Disclosure, Privacy, and Stigma on Social Media: Examining Non-Disclosure of Distressing Experiences

NAZANIN ANDALIBI, University of Michigan

Disclosures of distress and stigma on identified social media can be beneficial. Yet, many who may benefit from such disclosures do not engage in them. I examine factors that inform decisions to not disclose stigmatized experiences on identified social media. I conducted in-depth interviews with women in the US who used social media, had experienced pregnancy loss, and had not disclosed about their loss on identified social media. I detail six types of factors related to the self, audience, network, society, platform, and temporality that contribute to non-disclosure decisions. I show that the Disclosure Decision-Making (DDM) framework introduced in prior work explaining disclosures when they do occur, also explains non-disclosure decisions on social media. I show how DDM builds from and bridges prior privacy theories, namely, Communication Privacy Management and Contextual Integrity. I discuss design implications around removing barriers to disclosure to facilitate beneficial disclosures and reduce stigma.

CCS Concepts: • **Human-centered computing** → **Social media**; **Empirical studies in collaborative and social computing**;

Additional Key Words and Phrases: Self-disclosure, privacy, stigma, social media, miscarriage, pregnancy loss, reproductive health, well-being, feminist, Disclosure Decision-Making, Contextual Integrity, Communication Privacy Management

ACM Reference format:

Nazanin Andalibi. 2020. Disclosure, Privacy, and Stigma on Social Media: Examining Non-Disclosure of Distressing Experiences. *ACM Trans. Comput.-Hum. Interact.* 27, 3, Article 18 (May 2020), 43 pages.
<https://doi.org/10.1145/3386600>

1 INTRODUCTION

In his 1974 book, Ariès criticizes the notion that there is a “need for happiness – the moral duty and the social obligation to contribute to the collective happiness by avoiding any cause for sadness or boredom, by appearing to be always happy, even if in the depths of despair.” [16] (p. 93). Along the same lines, feminist scholar, Sara Ahmed critiques the American society’s notion of “happiness” and “positivity,” arguing that “happiness” is used as a tool for social oppression [3]. People often need to tell stories of difficult life events, psychological upheavals, and emotions stemming from them, but a lot of times do not do so [104]. Such often “unhappy” events and emotions are frequently associated with stigma [104], and sharing about them can be therapeutic [94], or painful and risky [47], for example due to impression management concerns [44] or fear of social rejection and further stigmatization [20]. This article investigates the factors shaping people’s decisions to

Authors’ address: N. Andalibi, School of Information, University of Michigan, 105 S State St., Ann Arbor, MI 48109-1285; email: andalibi@umich.edu.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

© 2020 Copyright held by the owner/author(s). Publication rights licensed to ACM.

1073-0516/2020/05-ART18 \$15.00

<https://doi.org/10.1145/3386600>

withhold intimate and stigmatizing information about themselves, even “in the depths of despair,” in one modern communication context: *identified* social media. These are platforms where one is typically connected to others they know in the physical world (e.g., family, friends, and colleagues), and use their physical world identities [57].

Social media platforms provide new contexts for communicating about one’s self, experiences, and emotions with others. People use social media to both talk about what makes them happy (e.g., getting married and receiving a dream job offer) [25] and what they consider to be emotionally challenging, painful, or associated with stigma (e.g., losing a job, pregnancy loss, abuse, and mental illness) [12, 14, 26, 111]. Yet, overall social media users share more about “positive” emotions and events than “negative” on identified social media such as Facebook [77, 103], a phenomenon known as “positivity bias” [103]. Communicating such information about one’s self, or self-disclosure, can be beneficial [7, 47]. For example, social media disclosures can facilitate access to social support and social capital [7, 27, 37] and relationship maintenance [36]. Disclosures of stigmatized experiences on identified social media can lead to other outcomes such as reduced stigma, increased awareness about one’s network, and stronger interpersonal relationships [7] as well as improved well-being [53]. While anonymous interactions can be very helpful (e.g., social support exchange [11]), and are less risky [115], they often are not enough for many experiencing distress and stigma leaving them with a desire to openly express themselves to networks of known ties on identified social media [9]. But self-disclosures associated with stigma to networks of known ties can also be risky due to impression management concerns [119] or negative outcomes such as social rejection or added distress [20] (similar to in-person settings), and context collapse (i.e., several audience types all collapsed into one) [81, 119].

Taken together, individuals facing distress or stigma can find it difficult to use identified social media to talk about associated experiences and emotions. Non-disclosure and inhibition can also cause suffering due to the psychological distress associated with keeping a secret [102], which tends to be the case with concealable stigmatized identities where one has to ensure that the information they want to keep private is not disclosed. These disclosures become more complicated on identified social media, in part because people are connected to others they know in the physical world to some extent and where they are not anonymous—in today’s social media landscape this happens to be Facebook for many [57].

