram. We also investigate how observers might think about the profile owner in different contexts by asking them to rate their Instagram personality (i.e., how they present themselves on their Instagram profiles) in addition to their Offline personality.

This study extends prior zero-acquaintance studies of social media by providing observers with an interactive Instagram-like profile. We showed the profiles of 18 Instagram owners to 194 observers in a simulated, interactive Instagram-like website. Each observer rated 3 profiles. We asked the profile owners to rate themselves on their Offline and Instagram personalities. We asked the observers also to rate the profile owners' overall Offline personality and their Instagram personality to compare and contrast self-presentations. Our research questions are:

1: How accurate are observers when measured by agreement with profile owners' self-ratings and what is the agreement between different observers about a profile owner's traits?

2: What cues are valid? (i.e., which Instagram cues are used to signal owners' personality traits)?

3: What cues are utilized? (i.e. which Instagram cues do observers use to interpret owners' personality traits)?

4: Is there an overlap between cue utility and validity? And what explains discrepancies between these?

7.3 Literature Review

7.3.1 Self-Presentation

Self-presentation is a complex construct. We define it here as how people present themselves to influence how others see them [139]. One well-established account of self-presentation is provided by Goffman, who describes a dramaturgical approach. This views interaction as a performance, where an actor performs some sort of self for an audience [85]. In this perspective, the actor may not always present themselves entirely consistently. Instead, the actor reveals or hides different aspects of themself in response to their audience's expectations, which Goffman calls impression management.

While this performative perspective works well for in-person self-presentation, where the audience is co-present, social media's asynchronous nature may necessitate a new metaphor. Hogan, therefore, describes self-presentation on social media as an exhibit instead of a performance [107], distinguishing between the audience (who one interacts with in real-time) and artifacts (saved performances that a chosen audience view at their convenience). The dramaturgical perspective also argues that there are multiple realizations of the self, as people present different facets of themselves flexibly depending on the situation or the self-presentation they want to convey. Such performances are subject to warranting. For example, online dating profiles make it possible for people to fib about hard-to-validate attributes to appear more desirable [100], an example of an Idealized presentation.

Idealized self-presentation is often driven on social media by social desirability or a bias to present oneself through positive and socially acceptable content [39,220,231,241]. Authentic self-presentations are also desirable at certain times and in specific contexts. Previous research has found positive outcomes for those who can Authentically express themselves

online, such as less negative and more positive affect [93,128,156,193]. However, expressing such Authenticity on social media is often fraught [14]. For example, a recent study comparing Finsta vs. main Instagram accounts found that the more Authentic Finsta accounts were less satisfying and useful due to receiving fewer comments [111]. These results support the idea of media-specific personalities, that profile owners deliberately present themselves differently depending on the affordances of the media [210,211]. Authentic self-presentations allow users to fulfill needs alongside Idealized self-presentations with different accounts or media, allowing users to achieve their self-presentational. However, outcomes can be complex and reliant on multiple factors; another study found greater negative affect from imagining criticism for Instagram users who present a false self on Instagram than users who present a more Authentic self [113]. Of note here is that profiles, as self-presentational artifacts, do receive feedback from observers. While not real-time as in a face-to-face self-presentational performance, profile owners consider observers' feedback and tweak their self-presentation accordingly. The feedback feeds into how one might present themselves, allowing them to tweak what portions of themselves they show to try and achieve the self-presentation they desire.

Another perspective on the multifaceted nature of online self-presentation comes from Baym, who notes another critical attribute. Digital identities are distinct from one's embodied self yet still represent facets of the person [17]. For example, one might have a self-presentation of an effortlessly cool consumer of coffee on Instagram while maintaining this as entirely separate from one's professional self-presentation on LinkedIn. Both might be true of the person, but they become separated, "disembodied" identities. Said media presentations are disembodied because they are separate from the physical bodies (as in Hogan's actor/artifact distinction), made up only of the information the presenter chooses to share. This shared information forms

the entirety of the identity, meaning that simple cues such as photographs [18], types of information included on a profile [1], and social group membership [25] can be artfully curated to convey something particular about a disembodied identity. Ironically, such a paucity of cues can also mean that it becomes more difficult to convincingly present an entirely inauthentic self, as the audience looks to unintended and intended signals when interpreting identity [64].

If we accept that self-presentations are performances tailored to specific audiences and contexts, how can one person maintain separate performances for every potential online audience? One approach is to present a bland, vanilla self acceptable to the broadest possible audience [107,180]. Another might be targeting specific presentations to media with restricted audiences [211] or maintaining separate accounts on one media where each account has a specific audience [212]. While these perspectives help us understand self-presentation, it can be challenging to measure self-presentations using only these theories. To help us quantify self-presentation, we look to personality theory.

7.3.2 Personality

Another common related framework for analyzing and measuring self-presentation is personality theory. Here, we review personality psychology (and specifically the Big Five [115,204]). In trait-based personality psychology, traits are considered relatively stable predictors of behavior. For example, if someone is extraverted, they are likely to behave in an outgoing and gregarious manner across different situations. We see traits and self-presentation theories as working together. Self-presentation theories are helpful because they create a conceptual lens to understand how a situation might constrain and influence people's behavior. Traits are helpful because they allow for the quantification of stable behaviors.

Personality theorists generally use the "Big Five" taxonomy, using the acronym OCEAN [115,116,204] to characterize 5 main traits: (O)penness to Experience, related to intelligence,

esthetic sensitivity, and curiosity; (C)onscientiousness, related to productivity, time-keeping, and organization; (E)xtraversion, related to sociability, energy level, and assertiveness; (A)greeableness, related to trust, compassion, and warmth; and (N)euroticism, related to anxiety, depression, and emotional volatility. Traits are assessed using surveys asking people to rate their agreement with self-descriptive statements such as: “I am someone who is emotionally stable, not easily upset” (assesses Neuroticism trait) or “I am someone who makes plans and follows through with them” (assesses Conscientiousness trait). These traits have been validated across many studies and have shown to be reliable predictors of people’s behavior [115,116,204]. The current study uses personality measures to examine self-presentation and self-presentation interpretation on Instagram profiles, both from self-ratings on the part of profile owners and observers who have never met the person in the profile.

Our work explores behavior on Instagram using traits to quantify and compare self-presentations. However, if we want to understand potential discrepancies between how people see themselves and how others interpret those self-presentations, we also need a way to theorize about these. Different media provide different self-presentation lenses that people can use [17,211,212]. Personality is a useful way to quantify self-presentation, which means we can also evaluate how well someone’s impression of someone matches how they are trying to present themselves. To better understand this difference, we now discuss impression formation in zero acquaintance studies and the lens conceptual framework we will use in this study.

7.3.3 Impressions and Cues

Previous research on self-presentation on profiles typically focuses on how people intend to present themselves, not how they are perceived [50,64,89,156,193,211,212,216,241]. This work focuses on the perception portion, understanding how others can perceive and interpret other people’s profiles. This study is a type of zero acquaintance impression study

[23,88,90,125,188,227] Previous research on zero acquaintance impressions has found that people can make somewhat accurate impressions of someone simply by viewing different types of material. For example, viewing a photograph, watching a video, or even hearing someone talk [23].

There is also a great deal of research from Gosling, who looks into personality "residue," or how people can leave an impression of themselves on their environment and the things they own [88,89,90]. This approach is particularly insightful as personality residue in people's things is a more permanent trace than other forms of personality self-expression (i.e., Goffman style performance, Hogan style artifacts [85,107]). In studies looking at how people can gain impressions of someone from their office and doom room, or other physical spaces [88,90,165,227], again, people can make accurate impressions of the other person simply through looking at their things. For example, seeing that someone has many music CDs and photos of them going skydiving on their desk at home, one can reasonably assume that the owner of these things is fairly high on Openness to Experience. One attribute that is important to note here is that there is a distinction between public information and private information or information that is "given" versus "given off" [85,86]. Given information is information that one directly tells others. Given off information is unintentionally expressed information from other sources. One's office might try and give others a sense that the person is organized, hardworking, and Conscientious. For the same person at home, they might have dishes sitting in the sink and laundry piled everywhere, indicating that they aren't as Conscientious as they appear at work. The information from the office is given or arranged by the person trying to make a self-presentational statement. The information from the home is given off, unconsciously and unintentionally, giving others a sense of how they are.

Gosling's study utilizes Brunswik's lens model [31,170] as a way to interpret how people understand and interpret people's possessions. We use it to interpret the cues that someone might use on a profile to communicate their self-presentation. A profile owner encodes

personality traits (potentially both representative of their personality and some intended to give a different impression) into their profile through several specific, observable cues. These cues could be related to their appearance, such as a fashionable set of clothing, or other elements that could represent their self-presentation, such as the language or emojis used in a caption on their post. Some cues are things the profile owner can control easily (framing of a photo) or things that are difficult/impossible to change (facial symmetry) [85]. These cues then form a lens through which observers interpret to judge the person's personality.

To better understand cues, we note two concepts we will return to in the results: cue validity and cue utility [31,170,171]. Cue validity is a cue that a profile owner uses to express a trait. Cue utility is a cue that observers use to predict a trait. These concepts speak to two categories of potential errors in interpretation. One where the observer fails to successfully interpret a trait by missing a valid cue, i.e., a cue that accurately expresses a trait. For example, an observer misattributes someone as less Agreeable because they missed that the profile owner has many photos where they are smiling. The second is where the observer uses a cue to judge someone, but that cue isn't expressing a trait; for example, an observer might think that an attractive person is more Conscientious due to the halo effect [5,215], but in reality, the cue of attractiveness is unrelated to that trait. Using these concepts, we can begin to compare media against one another. Perhaps some media are "clearer" lenses for people to interpret self-presentation because observers experience fewer errors when they use them. Other media might be more "opaque," where observers experience more errors, and it's more difficult to estimate the personality of someone through it.

Due to the potential for complexity in how observers might interpret personality, we also use Kenny's Social Relations Model (SRM) [124,125,126] to help tease apart some of the nuances in how observers interpret profiles. As discussed in the lens model paragraphs, it is important to understand how profile owners might present themselves separately from how observers interpret those presentations. To address this issue, the SRM uses different data structures to

help partition the variance in scores that we might see from raters. In this study, we use the half-block data structure, where observers do all ratings and profile owners are exclusively rated. There are other structures where every participant in a group rates and is rated by every other participant, but they are not relevant to the current study. The SRM has been used successfully on personality traits along with behaviors, liking, and meta-perceptions [124,126]. We use the SRM because it allows us to see where there might be differences between how particular observers rate multiple profiles consistently (called assimilation), how particular profiles are seen by multiple raters consistently (called consensus), and the unique interactions of how a particular observer rates a particular profile (called uniqueness). We will use the first attribute, consensus, or how particular profiles are seen by multiple raters because it helps speak to the accuracy of observers' perceptions. If observers can agree about the presence of a trait they see in a profile, we can be more confident that they are accurately identifying a trait.

As mentioned earlier, our study is very similar to another study examining Instagram personality expression [171].Here we go into more detail about the specific cues they identified, as we are utilizing this same list. Osterholz et al. created this list of cues by reviewing previous Instagram-based cue literature [12,13,23,33,45,68,69,110,127,129,130,153,155,161,165,184,208,224,228,240] and through multiple rounds of discussion and revision of what cues are appropriate to include. Osterholz et al. also generated five cue aggregates through factor analysis: Aesthetic/Professional Posts, Diverse/Private Posts, Colorful/Active/Positive posts, Appearance Based Posts, and Instagram Activity posts. We generated cue aggregates for each participant by averaging their response to the individual cue questions corresponding to the specific cue aggregate. They were as follows: Aesthetic/Professional Posts contained the individual cues Aesthetic Posts and Professional Photo Quality Posts. Diverse/Private Posts contained the individual cues Diversity of Posts and Disclosed Privacy. Colorful/Active/Positive Posts contained the individual cues Colorful Posts, Outside Photos, High Activity Level Posts, and Positive Affect. Appearance

Based contained the individual cues Authentic Posts (reversed from Self-Promotion Posts), Physical Attractiveness, Modesty (reversed from Sexiness), and Fashionable Appearance. Finally, Instagram Activity contained the individual objective cues Followers, Following, and Total Number of Posts.