The central research question I address in this article is: Why and how do people decide *not* to disclose about personal and stigmatized experiences on identified social media? This is important to investigate because those who do not disclose such experiences, stand to *not* benefit from unique important disclosure outcomes we described above. This investigation is a step toward designing social technologies that facilitate beneficial disclosures on social media.

I would like to note that the premise of this work is not to design social technologies that encourage “everyone” to disclose what might make them vulnerable. Rather, I imagine social technologies that facilitate disclosures for those who *want to* engage in such disclosures, but who may not for a variety of reasons. Drawing on Linda Layne’s feminist anthropological approach and translating it to the social media context, my position is that disclosures of stigmatized experiences on social media can be a “cultural fix” that involves “enriching our discursive repertoire by lifting taboos and expanding the range of acceptable story lines” [73] (p.31). I begin by examining what inhibits such disclosures on social media. To do so, I focus on pregnancy loss as the central context of inquiry.

Pregnancy loss, a common reproductive health complication refers to loss due to stillbirth or miscarriage. It happens in approximately 20% of recognized pregnancies in the United States; yet 55% of Americans believe it is a rare event [108]. So, it is not hard to imagine that when it does happen, people might feel very isolated and alone. In fact, research suggests that pregnancy loss can be isolating, socially stigmatizing, traumatizing, associated with negative feelings (e.g., shame and

guilt) and depression, and difficult to disclose to others [112]. The silence surrounding pregnancy loss is not due to its lack of impact, but “taboo status” signals how impactful an event actually is to those experiencing it [73] (p.64). Receiving support is important in recovery and grief for those experiencing this type of loss, yet it is dependent on the disclosure of the loss. Additionally, the lack of support from others, especially friends, can contribute to a sense of stigma and may increase depression risk in the wake of a pregnancy loss [113]. By disclosing stigmatized and distressing experiences, people can signal their need for support to others in their social networks, both online and face-to-face. The potential for improved well-being through access to social support as well as other positive outcomes (e.g., reduced stigma, stronger relationships, and increased awareness about one’s network) makes pregnancy loss a productive context for research on designing social computing systems for beneficial disclosures and support exchange. Because pregnancy loss is common yet perceived as rare, researching social media disclosures in this context can benefit a large number of people. Last, but not the least, feminist scholarship has by in large carefully avoided the topic of pregnancy loss (for a review see [73] p. 28). By taking pregnancy loss as a central topic of inquiry in this work, I render visible the challenges people face in making visible and known their stories of this often avoided, yet impactful, reproductive health complication.

As part of a larger project, I conducted 27 semi-structured interviews with women in the US who had experienced pregnancy loss within 2 years and who used social media. A total of 15 of the 27 individuals did not engage in disclosures of loss on identified social media; this article draws on these 15 interviews due to its focus on non-disclosure. Although I did not set out to focus on any particular social media for this study, all participants (except one who had stopped using Facebook) discussed Facebook as a site that includes their physical world connections (e.g., family, friends, and co-workers), consistent with prior research [57]. This made Facebook an important potential disclosure and support-seeking venue for them. In this article, I focus on the non-disclosure experience on Facebook as a primary example of an *identified social media*. This conceptualization’s emphasis on known ties and identifiability provides a useful lens from which to explain disclosures on other current and future social media as well.

I analyzed these data using the constant comparative approach, and organized findings by adopting the Disclosure Decision-Making (DDM) framework proposed in prior work by Andalibi and Forte [9]. The DDM framework [9] draws on the traditional communication literature [47], and identifies factors that explain motivations, reasons, and mechanisms behind disclosures when they *do* happen on identified social media in stigmatized contexts. This framework includes six categories of decision factors related to the self, audience, network, society, temporality, and the platform [9]. In this article’s findings (as summarized in Table 1), I show how these high-level decision factors also inform non-disclosure decisions of stigmatized experiences on social media.¹ In doing so, I make the following contributions to the Human–Computer Interaction (HCI), Computer Supported Cooperative Work (CSCW), Computer-Mediated Communication, and Social Computing scholarship:

- (1) I identify factors that inform non-disclosure decisions of socially stigmatized experiences on identified social media. I also render visible the challenges that individuals experiencing pregnancy loss face in making their experiences visible and known to networks of known ties on social media.
- (2) I show how the DDM framework [9] has the power to explain non-disclosure decisions of stigmatized experiences on social media.

¹It is worth noting that I think one should not *assume* that if factor A informs decisions to disclose information, it would also and necessarily inform non-disclosure decisions. By showing that a framework explains multiple distinct behaviors, we are able to illustrate the framework’s power.