Overall, prior work identifies a set of cues relevant to Instagram self-presentation using profiles and that personality is a useful way to quantify and compare self-presentations. We use the Brunswik lens model as a conceptual framework [31,170]. We will analyze accuracy by examining the degree of correlation between observer and self-ratings and the degree of consensus between multiple raters. Our work expands on prior work by investigating how observers use interactive social media instead of a static set of pictures to make self-presentational judgments about the profiles they view. We examine how accurately observers' can rate profiles through the correlation of observer and self-ratings and the degree of consensus between multiple raters. We also discuss how observers used different cues to aid their interpretation of the profiles.

7.4 Method

7.4.1 Participants

We recruited two groups of participants. For the profile recruitment phase, we recruited 26 participants from flyers posted at UCSC and through snowball sampling from participants we had already recruited. Participants were required to have an Instagram account on which they were active users (having posted in at least the last month) and at least 20 posts on their profile. Participants were provided informed consent before beginning the survey. All participants were compensated with a $15 Amazon gift card for their time. At the end of the survey, participants were asked if they consented to use their profile information in a second study. 18 participants,

hereafter referred to as profile owners, consented to this portion of the study, and they are the profiles we used for the observation phase. The final sample of 18 profile owners had the following characteristics. They self-identified as 7 female, 6 male, 2 preferred not to say, 1 non-gender binary, 1 gender non-conforming, and 1 genderqueer, aged 20-26 (M=22.94, SD=2.29): 6 Asian/Asian American, 5 White/Caucasian, 3 Hispanic/Latinx, 2 multiple race/ethnicity, 1 Persian, and 1 preferred not to say. Any profile owner who consented to share their profile for the observation phase of the study provided their Instagram screen name. The first author gathered their profile information and first 20 posts immediately after the interview, so any changes that the profile owner may have made afterwards are not represented in the study.

Participants in the observation phase, hereafter referred to as observers, were recruited from Prolific, a participant recruitment platform similar to Amazon Mechanical Turk. Participants on Prolific elect to participate in studies in return for compensation from researchers. In the observation phase of this study, we recruited 220 observers, of which 26 failed one or more manipulation checks (described in the Trumangram section), for a final sample of 194 observers. Observers were recruited for the study if they were self-described Instagram users. Observers in the sample had the following characteristics. They self-identified as 99 female and 95 male, aged 19-72 (M=35.29, SD=10.26): 162 White, 9 Asian, 9 Mixed, 7 Black, 5 Other, and 2 with no data. Observers' average time to complete was 30 minutes, and they were compensated $7.50 through Prolific for their time. The study was reviewed by the first author's university IRB and was approved as exempt.

7.4.1 Measures

7.4.1.1 BFI-2

Profile owners first assessed their regular Offline personality using the 60-item Big Five Inventory (BFI-2) [204]. The BFI-2 is a standard personality survey deployed widely and has

been used successfully in similar work [210,211,212]. Profile owners rated their agreement with self-descriptive statements such as: “I am someone who makes plans and follows through with them” (assessing Conscientiousness trait). Profile owners responded using a 1-5 Likert scale, with 1 being “strongly disagree” and 5 being “strongly agree”. We also modified the survey to solicit self-presentation through Instagram. The second time profile owners completed the BFI-2 survey; we modified each question to assess personality on Instagram. Profile owners answered the following question: e.g., “On Instagram, I am someone who makes plans and follows through with them” (assessing Instagram Conscientiousness trait). Previous studies show that participants can interpret modified survey questions straightforwardly [210,211,212].

7.4.1.2 BFI-2-XS

Observers, in contrast to profile owners, rated the profile owners’ personality using a 15-item Extra Short Big Five Inventory (BFI-2-XS) [205]. This was used instead of the BFI-2 because observers would have to rate 3 profile owners twice each, and we wanted to reduce the time and cognitive load this process took to keep the average time for observers to rate three profiles at 30 minutes. Observers rated profile owners’ Offline personalities by rating their agreement with statements such as: “In real life, they are someone who tends to be disorganized” on a 1–5-point scale. They also rated profile owners’ Instagram personalities by rating their agreement with statements such as: “On Instagram, they are someone who tends to be disorganized”.

7.4.1.3 Instagram Cue List

We presented observers with a list of Instagram profile cues generated by Osterholz et al. [171]. See appendix D for the full list of individual cues. We generated two categories of individual cue ratings; (a) observer cue ratings, generated by observers rating each profile for each cue, and (b) objective Instagram activity ratings generated on the profile owner’s actual

use of Instagram. Observer cue ratings were generated by each observer rating their agreement with a question related to that cue in relation to the profile they saw. Observers in this study rated each profile based on the list of individual cues in appendix D on a 1-6 scale, with 1 being “strongly disagree” and 6 being “strongly agree,” Items included statements such as “The profile had aesthetic or artistic posts.” For the objective Instagram activity ratings derived from profile data, we used the natural log transformation to account for outliers and skewed distributions.

7.4.2 Procedure

Profile owners in the profile recruitment phase completed two 60-item BFI-2 surveys [204]. The first was related to their offline personality. We then conducted an online Zoom interview with profile owners, where they were asked to walk the researcher through their Instagram profiles. Profile owners shared their screens during the interview and had full control over what they showed the researcher. The researcher used a semi-structured interview. All profile owners were asked what they tried to convey to others with their profile and how they tried to convey that impression. We probed this by asking pre-planned questions such as “What do you want other people to focus on when you post something?” (see Appendix E for the full list) while also investigating the profile owners’ profiles and posting strategies. After the interview, profile owners were presented with the second 60-item BFI-2 survey, which now asked about their Instagram personality. Prior work has demonstrated that participants can easily interpret such instructions [210,211,212]. Finally, we asked profile owners for separate informed consent for permission to use their Instagram profile in the observation phase, where other people would be viewing and rating their profile for research purposes.

In the observer phase, a separate group of observers (who did not know the profile owners) were randomly selected to view one set of three profiles on Trumangram (see the section below

for more details), with each profile within that set presented in random order. There were six sets in total, but observers only ever viewed one set. After each profile, observers were presented with two BFI-2-XS [205]. One survey asked about the profile owner's Offline personality, and the other asked about the profile owner's Instagram personality. These surveys were presented to observers in random order. Observers were then asked to rate each profile on the cue list derived from Osterholz et al. [171]. For example, they were asked to rate their agreement with the following statement: "The profile had aesthetic or artistic posts" on a Likert scale. We then asked observers if any additional cues might help give more information about the profile owner, which they answered in a short answer text box. Observers were also asked if they knew the profile owner; no observer answered yes for any profile. Once all three profiles were completed, observers were asked about their frequency of use for Instagram, including viewing and posting behaviors.

7.4.3 Trumangram

Unlike Osterholz et al [171], rather than obtaining personality assessments from static photos, this study attempts to replicate the experience of viewing profiles on Instagram by allowing observers to interact with a dynamic website with similar affordances to Instagram. The website's construction is partly based on Truman, a more robust simulated social media platform for research [53,54]. Observers are presented with a profile (see https://trumangram.herokuapp.com/users/Test_Username_1# for an example profile). Profiles consisted of their profile picture, bio text, the most recent 20 posts from that profile owner, the number of followers, following, total posts, and any captions provided on their posts. Any video posts or multiple posts (a set of multiple images or videos contained within a post) used the first image or the post image instead of a video or multiple images. Information about stories (such as icons showing stories) was not included in Trumangram. All information on the profile

was drawn directly from the owners after they consented to its use. Owners' profiles had some information removed, such as their username and name in the bio. This was replaced by pseudonyms (ex: "User_123"). Any names or locations in the bio or captions were also edited by replacing the text with XXXXXX. Censoring the profile information in this fashion was approved by the first author's IRB.

Each profile was presented to observers for a fixed period of three minutes by clicking on a link included in the survey, which opened the profile in another tab on their browser. After three minutes passed, the page changed to text indicating the observer should close this tab and go back to the study. If observers finished early, they could not move the survey forward until three minutes had passed. Observers were directed to view as many photos as they could within 3 minutes to get a good impression of the profile owner. We told observers that we would be asking questions about the profile owner after they viewed this profile. All observer interactions were logged, so which photos are clicked, how long an observer looks at a photo, which photos are liked, etc., are logged. Observers failed a manipulation check if they clicked on fewer than ten photos across all three profiles, indicating they did not interact sufficiently with the posts, or if they exhibited a bare minimum effort when rating a profile (i.e., using all "Agree" for rating a profile or generating a repeated responding pattern). 26 prospective observers failed one or both checks.

7.5 Results

7.5.1 Descriptive Statistics

Below in Table 1, we present descriptive statistics for profile owners' self-personality traits and observers' ratings of personality traits. The reliability of the profile owners' personality ratings was calculated using Cronbach's alpha. The Offline personality trait's reliability ranged from .68

(Agreeableness) to .90 (Extraversion). Profile owners' self-ratings of Instagram traits ranged from .82 (Openness) to .87 (Extraversion). The average traits in Table 1 for Offline and Instagram are similar to previous work examining college students from a University of California campus [212] and multiple validation studies when building the BFI-2 survey [204]. In particular, we see a similar pattern between profile owners' Offline and Instagram ratings as in previous research. For example, Neuroticism is lower on Instagram than Offline, while Extraversion is higher [212].

Table 1. Averages for Profile Owner and Observer Ratings on Traits.

Trait	Profile Owner rating Offline	Observer rating Offline	Profile Owner rating Instagram	Observer rating Instagram
Openness	3.99 (.62)	3.72 (.93)	3.79 (.64)	3.72 (.92)
Conscientiousness	3.4 (.81)	3.50 (.85)	3.69 (.61)	3.68 (.84)
Extraversion	3.49 (.83)	3.23 (.96)	3.66 (.67)	3.41 (.98)
Agreeableness	4.01 (.47)	3.72 (.81)	3.95 (.53)	3.82 (.78)
Neuroticism	2.83 (.80)	2.67 (.93)	1.97 (.60)	2.41 (.92)

Note. N = 18 for Profile Owner Ratings, N = 194 for Observer Ratings. SD in parentheses

Recall that we also collected behavioral data about observer behaviors regarding the profiles. We provided no instructions about whether or not to like any posts to observe if liking behavior was useful for people. The average number of likes that observers gave to profile owners across three profiles is .61 (SD=1.98), although most observers liked no posts. The average number of posts that observers clicked on (indicating that they viewed them) across three profiles is 31.21 (SD=13.75). Observers looked at each picture for an average of 6.64 seconds. We took the difference between profile owners' self-rating for traits (Offline and Instagram) and the corresponding observer rating of traits (Offline and Instagram). We correlated them with

the observers' average number of likes and the average number of posts observers viewed. We see only one significant correlation between the number of posts and Offline Conscientiousness (-.16). This indicates that as the number of posts an observer looked at increased, the lower the difference between their rating and the self-rating of the profile owner on Conscientiousness.

7.5.2 Accuracy and Consensus

The results in this section address observer accuracy (RQ1), which we measured by comparing observer trait ratings to profile owners' self-ratings and agreement between observer ratings. We define accuracy through two measures. The first is the correlation between profile owners' self-ratings and observer ratings for each trait, indicating the degree to which an individual observer correctly interprets the profile owners' traits. Consensus is a second measure of accuracy, which assesses the agreement between observers when rating a profile.

We determine observer accuracy by computing the correlations between profile owner and observer trait ratings. However, since we have profile owner self-ratings and observer ratings for both Offline and Instagram, this gives us four correlations per trait. We present these correlations in Table 2. Each correlation was created by individually correlating each set of profiles with the observer's rating, converting the correlations to z scores using Fisher's r-to-z conversion, averaging the individual z scores across sets, and then converting the z score back to Pearson's r, following the method used in [171,188]. We tested these averaged scores for statistical significance using a two-tailed t-test with an alpha of .05.

Table 2. Accuracy Score Correlations for Each Trait for Offline and Instagram

Trait	Profile Owner - Offline	Profile Owner - Offline Observer - Instagram	Profile Owner - Instagram Observer - Offline	Profile Owner - Instagram Observer - Instagram

	Observer - Offline			
Openness	**.17**	**.15**	**.17**	**.16**
Conscientiousness	.12	**.17**	.01	.03
Extraversion	**.24**	**.18**	.12	.14
Agreeableness	**-.16**	**-.17**	**-.21**	**-.27**
Neuroticism	.**17**	.13	.10	.10

Note: Bold represents statistically significant at <.05.

The first column of Table 2 represents the typical self-other accuracy score used in personality research, representing how an observer rates someone Offline (general, everyday life) compared to how the profile owner rates themself Offline, but through the lens of the medium they are looking through (in this case, their Instagram profile). This can be compared to other zero-acquaintance personality rating studies [23,88,90,125,188] where similar correlations range between (.07-65) for Openness, (-.02 - 33) for Conscientiousness, (.22-.51) for Extraversion, (-.04 to .35) for Agreeableness, and (-.01 - .36) for Neuroticism. These results are similar to other studies (examining Instagram profiles [171], Facebook profiles [9], a room [90], photos/videos/audio [23], music playlists [188], and simply seeing the other person for the first time in person [2,125]) where correlations for Extraversion and Openness tend to be higher. In contrast, correlations for Agreeableness and Conscientiousness tend to be lower.

We can directly compare this self-other accuracy with the fourth column, which represents how well an observer's estimation of the profile owner's Instagram personality (i.e., their self-presentation on Instagram) matches the observer's interpretation of the profile owner's Instagram personality. We would expect that the fourth column will have strong statistical correlations as observers are using Instagram information to rate the profile owner's intended Instagram presentation. We'd expect that asking observers to identify someone's Instagram

personality by looking at their Instagram profile would be more accurate than trying to identify their Offline personality by looking at their Instagram profile. Surprisingly, however, the Table suggests this was not the case. In fact, we see more statistically significant correlations for the first column, where observers are making estimations about profile owners' Offline personalities without having ever met them through another medium.

One possible reason for this is that people present an Idealized self on Instagram [39,220,231,241]. Understanding that one's Instagram personality may represent an Idealized self, we can see if there are mismatches or overlaps in how people interpret the two Instagram self-presentations. Comparing columns three and four, i.e., comparing profile owners' Instagram personalities to observers' ratings using Offline and Instagram information, we see few differences between how observers interpreted profile owners' Instagram personalities. This indicates that observers were unable to identify profile owners' Instagram self-presentation, outside of Openness and Agreeableness, which potentially means that observers are not able to detect this Instagram self-presentation.

Let's now compare columns 1 and 2 with columns 3 and 4. We see that observers' ratings (regardless if using Offline or Instagram information) were more accurate when judging the profile owners' Offline personalities than their Instagram personalities. This discrepancy could be due, as above, observers being unable to detect an Instagram self-presentation. We see some elements of this from the statistically significant correlations for Openness and Agreeableness in columns three and four, with Agreeableness being an Idealized Instagram trait identified in previous work [212].

Another point of interest in the table is the Agreeableness ratings. We see that accuracy correlations for Agreeableness are all negative; i.e., when the profile owner's ratings are higher, the observer's ratings are lower. This leads us to two potential interpretations; that profile

owners are successfully hiding their low Agreeableness (i.e., lower self-ratings elicit higher observer ratings) or that observers incorrectly think that profile owners are less Agreeable than they actually are (i.e., higher self-ratings elicit lower observer ratings). From looking at the higher profile owner Offline average (4.01) and Instagram average (3.94), and lower observer Offline average (3.72) and Instagram average (3.82) in the demographics in Table 1, it appears the second explanation might be correct. Observers seem to be under-rating profile owners' Agreeableness. We will discuss this discrepancy further in the discussion section.

Next, we discuss Consensus or the degree to which observers agreed about traits for a given profile. Consensus is a measure of accuracy for observers, as it indicates whether multiple observers agree about an individual profile owner for those traits. The other measures (Uniqueness and Error) are less relevant here. We calculated Consensus using the SRM [8,126] with a half-block structure. Each observer rated three profiles, which allows us to estimate how much variance in the score is due to differences between profiles that observers agree on (Consensus), differences between observers in how they systematically rate profiles (Assimilation), and differences between the unique relationship of a particular profile and a particular observer separate from Error. While Assimilation can potentially point to differences between observers, we aren't concerned with Uniqueness or Error in this study because these don't help us understand how accurate observers were. These ratings were determined by calculating the variance from each source (profile owner, observer, profile owner by observer) for each profile, then averaging them together. See Table 3 for the variance breakdown per trait.

Table 3. SRM estimation of Consensus

Trait	Consensus	Assimilation	Uniqueness	Error
Offline Openness	7.26%	16.65%	42.59%	33.50%
Offline Conscientiousness	19.88%	6.07%	41.93%	32.13%

Offline Extraversion	7.24%	21.66%	52.46%	18.63%
Offline Agreeableness	18.25%	10.76%	37.43%	33.56%
Offline Neuroticism	12.52%	5.81%	56.79%	24.88%
Offline Means	13.03%	12.19%	46.24%	28.54%
Instagram Openness	6.92%	16.14%	46.07%	30.86%
Instagram Conscientiousness	19.05%	6.93%	39.71%	34.31%
Instagram Extraversion	7.83%	22.99%	53.43%	15.75%
Instagram Agreeableness	14.35%	11.35%	35.78%	38.52%
Instagram Neuroticism	12.43%	7.87%	54.80%	24.90%
Instagram Means	12.12%	13.06%	45.96%	28.86%

Overall, these scores are comparable to Kenny [124] for Offline trait ratings (Consensus: .20, Assimilation: .15, Uniqueness: .20, Error: .45). Conscientiousness and Agreeableness show higher Consensus than Openness and Extraversion in particular.

We see large differences in Consensus and Assimilation between the traits. Conscientiousness and Agreeableness, regardless if on Instagram or Offline, was the highest on Consensus, while Openness and Extraversion were higher on Assimilation. This indicates that observers generally agreed better on Conscientious or Agreeable traits. In Contrast, individual observers were likelier to show variability in rating Openness and Extraversion. This makes sense as Openness and Extraversion are likely traits where profile owners would want to present a more Idealized version of themselves, especially for a visual medium such as Instagram. Since Instagram is focused on visual elements such as the composition of photos or the aesthetic presentation of art (related to high Openness) and also people showing that they enjoy spending time with others (related to higher Extraversion), these traits represent an Idealized

Instagram self. We also see no major differences between Offline and Instagram on traits, indicating that observers had similar patterns of ratings to one another for Instagram and Offline.

The error column in Table 3 represents all other variances in scores unexplained by Consensus, Assimilation, or Uniqueness. Overall, the current study generally shows lower error, Consensus, and Assimilation and higher Uniqueness ratings than other studies using this method. This is likely because of the half-block structure used in this study, where each observer rates just three profiles. If observers had rated more profiles, we would likely see lower Uniqueness scores and higher Consensus, Assimilation, and Error. With more data on how each observer rates more profiles, we would expect more information about profile differences and observer differences, removing these sources of variance from the unique interaction of a particular observer viewing a particular profile and the remaining variance not explained by Uniqueness moving back to Error.

7.5.3 Cue Validity

This section addresses RQ2, understanding which cues profile owners use to express their traits, also known as cue validity. A cue is valid when it correctly expresses a profile owner's traits. To simplify interpretation and to reduce the overall number of correlations, we aggregated conceptually related cues following the clustering process devised by Osterholz et al. [171]. We correlated trait ratings from profile owners both Offline and on Instagram with five sets of aggregated, related cues (as explained in the Method section). For example, the Colorful/Active/Positive aggregate represents the average of the observers responses to questions concerning the extent to which a given profile displayed Colorful Posts, Outside Photos, High Activity Level Posts, and Positive Affect. After generating cue aggregates, we

correlated these with each profile owner's Offline and Instagram traits. We present the cue validity correlations in Table 4.

Table 4. Cue Validity Correlations of Profile Owner Traits with Cue Aggregates

Cue Aggregates	Medium	Trait				
		O	C	E	A	N
Aesthetic/Professional (Aesthetic Posts and Professional Photo Quality Posts)	Offline	0.100	-0.040	**-0.154**	-0.093	**0.265**
	Instagram	0.072	-0.021	-0.065	**-0.235**	**0.306**
Diverse/Private (Diversity of Posts, Disclosed Privacy)	Offline	-0.124	-0.018	**-0.181**	**-0.346**	0.114
	Instagram	**-0.264**	-0.134	**-0.185**	**-0.366**	-0.005
Colorful/Active/Positive (Colorful Posts, Outside Photos, High Activity Level Posts, and Positive Affect)	Offline	-0.103	0.024	-0.082	**-0.207**	**0.157**
	Instagram	**-0.274**	**-0.142**	-0.140	**-0.398**	-0.027
Appearance Based (Authentic Posts*, Physical Attractiveness, Modesty*, Fashionable Appearance)	Offline	-0.044	**0.174**	0.120	0.130	-0.096
	Instagram	-0.023	-0.044	**0.241**	0.104	**-0.168**
Instagram Activity (Follower, Following, Total Number of Posts)	Offline	**0.234**	**0.461**	**0.584**	**0.404**	0.123
	Instagram	**0.375**	**0.262**	**0.834**	**0.284**	**-0.541**

Note. Bolded correlations are statistically significant at <.05. * indicates reverse coded from Osterholz et al. [171].

First, I will discuss overall highly predictive cue aggregates and traits in Table 4. Table 4 shows that cue aggregates were valid for 50% of traits, as indicated by bolded correlations. There are a few cues aggregates and traits of note from this table. The Instagram Activity cue aggregate had the most significant correlations, with these being significant for all but one trait. We also see that the Agreeableness trait had several negative correlations with cue aggregates. We will discuss both in the following tables.

I will now discuss cue aggregates. One cue aggregate of particular interest is Instagram Activity. Instagram Activity seemed to be the most valid of the cue aggregates, as it had the

most statistically significant correlations with traits. The Instagram Activity cue aggregate was significantly positively correlated with Openness, Conscientiousness, Extraversion, and Agreeableness for Offline and Instagram and significantly negatively correlated with Instagram Neuroticism. In other words, someone who uses Instagram more, by making more posts, having more followers, and following more people, shows reliably higher traits of Openness, Conscientiousness, Extraversion, and Agreeableness both Offline and for Instagram with lower Neuroticism on Instagram. The large number of significant correlations for Instagram Activity may reflect that the Instagram Activity cue aggregate is objective, i.e., the number of posts can be directly observed, unlike other cues such as the Appearance Based cue aggregate, which depends on observer interpretation.

Turning to traits, I will first discuss Agreeableness, as it had the most correlations with the cue aggregates. We see an unexpected pattern with Agreeableness: For this trait the Aesthetic/Professional, Diverse/Private, and Colorful/Active/Positive cue aggregates are all significantly negatively correlated with Agreeableness. This is unexpected, particularly for Colorful/Active/Positive. This cue aggregate concerns the presence of bright colors in a post, posts showing outdoor activities, posts showing active activities, and posts showing positive emotions. We anticipate aggregating these cues together would positively correlate with Agreeableness both Offline and on Instagram. However, these negative correlations point to an interesting potential discrepancy. Either disagreeable people are trying to disguise themselves by having more seemingly Agreeable posts, or Agreeable people aren't effectively using these cue aggregates to signal their Agreeableness.

Finally there were differences between Instagram and Offline where different cue aggregates were used to express traits. Correlations between Instagram and Offline most strongly aligned for Instagram activity cue aggregates but for most other cue aggregates showed different patterns for Instagram and Offline.