- (3) I draw comparisons with prior work at the intersection of social media and self-disclosure in diverse contexts. In doing so, I (a) identify novel decision factors not introduced in prior work as well as commonalities, and (b) posit that the DDM [9] framework, expanded to non-disclosures, provides a useful tool through which to systematically analyze and compare social media disclosure behaviors and research across contexts and populations.
- (4) In contextualizing and theorizing findings within broader privacy scholarship, I show how DDM [9] is situated between and bridges together Communication Privacy Management (CPM) [95] and Contextual Integrity (CI) [91] theories by identifying factors that account for the socio-technical milieu (e.g., design features, perceived platform norms, and perceived norms about the topic more broadly in society), as well as individual-level factors (e.g., self-related factors), and other contextual factors such as temporality (e.g., the amount of time passed since the event) that the CPM [95] and CI [91] each account for to some extent. I show how neither completely address the barriers perceived by individuals experiencing stigma in sharing stigmatizing information about themselves with members of their social network on social media.
- (5) I provide design implications around removing barriers to disclosures and reducing stigma as informed by findings.

2 RELATED WORK

Several bodies of literature motivate this work or provide useful lenses to contextualize its findings within. These include: (1) disclosure risks and risk mitigation strategies; (2) pregnancy loss, disclosure, and social technologies; and (3) pregnancy loss.

2.1 Disclosure Risks and Risk Mitigation Strategies

In this section, I first provide an overview of privacy research as related to non-disclosure. While the main literature I draw from in this work is that of disclosure specifically; it is imperative to make explicit the connections between non-disclosure and privacy; I will contextualize this study's findings within this broader literature in the Discussion section. I then shift my attention to particular disclosure risks and how people navigate those risks, with a focus on non-disclosure—this article's central focus. I end with an overview of non-disclosure and privacy research in the social media context for marginalized and stigmatized populations.

2.1.1 Non-disclosure's Relationship with Privacy: An Overview. Self-disclosure and privacy are related yet distinct concepts. Altman states that: "Privacy is conceived of as an interpersonal boundary process by which a person or group regulates interaction with others. By altering the degree of openness of the self to others, a hypothetical personal boundary is more or less receptive to social interaction with others. Privacy is, therefore, a dynamic process involving selective control over a self-boundary, either by an individual or by a group." [4] (p. 6). Self-disclosure is the adjustment of these boundaries. Non-disclosure allows us to maintain a barrier or boundary around ourselves. When we engage in self-disclosure, this barrier is opened [4, 33, 95] and when disclosures do not occur, one's boundary is protected [96]. Petronio draws on Altman and provides the CPM theory [95]. In light of CPM, an individual's privacy is maintained through "decision criteria" or "protection rules" that one uses to preserve these boundaries [96].

Focusing on children's in-person disclosures of abuse experiences, Petronio identified two major "protection rules" that informed the choice to preserve boundaries: target characteristics (i.e., distrust and responsiveness—children would not disclose to someone who does not care or to those who would not understand their predicament), and anticipated ramifications (i.e., loss of control) [96]. In her influential work, Petronio suggests that examining the decision criteria behind rule

use and development and learning how a variety of factors inform privacy management strategies (in the case of this article, non-disclosure) provide us with deep understanding on how people regulate their privacy [30]. Petronio also calls on researchers to examine how privacy management is enacted and why choices are made by different populations within different contexts [30]. Therefore, in examining what informs people's decisions to *not* disclose, I inherently shed light on how individuals who experience pregnancy loss manage their self-boundaries in social media contexts.

CI [91] is another influential privacy theory that provides rich insights into information flow norms, positing that privacy is provided when there is information flow appropriate in its social context. According to CI, the parameters that identify appropriate information flow are: data subject, sender, recipient, information type, and transmission principle. CI is particularly powerful in considering information flows from one social context to another; for example, from information shared in the work context to the health-care context. As I will explain in the Discussion section, this explanatory power changes when we consider stigma and choosing not to share information with members of one's online social network typically consisting of families, friends, coworkers, and the like.

Research in Social Computing and HCI has also extensively examined privacy in using social media. For example, Wisniewski et al. provide a taxonomy of boundary types on social media: disclosure, relationship, network, territorial, and interactional [128]. Palen and Dourish argue that people manage privacy along three dimensions (i.e., disclosure, identity, and temporality) [93]. My focus in this article is on non-disclosure as *one* important privacy boundary management dimension. Achieving desired privacy levels is crucial to beneficial social media use. Overall, social media users whose privacy needs are met report more social connectedness (and thus more social capital) compared to those whose privacy needs are not met [129]. For example, people who would disclose information if they have higher trust in their audiences or the platform, and do not so because of this lack of trust, do not feel that their privacy needs are met [129]. The privacy literature is extensive, and a complete review of privacy research more broadly is outside the scope of this article's context and contribution; my focus is on *non-disclosure* in socially *stigmatized* and sensitive contexts as *one* privacy management strategy. In the remainder of this section, I shift my attention to challenges and risks associated with self-disclosure in such settings as well as how people navigate these challenges in in-person and social media contexts.