7.5.4 Cue Utility

The results in this section address RQ3; what cues did observers actually use to interpret profiles, also known as cue utility? Recall that cue validity examined in the previous section assesses how cue aggregates correlate with profile owners' self-presentation of traits. Cue utilization correlations, in contrast, assess what cue aggregates observers actually use when rating profiles. It is important to analyze both since there may be mismatches between what cues profile owners use to present their traits and what cues observers use to interpret traits. To calculate cue utility, we correlated observer trait ratings (for both Offline and Instagram personality ratings) with cue aggregates generated by the observers. We first generated the five cue aggregates described above. Since observers rated three profiles, we averaged the three individual profile cue aggregate/trait correlations per participant by using the fisher r to z transformation to convert individual correlations into z scores, averaging the z scores, and converting them back to r correlations (following [171,188]). We then tested for significance on each averaged correlation using two-tailed t-tests, with alpha at .05. We present the cue utilization correlations for Offline and Instagram ratings in Table 5, again focusing on the cue aggregates to reduce the number of correlations shown.

Table 5. Cue Utilization Correlations of Observer Ratings with Cue Aggregates

		Trait				
Cue Aggregates	Medium	O	C	E	A	N
Aesthetic/Professional (Aesthetic Posts and Professional Photo Quality Posts)	Offline	**0.511**	0.104	-0.078	**0.207**	0.029
	Instagram	**0.545**	0.077	-0.069	**0.244**	-0.003
Diverse/Private (Diversity of Posts, Disclosed Privacy)	Offline	**0.250**	0.109	0.091	**0.307**	-0.066
	Instagram	**0.217**	0.128	0.133	**0.304**	-0.077
Colorful/Active/Positive	Offline	**0.329**	**0.351**	**0.333**	**0.483**	**-0.350**

(Colorful Posts, Outside Photos, High Activity Level Posts, and Positive Affect)	Instagram	**0.271**	**0.369**	**0.353**	**0.534**	**-0.366**
Appearance Based (Authentic Posts*, Physical Attractiveness, Modesty*, Fashionable Appearance)	Offline	**-0.190**	-0.008	**0.358**	-0.141	**-0.145**
	Instagram	**-0.168**	-0.002	**0.375**	-0.115	**-0.196**
Instagram Activity (Follower, Following, Total Number of Posts)	Offline	**-0.222**	0.133	**0.384**	0.019	**-0.277**
	Instagram	**-0.260**	**0.165**	**0.340**	0.017	**-0.288**

Note. Bold are statistically significant correlations at <.05. * indicates reverse coded from Osterholz et al. [171].

First, I will discuss highly predictive cue aggregates and traits in Table 5. The table shows that cue aggregates were significantly utilized for ~60% of the traits, as indicated by the bolded correlations. Strikingly, the Colorful/Active/Positive cue aggregate correlated with every single trait. We also see that the Openness trait was significantly correlated with every cue aggregate, while Agreeableness is now positively correlated with many traits. We will discuss these in more detail below.

Overall, cue utility correlations differ greatly from the cue validity correlations shown in Table 4. Notably, there were differences between Offline and Instagram for validity that weren't reflected in utility scores. Profile owners used different cue aggregates to express Instagram versus Offline traits. In contrast, observers made similar Offline and Instagram ratings for almost all cue aggregates. For example, in Table 4, some cue aggregates were only valid for a trait's Offline or Instagram version. By contrast, in Table 5, almost all cue aggregates were utilized for both the Offline and Instagram versions of a trait (except for Instagram Activity and Instagram Conscientiousness). Therefore, it seems that observer's understanding of which traits related to cue aggregates differed greatly from how profile owners used them.

Next, I will compare cue aggregates. As mentioned above, the Colorful/Active/Positive cue aggregate was statistically significantly correlated with every trait. It was positively correlated

for both Instagram and Offline Openness, Conscientiousness, Extraversion, and Agreeableness and negatively correlated for both Instagram and Offline Neuroticism. This pattern generally matches what we might expect. A profile owner with posts showing colorful photos, outside photos, active activities, and positive affect would likely be high on Openness, Conscientiousness, Extraversion, and Agreeableness while lower on Neuroticism. However this pattern contrasts with the cue validity correlations for Colorful/Active/Positive shown in Table 3 where just half the correlations were significant. A potential explanation for the higher number of significant correlations between this cue aggregate and the traits is that there may be a type of Instagram halo effect; someone using these cues is generally seen in an Idealized light as having highly positive traits.

Next, I will discuss cue utility and traits. In Table 5, we see that Openness was statistically significantly related to every cue aggregate, meaning that observers thought every cue aggregate signaled owners' Openness. This indicates that Instagram is not a good method for discriminating Openness because observers see every cue as related to it, even treating unintuitive cue aggregates as reliable cues, e.g., the statistically significant negative utilization correlation between Appearance Based and Openness could represent to observers that someone attractive, fashionable, self-promotion focused, and sexy is less likely to do other activities or have strong intellectual curiosity. Another frequently correlated trait for cue utility is Agreeableness. When comparing Table 4 and Table 5, we see some discrepancies between validity and utility for Agreeableness. Notably, cue aggregates that were negative indicators for the trait for validity were interpreted by observers as positive indicators of that trait. We now explore the discrepancies between validity and utility by comparing them directly.

7.5.5 Cue Validity and Cue Utilization Overlap

The results in this section address RQ4: to what degree do cue validity and cue utilization concur? To help us visualize and better understand the relationship between how profile owners used cue aggregates to present themselves (cue validity) and how observers used cue aggregates to interpret profiles (cue utilization), Table 6 visually displays overlaps and discrepancies. In some cases there is an overlap between validity and utility. For example, Table 4 shows that profile owners use Instagram Activity to signal their traits and Table 5 that observers also used this cue aggregate to infer traits. However, the two tables clearly do not mirror one another. So, for what traits is there a mismatch?

Table 6 uses color to represent the relationship between cue validity and utilization. Green indicates a **correct** cue aggregate, namely the case where a cue aggregate statistically significantly correlated for cue validity and cue utilization on a given trait. This correspondence shows that a profile owner used this cue aggregate to present trait information about themself, and observers correctly used the cue aggregate to interpret that trait. Yellow indicates a **missed** cue aggregate, indicating statistically significant cue validity but not cue utilization. Cue validity but no cue utilization means that even though the cue provided accurate information about a trait, observers did not actually use this cue aggregate when making trait judgments. Orange indicates a **false** cue aggregate where there was statistical significance for cue utilization but not cue validity. In this case, observers used this cue aggregate when making trait judgments, even though profile owners were not using it to signal trait information. The Table also signals another possibility indicated by a **minus** sign (-), representing a sign mismatch between cue validity and utilization when both are statistically significant. Minus represents a case where observers correctly interpreted the cue aggregate's importance but misunderstood its direction. The last case is signaled by a blank, which indicates an **irrelevant** cue aggregate, namely when a cue aggregate was not statistically significantly correlated for

either cue validity or cue utilization. Observers correctly did not use this cue aggregate when making a trait judgment, as profile owners weren't using it to signal information about that trait.

This method of aligning cue validity and utilization presents a useful way of comparing across mediums. It allows us to look at overall patterns of cue validity/utilization overlap, which points us to different patterns of use. If a medium is transparent, there should be a good correspondence between utility and validity, leading to mostly correct (green) and irrelevant (blank) cues. In other words, observers only use valid cues providing accurate information about traits while ignoring those that do not. A more opaque medium will have more missed and false cues. Missed and false cues can arise for two distinct reasons, either because cues are inherently difficult to interpret or because profile owners exploit those cues to present an inauthentic personality intentionally.

Table 6. Cue Utilization and Validity Overlap Signaled by Color

Cues Aggregates	Criteria	Trait				
		O	C	E	A	N
Aesthetic/Professional (Aesthetic Posts and Professional Photo Quality Posts)	Offline					
	Instagram				-	
Diverse/Private (Diversity of Posts, Disclosed Privacy)	Offline				-	
	Instagram	-			-	
Colorful/Active/Positive (Colorful Posts, Outside Photos, High Activity Level Posts, and Positive Affect)	Offline				-	-
	Instagram		-		-	
Appearance Based (Authentic Posts*, Physical Attractiveness, Modesty*, Fashionable Appearance)	Offline					
	Instagram					
Instagram Activity (Follower, Following, Total Number of Posts)	Offline	-				
	Instagram	-				

Note: Green indicates correct, yellow indicates missed, orange indicates false, blank indicates irrelevant. - indicates a sign mismatch where validity and utility have an opposite valance.

Table 6 shows how cue utilization and validity overlap. First, I will discuss general trends. Table 6 shows that 34% of the cue aggregates were correct, ignoring sign mismatches, as indicated by green-shaded cells. Instagram Activity has the most overlaps, showing this is generally a transparent cue. In terms of traits, we see two unusual ones. First, Openness only has false and correct cue aggregates, as observers thought every cue aggregate was related to it. Second, Agreeableness has the most minus correct cue validity/utilization overlaps. We will discuss these instances below.

Next, I will discuss the cue aggregates where validity and utility overlap. As we might expect from Tables 4 and 5, Instagram Activity signals validity for Openness, Conscientiousness, Extraversion, and Neuroticism in a way that observers actually use. This overlap could be due to observers interpreting these cues as “given off” rather than “given” [85,86]. In other words, Activity cues represent objective Instagram interactions making them harder to manipulate. The Instagram Activity cue contrasts with other more manipulable cues, such as Appearance Based, which could involve choosing photos that present the owner flatteringly. This interpretation suggests that objective cue aggregates are more reliable, allowing both profile owners and observers to convey and correctly interpret a particular self-presentation. One exception to the general overlap for Activity concerns Agreeableness, where the cue aggregate is missed, indicating this cue was valid, but observers didn’t use it. Such missed traits represent potential areas for intervention, encouraging observers to focus on these cues to make more accurate judgments.

Next, I will discuss trait alignment. In particular, Openness does not show a clear overlap between utility and validity. There are multiple instances of false cue aggregates in Openness, where the cue is invalid, but observers use it. As discussed above for cue utilization, observers thought that every cue aggregate was related to Openness, but Table 6 reveals that observers

actually interpreted even the few valid cues in the wrong direction. For example, Instagram Activity was a valid positive correlation, but observers thought it indicated that more Instagram activity represented lower Openness. One potential interpretation is that Instagram is not a good medium for conveying Openness, not because it is opaque, but because observers see too much as related to it. This interpretation aligns with previous work, which identifies Instagram users' primary Instagram account as an Idealized self-presentation [39,212,231,241]. From the profile owners' side, more Instagram Activity represented more Openness, since they were more successful at presenting their Idealized self. However, observers thought that more Instagram activity indicated less Openness (since profile owners were spending more time on Instagram), which helps explain the minus signs for this cue aggregate. Another way of stating this is that if everything on Instagram is related to Openness (recall that this trait is related to intellectual curiosity, aesthetic sensibilities, enjoyment of new experiences, etc.), then profile owners might present a more Idealized self to benefit from the misunderstanding intentionally or unintentionally. The Neuroticism minus is a mismatch between Idealized self. There is a statistically significant positive validity correlation between Offline and Neuroticism, meaning people who were higher on Neuroticism posted more Colorful/Active/Positive posts because they were trying to express a less Neurotic self. Profile owners fooled observers here; they assumed that more Colorful/Active/Positive posts meant the person was less Neurotic.

Table 6 indicates Agreeableness shows a different pattern. Agreeableness has more correct overlaps overall compared to the other traits. However, each of these overlaps is actually minus. In other words, cue validity and cue utilization are aligned, but cue validity is negative, while cue utilization is positive. There are two possibilities. First, observers correctly identify that the cue aggregates are relevant to Agreeableness but misunderstand the precise nature

of the relationship. Second, profile owners weren't correctly using the cue aggregates to signal their Agreeableness.

7.6 Discussion

Overall, the above data reveals that profile interpretation is a complex process. We see more accurate judgments of profile owners' Offline traits than when observers try to infer owners' Instagram personalities. Indeed, observers are more accurate at inferring Offline traits from Instagram profiles than they are at inferring Instagram personalities. The discrepancy between Offline and Instagram interpretation suggests that observers interpret Instagram profiles as representing profile owners' Offline personalities rather than the Instagram personality profile owners may be trying to portray. We also see significant Consensus for Conscientiousness and Agreeableness, indicating that observers rated these traits more consistently. When looking at cue validity, we saw that 50% of the trait/cue aggregates were statistically significant, indicating that traits were expressed through multiple cue aggregates. In addition, objective cue aggregates capturing Instagram Activity were highly predictive of profile trait ratings. We saw that 60% of the trait/cue aggregates were statistically significant for cue utility, indicating that observers used multiple cues to infer profiles. However, the cues observers used to infer traits did not exactly correspond with the cues that owners to express those same traits. When we examine the overlap of cue validity and utility, we see that even allowing for directional differences, just 34% of the traits are correct. We saw the greatest overlap for objective cue aggregates (i.e. Instagram Activity), which had the most alignment between validity and utility. Turning to specific traits, it appeared that observers overgeneralized cues signaling Openness which they thought was indicated by all cues. Finally, while there were strong overlaps for Agreeableness, observers tended to interpret the direction of correlation

incorrectly. We now first discuss the accuracy results, traits, and cues, then finish with design/research implications and limitations.

Previous work indicates that profile owners feel they present themselves very differently across different media [21,151,208,210,211,212,213]. For example, previous work found owners reported lower Openness, Extraversion, and Neuroticism on Facebook, than Snapchat or Offline, while having higher Extraversion and lower Neuroticism on Snapchat [211]. Examining differences between Instagram profiles, profile owners self-rated lower Conscientiousness, higher Extraversion, and lower Agreeableness on a Finsta (fake Instagram account for more Authentic self-presentation) compared to Offline and their main Instagram account, higher Extraversion compared with Offline and lower Neuroticism compared with both [212].

We assumed that observers would be able to detect personality differences across media. However, we found that media-specific personalities were not salient to observers. Instead, observers tended to view personality as consistent across media, with owners revealing their Offline personalities even when using Instagram. Consistent with this, observer assessments of Offline personality were more accurate than Instagram personality, and strikingly observers were more accurate at using Instagram to evaluate owners' Offline personalities than their Instagram personalities. This result is consistent with survey data we collected during our study, suggesting that observers do not expect to see different personalities across media. We asked observers if they thought the profile owners would present themselves the same on Facebook, Snapchat, TikTok, and Twitter, with 1 representing strongly disagree and 5 representing strongly agree. On average, observers indicated that they agreed (Facebook: 4.1 (.67), Snapchat: 3.9 (.83), TikTok 3.9 (.76), Twitter: 3.8 (.81)), which indicates that observers do not see media-specific personalities, but interpret profiles, even across different media, as representing the profile owners' Offline self.

We now turn to the issue of media transparency, i.e., how effectively owners can use different media to express their personalities to observers. We have already seen that owners' Instagram personalities were less accurately interpreted than their Offline personalities. This result would suggest Instagram is an opaque medium for self-presentation. However, observers were more accurate when using Instagram profiles to predict owners' Offline personality. Rather than seeing the profile owners' intended media self-presentation, observers seem to look past the Instagram profile to infer their Offline personality. The Instagram profile may therefore be like gazing through an invisible refractive lens; observers aren't aware that they are looking through it, though the medium might distort what they see.

Of note here, we see two models of personality in action. When people use media to self-present, they appear to think like situationists [76,85,160]. They consider the different factors of the media that might influence them, such as the audiences, affordances, features, and social norms on the platform that shape how they present themselves. However, this situationist approach seems to disappear when interpreting other people's self-presentations. When interpreting, observers in this study more accurately identified the participant's Offline personality. This result presents a trait-based approach that there is a consistent self, independent of situational factors [43,115,204]. From the discrepancy between these two styles of interpretation, we see something like the fundamental attribution error [84,189,190,191], where we highlight situational factors in our behavior but ascribe more stable motivations for others. If one is speeding on the freeway, one might know there is a good reason, such as being late for an important meeting. If someone else is speeding, they must be doing it because they are a terrible driver.

This interpretation has implications for future research. Prior research indicates that profile owners may intentionally try to project an idealized self that does not authentically represent their actual personality [39,212,220,231,241]. Our results suggest that observers may not be

aware of this attempted deception, seeing media presentations as presenting an underlying Offline self. In other words, they may not interpret the self-presentation cues as owners intend. Instead, observers recognize Instagram cues as efforts to present an idealized self but transform them to represent the owner's Offline personality. An alternative is that owners choose inappropriate cues to signal personality, but our results suggest that observers can correctly interpret a substantial subset of cues. Future studies could investigate how well observers can identify an owner's idealized self by identifying two profile groups. In this theoretical study, there would be one group of highly Idealized profiles, where there is a large discrepancy between the owner's Instagram and Offline personality, and one group of non-Idealized profiles, where there is a small or no discrepancy between the owner's Instagram and Offline personality. If observers treat the two groups the same, identifying only their Offline personality, we have further evidence that observers ignore the owner's intended Instagram self-presentation. Future studies could investigate this by identifying highly Idealized profiles (where there is a large discrepancy between Instagram personality and Offline personality) and non-Idealized profiles (where there are small or zero discrepancies between Instagram and Offline personality) to see if observers can identify a difference between the two groups' profiles.

Overall our method was successful, and we saw similar accuracy results as Osterholz et al.'s previous work examining Instagram profiles using a method where observers evaluated far fewer profiles [171]. We also extended Osterholz et al., using an approach that more closely corresponds to actual experiences with Instagram. However, reducing the number of profiles, each participant rates has disadvantages. Because each observer only sees a subset of the total number of profiles, we could not calculate Consensus using the intraclass correlations method for averaged observers or single observers as in previous work [171,198]. Next, we move to traits to discuss how observers understood profile owners.

We now discuss how observers interpreted specific trait cues. In particular, we saw discrepancies in how observers interpreted Openness and Agreeableness versus how profile owners presented them. Thus observers overgeneralized Openness cues, with cue utility results suggesting observers judged every cue to signal this trait. The SRM analysis for Openness supports this interpretation. Openness had one of the lower Consensus scores (6.9-7.3) and one of the higher Assimilation scores (16.1-16.4) of the traits we investigated. Observers were less likely to agree about a particular profile's Openness, and individual observers were more likely to rate all profiles they saw as similar on Openness, regardless of the profile's actual Openness. This lack of Consensus could be due to expertise; observers who spend more time on Instagram might be more aware of patterns on the platform and thus better distinguish between different profiles for Openness. Agreeableness was also difficult to infer. In some cases, such as for the Colorful/Active/Positive cue aggregate, both profile owners and observers recognized that this cue was important for Agreeableness but saw it as having a different valance. In other cases, such as Instagram Activity, a valid cue for Agreeableness was missed by observers. Observers could have missed this valid cue due to the medium of an Instagram profile consistently misrepresenting what it signals about this trait.

We also saw some surprising results for Extraversion and Neuroticism. Previous work on media-specific self-presentation showed frequent marked differences between medium self-presentations on Extraversion and Neuroticism traits [210,211,212], suggesting idealized self-presentation. Participants in those studies expressed a strong desire to show Extraversion (i.e., be social, high energy, and outgoing) and hide Neuroticism as much as possible (i.e., appear less anxious, depressed, and more emotionally stable). However, observers did not recognize these efforts by owners to signal traits. In the current study, observers could not accurately identify Instagram Extraversion or Neuroticism. Instead, they were more accurate at identifying owners' Offline Extraversion and Neuroticism. How might we explain this? Perhaps owners are

overconfident in how well they can project these traits through Instagram. In the interviews, profile owners mentioned trying to reach out or express parts of themselves without wanting to appear vulnerable on their main accounts. Perhaps Offline Extraversion and Neuroticism are difficult to hide, no matter the medium. If they are traits that profile owners are concerned about, observers may be highly attuned to detecting them. Next, we will discuss cue overlap.

As mentioned in the cue overlap results, it is interesting to examine why observers missed valid cues or decided to use invalid cues. Future work could use qualitative techniques, such as interviews or further observational/experimental studies with constructed profiles on Trumangram, to determine how observers interpret the cues presented in a profile. This method could help reveal which cues observers focus on and why. It could also identify other valid cues outside of the profile, such as comments from friends, which would provide additional "given-off" information [85,86]. Additionally, cue overlaps help identify correct and irrelevant cues, potentially offering observers information about which cues to focus on to accurately infer profile traits. For example, we identified that Instagram Activity was valid more frequently than other cue aggregates, underlining the utility of objective cues. It is also important to analyze the role of irrelevant cues; as not all cues convey traits, observers should avoid these when making inferences. For example, the Diverse/Private cue aggregate was irrelevant for Conscientiousness and Neuroticism and should therefore be avoided when making inferences about these traits.

As mentioned above, Instagram Activity is objective compared to the subjective cue aggregates. We derived subjective cues from observers' ratings of the profile owner's profiles, a process involving some interpretation. Our results indicate that the objective cue aggregate, Instagram Activity, was most useful in signaling profile owners' traits in that it had the most correct cue overlaps. Future studies could further explore cues by examining other objective cue aggregates, such as the number of comments and likes on a post, as these might also

have utility and validity. Such cues seem to have been missed in earlier work [171]. Regarding media transparency, both examples convey given-off information [85,86] about the owners' Offline personalities. Reducing the reliance on subjective in favor of objective cues should also improve the accuracy of trait inferences.

In addition, there are differences between personality traits. Previous work on zero acquaintance studies indicates that traits, such as Conscientiousness, are difficult to convey. While a still photo does not say much about how seriously one takes responsibilities, it can nevertheless convey Extraversion through showy dressing or Neuroticism through dark clothing [23]. However, other cues can paint a richer picture. For example, looking at a video and determining that someone sitting relaxed but frequently touching themselves conveys Conscientiousness [23]. It is well established that social media allows people to control self-presentation and suppress potentially negative information about themselves. For example, excluding photos showing a messy room could hide a lack of Conscientiousness, while posting a photo with an impeccably put-together outfit could allow an introvert to project Extraversion. However, our results suggest that strategic efforts to control self-presentation might be ineffective. When using Instagram information, observers made more accurate inferences about owners' Offline than their Instagram personalities. This accuracy discrepancy indicates that deliberate efforts to manipulate cues on Instagram to achieve specific self-presentations were unsuccessful. Future research should examine this further by exploring whether objective cues allow users to infer Offline personality accurately and determining whether observers can see past the Instagram personality projected by subjective cues.

The meaning of cues may also change over time, both for the lifespan of a medium and for an individual. Almost every profile owner mentioned in the interviews that they had previously aimed to actively manage their self-presentation by achieving a balanced ratio of following to followers. They felt a balanced ratio signaled that they were popular without striving too hard

for others' attention. However, these same profile owners now noted that they no longer attached importance to this ratio. They attributed this to a general withdrawal from Instagram after moving and leaving high school and the fact that they no longer saw Instagram as important in their lives. While cross-sectional studies of different media cues are important, such observations mean that what cues signal is subject to changes over time.

7.6.1 Implications for Social Media Design and Research

The results suggest ways to improve the user experience both for profile owners and observers, using the data we have gathered about relations between cues and traits. One possibility is to design a self-presentation tutorial for new Instagram users that explains what different cues signal and summarizes what their current profile signals to others. Given our results, it might also remind users before posting that observers may draw more accurate inferences about their Offline selves than they intend. Text processing could also help by telling posters how their posts appear to others. Like automated grammar and spell checkers, which provide tone indicators for emails, profile owners could be presented with information about how Open or Agreeable their post appears. Such a program could also help observers counter some of the issues with social comparison that Instagram is currently facing. A large body of work identifies teens and young adults as feeling more insecure, anxious, and depressed and suggested that this arises from media based social comparisons [40,95,98,142,221,229]. Our results suggest that people are aware that a profile owner "isn't really like that". However, teenagers and younger adults might have less pre-internet experience, and this indicates that we might be able to train people to be more aware of the person behind the profile. A program that surfaces the owners actual as opposed to projected personality, could comfort users by drawing attention to the fact that the poster they are looking at isn't as perfect as they might appear.

We also present our Trumangram system for other researchers to use [https://github.com/lee3206/TrumanGram]. We provide documentation on how to use it as we built this system to be flexible for different research questions and needs. We hope this system is flexible enough for others to replicate our results with different populations or research questions. The Trumangram system can also be used for experimental studies, where some participants see one profile version and others see another. We are excited for other researchers to use this system and hope that it is useful when building future studies.

7.6.2 Limitations

Our profile owners were all young adult college students in the US. While this is a majority of active users of Instagram [6], this is not a representative sample of all Instagram users. We excluded people who did not have at least 20 posts on their profile, meaning those who might be less Extraverted but still use Instagram were excluded. We also had a small pool of profiles for observers to view; our results could be due to the particular profiles we chose. We would not expect our results to apply to other users with different use patterns, such as influencers or business users who might post frequently but not leave much information about their Offline personalities. We also limited some important informational cues for profile owner privacy. Real names, user names, and location information could provide cues that help observers make attributions about the profile owners. We also limited the types of information available to observers, again to help protect profile owners' privacy. Videos would be rich sources of information, but not all profiles had them. They could additionally have information that would be more difficult to censor (such as if someone uses the profile owner's real name in the video). We also didn't implement multiple picture posts, which would also be rich sources of information, but were unevenly used by profile owners. While this system represents greater

interactivity and ecological validity in observing and interpreting profiles, some of this was reduced to help protect profile owners' privacy.

7.7 Conclusion

We present observers with an interactive social media website, Trumangram, based on Instagram. We found that observers can accurately identify some personality traits, specifically Openness, Extraversion, Agreeableness, and Neuroticism, although some noise is based on the cues people use. We present a framework to help understand cue validity and cue utility overlap for different mediums. We find that Instagram has some specific blind spots in Openness and Agreeableness, where observers' understanding of profile owners' traits was flawed. These results have implications for social media design, as well as social media theory.

8 Discussion/Conclusion

8.1 Summary

I will first summarize the main empirical results.

Chapter 3 investigated self-presentation on Facebook and Snapchat compared with offline. This study addressed research questions 1, 2, and 3. The work was the first to compare offline with online personality and personality across social media platforms. Two studies showed novel findings documenting clear differences in offline and online personality. In both studies, people perceive Facebook personality as less Neurotic and less Open than offline personality, which may result from self-editing to avoid controversy. A second study showed additional differences between social media platforms. Snapchat is used in a hypersocial manner, with some seeing themselves as more Extravert than offline. Qualitative analyses suggest these differences arise from platform affordances concerning audience and ephemerality, leading to design and theory implications which we return to later.

Chapter 4 investigated how people use different accounts on Instagram for different self-presentations. This study addressed research questions 1, 2, and 3. Our work is the first to systematically document personality differences between different accounts on the same platform, findings that have important implications for affordance explanations. Contradicting online social desirability bias, we find that Finsta accounts project negative self-aspects, including illegal behaviors, controversial opinions, and expressing negative emotions contrary to existing literature [80]. Within-media differences appear from different goals between people's accounts concerning audience and self-presentation.

Chapter 5 investigated how people's self-presentations on video communication differ depending on situational factors such as a worldwide pandemic. This study addressed research questions 1, 2, and 3. The COVID pandemic and social distancing have radically disrupted work and learning practices. Working from home (WFH) has reduced offline interactions while increasing digital communications, especially video. Pre-COVID, work teams often combined digital communications with various offline interactions, including formal meetings, water-cooler conversations, and impromptu chats. In educational settings, Pre-COVID learning often took place in physical classrooms and small group settings that promoted informal offline interactions. During COVID, people attempt to replace these heterogeneous forms of offline communication by combining videoconferencing with other digital tools. We found that pre-covid, students were more Extraverted and Agreeable and less Neurotic and Open than offline, but during the pandemic, students were more Agreeable and Conscientious and less Neurotic than offline. Office workers were only more Agreeable than offline. These differences indicate that the changing audiences and norms around WFH video usage resulted in different self-presentations from students as they adjusted from talking to small intimate groups to using video for work and school.

Chapter 6 presents a theoretical framework of what media attributes people consider when choosing potential platforms, they could post to. This study addressed research questions 2 and 4. How do people decide between competing social media when deciding where to post? Previous research argues that decisions can be modeled based on users' Goals and those media's Affordances, Features, and Social Norms. We evaluated this model by giving 19 participants different self-presentation scenarios and asking them to choose between Twitter, Snapchat, Instagram, and TikTok. Data suggest revisions to the simple model; rather than reflecting Affordances and Features, we found that Social Norms and Goals primarily drove participants' choices. Participants choose media based on a direct match between Goals and

existing Social Norms. Only when they failed to detect such a match did participants consider Affordances and Features. We present a revised conceptual model based on these results.

Chapter 7 investigates how others perceive another person's self-presentation through their Instagram profile. This study addressed research question 5. Previous perception work uses the Brunswick lens theory, suggesting people use informational cues to interpret what someone is trying to present about themself. To evaluate how people use cues, we presented 18 profiles to 194 observers using an instrumented social media website similar to Instagram that we created as a research tool. Observers were only moderately accurate in determining profile owners' personality. Results suggest that cues can be misleading; observers were not always aware of valid cues, and there is evidence of systematic misunderstanding about how profile owners display Agreeableness.

Returning to my research questions

1. **Do self-presentations differ across media, and if so, how?**

Across multiple studies, we found that self-presentations differ across media. There are also differences between self-presentations, online and offline. Although there are some media-specific differences, such as Facebook being lower on Openness and Extraversion than offline, there are also striking general self-presentational patterns across media. All media, except those where more emotional expression is an explicit social norm, showed people presenting less Neuroticism. There also seemed to be differences that depended on whether the medium was synchronous. Synchronous media, such as video, showed more Agreeableness, whereas asynchronous media featured more Extraversion.

2. **What factors (such as affordances, social norms, audiences, etc.) influence self-presentation?**

All of the above factors influenced self-presentation. In study 1, we saw differences between self-presentations relating to audiences and technical affordances. For example, the ephemerality affordance of Snapchat and its generally smaller audiences and social norms around more authentic self-presentation led to a specific pattern of higher Extraversion, higher Openness, and lower Neuroticism than offline. In study 2, we saw that social norms also played a large part. By examining different accounts on the same social media, Instagram, we saw that there could be self-presentational differences between different audiences (smaller, intimate audience on Finsta, and larger heterogeneous audience on main Instagram) and different social norms. Study 3 found that technical affordances and different audiences led to differences in self-presentations on video calls. The pandemic shifted how students used video calls from friends and family to use it for large audiences like work and school. Study 4 also showed that social norms have an important role in media choice, as when a potential post matches an existing social norm on a medium, people were quick to choose that medium. Overall, there is some evidence for social desirability with people aiming to appear less Neurotic but more Agreeable and Extravert across multiple media.

3. How do these factors influence self-presentation?

Each factor has some influence over self-presentation. In study 1, we saw that different affordances and audiences, specifically Snapchat's ephemerality and Facebook's large, heterogenous audiences, influenced the self-presentational differences. Ephemeral Snaps led people to be more Extraverted and Open than Facebook because things sent would disappear over time. Facebook's permanence and large audiences caused people to withdraw more in order to avoid provoking potential consequences from their audience. In study 2, when comparing main Instagram accounts to Finstas, which controlled for affordances but allowed for variation in social norms and audiences, there were large differences due to the social norms and audiences on each separate account. Instagram's social norms are more around

presenting the best side of oneself, emphasizing Extraversion and downplaying Neuroticism. Finsta's social norms around ranting, venting, and letting loose with more outlandish behavior let people be Extraverted, but rather than downplay Neuroticism; they could downplay Conscientiousness and Agreeableness, being more disorganized in posting and rude in captions. In study 3, during the pandemic, students began to use video with different, less intimate audiences in diverse contexts. While pre-pandemic, students could be more Extraverted, Agreeable, and less Neurotic with smaller groups of intimate others like friends and family. However, when the pandemic caused students to use it instead for work and school, they became less Extraverted but more Conscientious and Agreeable while still hiding their Neuroticism. Video also has some different technical affordances that help students hide Neuroticism. Through the self-facing video feed and real-time feedback, students could feel more certain they were presenting the ideal self they intended to.

4. How do people choose between multiple social media for self-presentation?

People appear to have two main methods by which they choose between different social media. The first method is driven by simple social norm matching; if an intended post matches a social norm for a particular social medium, they will post it there. For example, if a post shows off a dance, that belongs on TikTok because of TikTok's social norms. The second method of choice is more complex; if their intended post doesn't match social norms, then people consider the goal of the post, comparing it against the affordances and social norms of the media they are considering, then reevaluate their goal before choosing where to post. For example, if someone wants to post about missing their ex, after realizing this post doesn't match existing social norms, they would then consider the affordances and audience of the media they are considering.

5. How do others interpret self-presentations across media?

Observers interpret other people's self-presentations on media as reflecting their offline personality more than a medium-specific personality. Strikingly observers were more accurate at judging offline compared to Instagram personality, and observers didn't detect differences between offline and Instagram personality. As summarized above, across multiple studies for many different media, we found that when making a post, people consider their self-presentation to be medium-specific. However, results are very different when observing a post. Here it seems to suggest that observers see the self-presentation as revealing that person's offline self. This discrepancy suggests that media users may display the fundamental attribution error, believing that their behaviors are situationally determined, whereas others' behaviors reveal consistent traits.

8.2 General Lessons

We next move to general lessons drawn from my overall program of research.

8.2.1 Social Media Theory

One key finding of my research is that people have different self-presentations across different media. See Table 1 for a summary of different personality traits measuring self-presentation across different media.

Table 1. Different Personality Traits on Different Media compared with Offline.

Media	**Traits that are Higher Than Offline**	**Traits that are Lower Than Offline**
Snapchat	Extraversion	Neuroticism
Facebook		Openness, Extraversion, Neuroticism
Main Instagram Account (Rinsta)	Extraversion	Neuroticism

Fake Instagram Account (Finsta)	Extraversion	Conscientiousness, Agreeableness
Student on Video Pre-Pandemic	Extraversion, Agreeableness	Openness, Neuroticism
Student on Video During Pandemic	Conscientiousness, Agreeableness	Neuroticism
Office Workers on Video During Pandemic	Agreeableness	Neuroticism*

Note. * Indicates p = .051

We see several commonalities of self-presentation across media. Almost every media we studied featured people trying to present themselves as more Extraverted or Agreeable while also trying to present themselves as less Neurotic. These results suggest that, across media, people present an idealized self rather than an authentic one. We also see three general patterns related to media; lower Neuroticism on all media (with one exception), higher Extraversion on asynchronous media, and higher Agreeableness on synchronous media.

Overall, different factors influence how people present themselves in different media. We identify three factors; different audiences on different media, social norms on different media, and authentic vs. idealized self-presentation. While we discuss these effects, remember that different media personalities do not represent a complete shift of one's personality but rather discernable differences on a continuum. A person who is lower on Extraversion does not suddenly become gregarious on Instagram.

8.2.1.1 Audience Explanations

First, we will discuss how the expectations of an audience influence self-presentation. People respond to the possibility of context collapse [150] by carefully managing the audiences to which they present different self-relevant information. Thus on Snapchat, it seemed that

having a small intimate audience led people to be more Extraverted. Generally, those on Snapchat are closer friends, so people feel freer to be more outgoing. In contrast, people tend to have larger, heterogenous audiences on Rinsta (general Instagram) and Facebook accounts, leading users to present a more deliberate, curated self that performatively expresses a higher amount of Extraversion. By contrast, people's Finsta accounts contained mainly trusted friends, leading them to express themselves authentically. Finally, for students on video calls pre-pandemic, higher Extraversion may again arise from audience effects, with conversations usually taking place in a relaxed setting with close friends and family.

From this research, it appears that there is a general rule for media where Neuroticism is lower. This rule is partially due to people feeling they have more control over their self-presentation, except for Finsta, which we discuss below. For asynchronous media, like Facebook and Instagram, people have more control over how they present themselves. A user can select more flattering images and have time to edit photos or text before it is posted. This careful selection helps meet the expectations of a larger audience; by preemptively removing potential Neuroticism and avoiding confrontations. On video, we also saw less Neuroticism. People suggested this may be due to the self-facing camera helping people audit their self-presentation in real time, allowing them to show their best selves. Returning to our notable exception, we see that Finsta was the medium where people were not interested in hiding their Neuroticism. This difference was partially due to featuring a smaller audience of trusted others. However, people explicitly noted social norms on Finsta about venting their negative emotions, and the personality survey detected this difference.

8.2.1.2 Social Norms

The second potential explanatory factor relates to the social norms of each platform. People use such norms to help them filter how to present themselves in a particular medium. In

essence, people want to do what is appropriate for a platform and avoid the social sanctioning that comes from sticking out and acting inappropriately. This behavior means that social norms influence other factors to some degree. What is appropriate as being authentic vs. idealized can be a matter of the social norms on a platform. As in the Finsta example, if everyone agrees that the Finsta account is where people can vent, it becomes the social truth for that type of account. If someone were to make a very happy and positive Finsta account, even if they are authentically happy, people might push back because they are using a Finsta inappropriately. It is also important to note that social norms can change over time. Finsta accounts, when we researched them, were in use by people because the norms and features on main Instagram accounts encouraged people to make side accounts. However, due to the addition of Instagram stories and enough time for people to figure out ways to use them, more recent participants have mentioned that they use stories to serve similar purposes as Finsta. By choosing who receives a story, they can make sure that a small group of trusted intimates can receive it, and because it is ephemeral, people feel more comfortable venting. As different social media change over time, their use patterns also change.

8.2.1.3 Technical Affordances

Other differences seemed to arise from technical media affordances, although affordances weren't as significant as we had first anticipated. In study 1, we saw differences in self-presentation due to audience and affordances. In particular, participants noted that Snapchat's ephemerality was a key difference between it and Facebook, where posts were permanent unless deleted. However, there were multiple factors related to the differences in self-presentation. We decided to explore holding technical affordances constant in study 2 by investigating different account types on Instagram, which would have the exact same technical affordances. In study 2, we still saw self-presentational differences due to different

audiences and social norms. This result indicated that affordances were not a necessary condition for self-presentational differences and that other factors could influence how people present. This pattern of results was also the case in study 3, where we saw self-presentational differences on the same medium (video) over multiple time points and with different users. Study 4 found that people only considered affordances if they couldn't quickly map the intended post to an existing social norm. This result indicates that affordances are far less important to media choice than social norms, although affordances likely have a role in forming social norms.

However, that is not to say that technical affordances were unimportant. For example, in study 3, participants noted that the self-facing video feed on video helped check their own self-presentations. We linked this technical affordance to Neuroticism, indicating that this affordance helped people manage their emotional concerns about self-presenting with video. They were able to check in real-time how they looked and could make sure to show their best side. Additionally, the synchronous element of video was another technical affordance difference, as people presented as more Agreeable on it, regardless of other factors. Overall it seems that video, we see that it appears to be an inherently Agreeable medium; independent of the situation or users, people presented more Agreeableness due, in part, to these technical affordances, which were different from asynchronous social media affordances.

8.2.1.4 Authenticity

Next, we discuss authenticity, which is a controversial topic. Some prior work has argued that social media are often used to present an idealized self [39,220,231,241], while others note that social media use represents a more authentic self [14,93,136,187]. Overall our data suggest that self-presentations over media show consistent bias towards idealized self-

presentation; the pattern of personality traits identified across studies indicates that people are consistently hiding negative traits (showing lower Neuroticism across multiple media) while boosting positive ones (higher Extraversion or Agreeableness across multiple media). This bias was a particularly strong factor in the Instagram study, where participants created a specific account to express their authentic selves. The interviews revealed that most participants described their Finsta as authentic and their Rinsta as curated. While social media can be a place where people who might have difficulty expressing themselves can be more authentic [70,223], there seem to be strong social norms that encourage inauthentic self-presentation.

From the scenarios study, we identified that self-presentational goals drive some social media posting choices. Everyone could agree; TikTok is best for posting dancing content where someone is showing off (i.e., being inauthentic). However, participants had more trouble matching authentic goals to social media when those goals violated the norms they knew about for that media. For example, participants have difficulty identifying the most appropriate social media to post upset feelings about an ex-partner. Although this represents an authentic goal, it might violate social norms about how people typically present themselves in those media. For idealized goals, participants generally had an easier time allocating them to specific social media. This result indicates that because it was easier for participants to select an option when the goal was more idealized, it is likely that the media studied encouraged more idealized self-presentation. This interpretation suggests that social media lean towards the inauthentic or idealized. However, this study's results also point to the subjectivity of what is idealized and authentic. One scenario we had designed to be authentic, where the poster describes a difficult time during college, was straightforwardly placed by participants. The interviews reveal that people interpreted it as idealized, showing minor vulnerability but focusing instead on how they overcame it; such a post instantly became a “success story,” which would be appropriately posted to any medium.

8.2.2 Perception and Cross-Media Theory

These changes speak to media theory. With a few exceptions [21,151,213,233,242], most media studies have focused on a single medium. In this thesis, we have generally compared multiple media. Social media don't exist in a vacuum, and how someone uses them depends on their place in their social media ecology. This observation may also help explain differences in how people use individual social media. For example, if someone has a Snapchat where they already vent to their friends, they are unlikely to make a Finsta. As with self-presentation, there are different factors that influence why people will post to different media. For example, in the scenarios study, people noted that the format of a post was important, not because a medium only accepts a specific format (for example, Twitter tends to be more text-focused, but users can post pictures or videos), but because of social norms around the type of media that people post there. If something doesn't match that medium's typical type of post, it doesn't belong there. From this study, we saw that social norms were a powerful motivator for media choice, which indicates that emerging social media have to compete against the norms of existing social media.

Like ecologies, observer perceptions of media self-presentation is a less researched problem [although see [171]]. The results from the Trumangram study indicated that observers were not very accurate overall but were generally more accurate to the profile owner's offline self-presentation than their Instagram self-presentation. We also saw that profile owners used fewer cues than observers thought to express their personality. Observers tended to think that a larger set of cues was linked to profile owners' self-presentation than profile owners used. In particular, observers overestimated how many cues were linked to Openness, assuming that all cues we examined were related to the trait. However, we saw that cue validity and utility overlapped more for objective cues (i.e., the number of posts, followers, following, etc.) than for subjective ones (rating of fashionable posts, rating of positive affect

posts, etc.). The Trumangram study identifies further work that needs to be done to examine how observers assess others' personality on different media. Additional work that examines media self-presentations on different platforms can further explore this area of research to see if other observers can detect a medium-specific personality on a different platform or if observers generally detect the person behind the profile.

8.2.3 Personality Theory

This program of research also speaks to personality theory. Personality theory acknowledges both traits and situations in explaining human behaviors. My research has shown that people express traits differently across media, so how does this impact personality theory? Overall, results support a situational account, as we see different manifestations of traits across media, different personality presentations on the same social medium, and even differences over time as video call use expanded during a pandemic. While prior work has explored differences in traits across in-person situations [75,76,77], our results suggest a significant new set of research questions concerning situational factors affecting traits in social or communicative media. Given social media's popularity, this represents an important new area for personality research. This approach of assessing traits across medium also identifies a "snapshot" of media use at a specific time. As our video study and other research suggest [128,206,210,220], how people present themselves may shift as media features, norms, and audiences shift over time. As noted above, people recently seem to be using Finstas less by switching to Instagram stories or migrating parts of their authentic presentations to TikTok. Comparing presentation with perception results has additional implications for personality theory. Our results show conclusively that profile owners believe they are presenting differently on different social media, nevertheless, observers don't discern these differences. Observers were more accurate at assessing owners' offline personalities, and observers

perceived few differences between Instagram and offline presentations. What does this mean? Presenters seem to have a situationist, but observers have a trait-based view of self-presentation. Presenters across multiple studies thought they were projecting noticeable self-presentational differences, yet observers don't appear to see this. Observers seem to think that how someone is offline is basically how they are everywhere else, including on social media. This outcome appears to be an example of the fundamental attribution error, the heuristic where we see the influence of the situation on our behavior yet assume that others are simply acting that way because of some inherent quality [84,189,190,191]. As far as personality theory is concerned, presenters think that they are situationists, but observers feel they display consistent traits.

8.2.4 Methods

Next, we will discuss methodological contributions. We were able to measure media self-presentation through personality surveys. These quantitative results were supported by qualitative analysis to help identify explanations for the phenomena we observed. The qualitative results were often generative, generating hypotheses we tested in later studies. For example, the Snapchat/Facebook study suggested the importance of social norms and affordances for determining self-presentations, leading us to design the Insta/Finsta study. When that study showed that people had different self-presentations on the same medium, Instagram, this showed the definitive role of norms over affordances as the latter were constant as participants used the same medium. We were also able to show the approach was generative in applying to social media and more traditional media such as video. We successfully deployed our methods developed for social media to synchronous settings to generate novel results. Furthermore, we have additional unpublished work that uses similar methods to understand texting and single-player and multiplayer video games. The fact that these are very different applications and settings suggests a robust and generative approach to interpreting self-presentation in media.

Additionally, we have evolved our methods, extending from presentation to ecologies and perception. Future work could address new research questions. As identified by the Trumangram study, there is a discrepancy between how people see themselves and how other people see them on Instagram. This result implies that self-report has limitations, providing one perspective on self-presentation.

Future work could try to identify known others or people that know the person in different contexts [30,171,226]. One extension of the Trumangram study could investigate whether people see someone differently if they know them primarily through media. For example, we could compare someone who knows the profile owner primarily through Instagram and compare their perceptions with someone who knows the profile owner primarily offline. This report could be contrasted with the profile owner's self-reported offline and Instagram selves.

Another important direction would be to gather more behavioral data on how people use social media for self-presentation, similar to the data gathered in the Trumangram study. However, there are challenges in doing this. It's difficult to emulate how people use real social media by asking them to use a simulated one. Much of our previous work has identified that social norms and audiences are crucial factors in how people really use social media. It would be hard to replicate these in a simulated social medium. This issue suggests the promise of approaches relying on technologies like Trumangram. Trumangram is based on Instagram, triggering pre-existing social norms that may not be true of asking people to use a completely novel medium with no prior experience. Such an approach would be a closer approximation of real behavior without controlling and instrumenting an actual social medium for which it would be necessary to work at a social media company.

8.3 Future Work

Next, we will discuss the technological implications of these studies and future work. We propose several new social media designs. After discussing these, we will return to media theory offering a reminder to designers that social norms will often trump designed affordances, that social comparisons may not be as problematic as we assume, and a summary of the findings from this program of research.

8.3.1 Design Implications

Our work suggests various new designs for social media technologies. One approach involves designing a new social medium that allows users to emphasize specific traits. In essence, if we were to propose a social medium that supports particular traits, how might we do so? Another design approach might help improve existing social media by proposing a Persona Manager that assists users in organizing and displaying their intended self-presentations across the target social media. The third new design is a Persona Analyzer, which could assist users by explicitly analyzing their posts for self-presentation, acting as an editor to help users showcase themselves how they intend to.

How might we help people project traits thought different media? The first step in the design process is identifying the traits we are interested in. From Table 1, we see that video seems to be inherently Agreeable. We will use this to motivate a potential design of a social medium that helps foster Agreeableness. The video results suggest that this Agreeableness might arise from the additional capability that self-facing images of oneself allow people to self-audit effectively. We would also suggest that this medium allow for different groups of people (i.e., groups to which asynchronous messages go) within the same account, as our prior work suggests greater Extraversion with smaller, more intimate groups. Allowing users to create separate groups and therefore segmenting their audiences as a built-in feature would help

reduce the risk of context collapse for users and help them feel more engaged with their groups when not using video calls. By focusing a self-presentation towards a smaller group, users wouldn't need to worry about how they present themselves, such as how they act with family members intruding on how they present themselves with close friends. By combining specific elements of synchronous communication (having a profile and groups of friends) and asynchronous communication (video calls), we would help users' self-presentation be more Agreeable. Recall the scenarios study where participants sometimes had trouble identifying where to post. This design would hybridize synchronous and asynchronous features to help cut across affordances while staying on the same account. One could therefore have a more subdued self-presentation in a family group, reducing Neuroticism while acting more Open and Extraverted in a friend's group.

Another design-focused implication of this research is a technology that assists people in managing their different self-presentations on different media. A Persona Manager could explicitly help people think about how and what personas they want to present. This assistance could be a tutorial that tells users about typical self-presentations when they first sign up for an existing social media. This tutorial might help users engage with the medium as it will explicitly tell them about social norms that would help them to conform to standard media uses. For example, when making an account on Instagram, the manager could ask about the users' intended Audience, i.e., whether they will use it with a large heterogeneous audience or for communication with a smaller group of people. If the account is for general use, then the Manager could point out that people typically try to show the best side of themselves on this type of account. It could then offer specific tips about how to post to achieve this, e.g., by showing less Neuroticism through avoiding negative captions or more Extraversion by making lots of connections, posting frequently, and having posts with friends or relatives. Incremental tutorials could provide examples to clarify, which could help train people to acclimate to existing social norms.

Another way a Persona Manager could help people is similar to a password manager. A user could identify which social media they use in the manager and indicate their intended self-presentations on each medium. The manager could then provide tips on how to achieve their self-presentations on each individual medium ("Make sure you are showing your fun, goofy side on Snapchat through sending silly pictures to your friends") while making suggestions about other media they could use if they wanted to show a different side of themselves. This technology could also assist users in configuring their social media ecology, letting them see the overlap between different social media and identify the reasons for using different social media.

Another way to support people managing different selves on different media would be building a Persona Analyzer. The Persona Analyzer would be a text and visual analyzer using machine learning to interpret text and images to help the user determine if a prospective post supports the self they are trying to present. For example, someone who had difficulty in college posts about getting their degree. The Persona Analyzer could read their caption or analyze images, for example, to let them know that the content of this post is higher on Neuroticism and lower on Extraversion than their typical posts. This might help the poster re-work their post or choose a different photo to support their intended self-presentation better; given such feedback, they could create a post that is lower on Neuroticism (less negative language in the caption, brighter picture) and higher on Extraversion (surrounded by family in the picture, callouts to friends that helped them in the caption), that is also more similar to their typical posts which helps support their intended self-presentation.

More ambitiously, given the recent surge of AI text generation technologies such as ChatGPT, future users could automatically generate an entire caption matching their intended self-presentation. By telling the ChatGPT Persona Generator to "write a short Instagram post about a recent trip to Amsterdam. I had fun, the post shows high extraversion, high

agreeableness", the generated text could be slightly tweaked to match their photos while maintaining their intended self-presentation.

8.3.2 Media Theory Implications

One implication of my work speaks to social media design; while social media creators build specific features and affordances, users may use these to create unintended social norms. For example, the discrepancy between the main Instagram accounts and Finstas was clearly not intended by the designers of Instagram. From the affordances of Instagram, users are incentivized to build large networks of followers and following because having a larger network lets people see more content in their feeds. However, the designers likely didn't realize that self-presentation pressures for young adults would lead them to create a backup account where they can use social media as they intend to. Instead of always presenting an idealized, well-mannered self for an audience that could include friends, acquaintances, potential employers, and family, they wanted to present a more authentic, venting, upset, unbalanced self to a smaller group of friends without having to use a different social media. Instagram seems to have learned from this, as the implementation of stories allowed people to take advantage of those affordances (ephemeral media that can go to a smaller audience of selected people) without switching to a different account. Social media designers need to be aware that while they can create features and affordances that people can use, their users will utilize them in ways they could never have expected.

A final significant broad social implication concerns how people compare themselves to others through social media. There is now a great deal of research showing that social comparisons on social media can be very detrimental, especially for younger users [40,95,142,229]. The Trumangram study found that observers don't necessarily detect the idealized self that the profile owner thinks they are conveying. This result might mean that

some of these effects could be less detrimental if observers were explicitly aware that profile owners may be presenting an Idealized rather than an Authentic self. This awareness could be built explicitly, such as through Persona Manager training. For example, part of onboarding a new social media account could point out that the self-presentations they are seeing may not represent how others actually are; if one sees people as more Extraverted and less Neurotic on Instagram, this is because they are trying to present themselves this way. Future studies should investigate whether such a training program could positively affect young adults' sense of identity and well-being.

Finally, we will return to some of the larger implications of this work. We have identified four seemingly consistent rules for how people present on social media. First, it appears that the fundamental attribution error that has been commonly observed in social psychology is also true of media self-presentation. Users may believe that the self they present on Twitter represents a single malleable facet of their identity, but the vitriol others reveal on that platform indicates that they are generally negative people. Future studies could explore whether this holds true for different media types (i.e., synchronous, asynchronous, video-based, text-based, etc.). Second, we found consistent Extraversion effects for asynchronous media; people try to indicate that they are highly social on media. Future studies should see if this effect applies to other forms of asynchronous media with different affordances, such as Twitter or TikTok. Third, we found consistent Agreeableness results for synchronous media; people try to be warmer on video as it is real-time and allows people to monitor their appearance. Future studies should try and disentangle video from synchronicity; for example, does real-time text reveal the same pattern? The fourth and most striking is the Neuroticism result. All the social media we studied had people who used the media present themselves as less Neurotic. The one exception to this rule was a specific Instagram account where presenting Neurotically was an explicit social norm. Future work should investigate the bounds of this effect. Are there other media where this is not the case? If so, what is people's

motivation for using it? Overall, this program of research has identified exciting technical, theoretical, and empirical avenues for further exploration of how people self-present on different media and commonalities between media self-presentation.

Appendices

Appendix A: Semi-Structured Interview Questions

To start with, could you tell me about how you generally use video call software, such as Zoom, Google Hangouts, Facetime or Skype?

How are you using it? For example, are you using it to keep in contact with people you don't see often?

Could you give me a rough estimate of how many contacts you have on your favorite video call software account? How close are you to most of them? How often do you talk to them through this video call software?

Do you ever notice the self-facing video feed when on a video call (such as Zoom or Skype)? Do you think this has an effect on how you present yourself?

Can you expand on what role/s video chat plays in your relationships with people? Could you also describe the types of people you generally talk to through video call software? (i.e. friends, close friends, not close friends, family, mostly significant other etc.)

Some people tell us that they feel that they can be play around with how they present themselves through a video call compared to talking to someone in person, is that true of you? Can you give me an example?

Would you say that you have a slightly different personality when you are on a video call with someone? Why/Why not?

Have you ever had differences in how you act or interact with someone through video call software with how you act or interact with them in person? Is there something about video call software that makes people/allows people to act this way?

Are there differences in how you use different video programs, e.g. Skype, Zoom and Facetime?

Anything else that you would like to tell me about your use of video call software? Any anecdotes or final thoughts?

Study 2 and 3: Are you using video to replace offline work conversations and what adjustments are you making in these situations?

Study 3: Have you ever had your home context intrude upon your work, for example, an interruption from housemates, children or family members?

Appendix B: Scenario Text

Note: Pronouns altered based on participant's stated gender. We display male pronouns here for consistency.

Idealized

1: Sam/Sam/Sam is a 23 year old college student who enjoys dancing. He recently noted that he has gotten quite good at a particular dance through lots of practice, and he wants to show his skills off on social media. He added some props to accompany his dance, to make himself look richer and more successful. Where should he post his dance?

2: Andrew/Andi/Andi is a 21 year old college student who enjoys photography. He recently was able to visit a friend at another college and took some photos and videos with him and his friend at the college. He wants to show off his attractive friend in the college backdrop, hoping that it will get more attention to his profile. Where should he post these?

3: Kevin/Karla/Kay is a 28-year-old college student who is going out to a local amusement park with his partner. He wants to show off some of the fun he was having, such as going on rides, posing next to local tourist attractions, and eating food with his partner. Where should he post this?

4: Jim/Jamie/Jay is a 20 year old college student who is taking programming classes and recently got into fitness. He's been feeling frustrated about his coursework and has been putting a lot more energy into his workout routines. He wants to share the effort he put into his body and brag a bit about his improved fitness, but where should he post it?

Authentic

5: Chris/Chrissy/Chris often gets told that he "talks white." This used to bother him but now he mostly finds it funny. He wants to show that he's moved past these comments and showcase his top ten responses to these types of comments, in a funny way. Where should he post this?

6: Carlos/Carla/Carlie received his college degree in the mail. His final year was really difficult and he almost had to drop out/take a year off. He wants to share his diploma, the struggle of his final year and show that he was able to complete what he started. Where should Carlos post this?

7: Allen/Allie/Al found out his ex-partner has started seeing people since their breakup. They broke up to focus on their schoolwork, but Allen secretly wanted to keep dating. He misses his ex-partner and wants a space to talk about how he feels. Where should Allen post this?

8: Jin/Fen/Min is upset at some recent events in his life and doesn't know who to talk to about them. He wants to honestly share his feelings on social media in hopes that a friend will reach out to comfort him. Where should he post this?

Where do you think ____ should post this?

Why do you think ____ would choose to post to that medium

Why wouldn't _____ post to other media (or) Why are these other media worse fits for this post?

Have you ever seen someone post something like this on _____?

Why did you think it was posted there?

Have you ever posted this type of content?

If yes: Where did you post it?

Why did you post it there?

After this process for all scenarios:

Have you ever seen someone post something on ____ (repeated for Twitter, Snapchat, Instagram, and TikTok) that didn't really fit in?

What made it stand out?

Where should that have been posted instead?

Why should it have been posted to (other social media)

Appendix D: List of Individual Cues

Aesthetic Posts: Aesthetic, artistic photos

Professional Photo Quality: Professional photo (vs snapshot) quality

Diversity of Posts: Diversity of photos

Disclosed Privacy: Disclosure of private information/intimate details of the profile owner

Colorfulness of posts: Colorful (vs. monochrome) photos

Outside Photos: Outside (vs. Inside) activities visible in photos

Activity Level: Activeness of activities visible in photos

Positive Affect: Positive affect/ friendliness (vs. negative affect) of the profile owner

Authentic (RC): authentic (vs. self-promoting) photos of the profile owner

Physical Attractiveness: Physical attractiveness of the profile owner

Modesty (RC): Modesty (vs sexiness) of the profile owner

Refined Fashionable Appearance: Refined/fashionable appearance of the profile owner

Followers (LN): Number of followers of the profile owner

Following (LN): Number of Instagram accounts followed by the profile owner

Number of Posts (LN): Number of posts in account bio

# of Words in Bio: Number of words in the account bio

Appendix E: Instagram Audience Questions

- What does a successful post mean to you?
- When you post something, what aspects of your post do you look at to understand if the post was successful?
- Can you show me an example of a post that you considered successful?
    - What was successful about it?
- What do you want other people to focus on when you post something?
- What aspects of a post do you want people to not pay attention to?
- Have you had a post where someone focused on something that you didn't intend them to?
    - What was it/What happened?
- Do you use your profile information to say something to people? If so, what are you trying to convey?
- Do you use your profile image to say something to people? If so, what are you trying to convey?
- Do you use… [other potentially diagnostic elements] to say something to people? If so, what are you trying to convey?
- How frequently do you tend to post for this account?
    - What do you think this conveys to people?
- Do you have a few posts that convey the essence of your profile? If so, which are they, what are they trying to convey, and how do they do so?
- Do you have multiple accounts on Instagram?
    - If yes, do you feel like there are differences between them?
- For your main Instagram account (if multiple):
    - Do you ever try to deliberately express a more or less social side on Instagram?
        - How do you express your social side?
    - Do you ever try to deliberately express more or fewer emotions on Instagram?
        - How do you express your emotions (particularly negative)?
    - Do you ever try to deliberately express more or less adventurousness or artisticness on Instagram?
        - How do you express your adventurous or artistic side?
    - Do you ever try to deliberately express more or less friendliness on Instagram?
        - How do you express your friendly side?
    - Do you ever try to deliberately express more or less organization on Instagram?
        - How do you express your organized side?
- Do you have any photos in particular that show any of these elements? Let's look through them.

    - Repeat: So you said you are x-ing here; tell me more
- Are there things about yourself that are difficult to communicate over Instagram? If so, why?
- Is there anything else you'd like to tell me about your profile or how you use Instagram?

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