2.1.2 Disclosure Risks. Related to self-disclosure are risks and threats associated with disclosures that make people want to maintain their self-boundaries through non-disclosure. Social science literature tells us that people experiencing negative events or emotions have a hard time deciding to disclose due to concerns around self-presentation, impression management, and deviating from the social norm [21, 44]. Experiencing rejection, social isolation, and developing negative self-image are other risks associated with self-disclosure [67]. In fact, this tendency to withhold negative information to the self is a well-documented phenomenon (i.e., the Mum effect [105]). When people experience shame and guilt—feelings associated with pregnancy loss [75]—or other traumatic or stigmatizing life events, emotional disclosure can be restrained [104]. Often people experiencing negative events take longer to share their emotional experiences because they need to find people whom they feel comfortable sharing with [126] and process their feelings [131], highlighting disclosure recipients' roles.

On social media, intimate public updates (versus private) are perceived as inappropriate and can lead to less liking of the poster by their audience [18], in contrast to research in dyadic contexts, which indicates intimate disclosures often increase the extent to which the discloser is liked [15]. Relatedly, research has investigated factors that influence support provision online. For example, prior work [10] identified a variety of factors (i.e., poster-related, responder-related,

and context-related) that shape support provision decisions on social media. An experimental study suggests that emotional bandwidth (i.e., poster's ability to disclose personal affect online) is negatively associated with eliciting support unless support providers feel a sense of community on the platform or prefer online interactions over in-person ones [61]. Overall, anticipating supportive responses and reactions from one's audience is an important factor leading to disclosures in person [29, 47, 67, 92, 104] and on social media [9, 123]. While many positive outcomes can occur due to audience's response and reactions to social media disclosures [7, 46, 70, 106], sharing sensitive information about one's identity and experiences can be risky due to features such as data persistence [117] and context collapse (i.e., flattening of one's audience from different groups into one big group) [22, 80]. In an interview study with graduate students about their social media use and disclosure behavior (not focusing on any specific personal or sensitive context), Vitak and Kim [121] identified three risk categories associated with self-disclosure: "interpersonal-based" (i.e., social rejection and hurting friends' feelings largely through positive news sharing), "impression management-based" (i.e., loss of control such as future employers seeing one's posts), and "affordance-based" (i.e., how Facebook's affordances shaped by whom and how posts could be viewed). These risks identified in prior work tend to have a social dimension as reviewed here.

2.1.3 Disclosure Risk Mitigation Strategies. Prior work addresses what people do to manage disclosure risks and unwanted outcomes. Risk management and avoidance strategies employed by social media users include network regulation (e.g., rejecting friend requests and defriending) [49, 55, 121, 122], targeted disclosure (e.g., friend lists) [121], self-censorship (e.g., not sharing at all or non-disclosure in our article) [49, 121], not participating online at all [65], sharing determined by lowest common denominator (i.e., disclosing only what they perceive to be appropriate for all of their audience) [62, 121, 122], content regulation (e.g., coded content [122], indirect disclosures [13], social steganography [23], and limiting the disclosed information [65]), sharing incorrect information [65], switching between communication channels [49], using multiple accounts [122], and postponed disclosures [9, 111]. Individuals often need to prevent anticipated identity-threatening situations [72], and sometimes they do so using "preventive strategies" to avoid potential unwanted outcomes in the future [9, 71]. Concealing information, self-censorship, or "non-disclosure" in this article's terms allow people to maintain their privacy boundary and mitigate risks [30].

2.1.4 Self-disclosure, Stigma, and Marginality. Privacy research in Social Computing and HCI has focused on the general population as well as groups that might experience vulnerability due to their identity facets or life experiences. Populations included in research framed around privacy include teenagers [79], intimate partner abuse survivors [82], parents of lesbian, gay, bisexual, and transgender kids [19], young homeless individuals [130], undocumented immigrants in the US [49], and certain contributors to participatory information sources like Wikipedia (e.g., gender, sexuality, race, and ethnicity minorities) [39] to name a few. Overall, as summarized in [49] privacy concerns are diverse and different among various populations. Similarly, "differential vulnerability" explains how safety and vulnerability can vary depending on markers of relational position such as class, gender, race, religion, and experience [99]. This body of work is not reviewed in detail here because the focus is on *one* aspect of privacy management (non-disclosure) in sensitive contexts. Non-disclosure, as this body of work also suggests, is a common strategy people use to mitigate privacy concerns.

Shifting our focus to *self-disclosure* research on more intimate and sensitive disclosures, HCI and social computing scholarship has explored how people use social media when they possess stigmatized identity facets or when they experience life changes that may induce psychological distress. Broadly, this line of research suggests both positive outcomes (e.g., access to support,

social capital, and reducing stigma) [7, 36, 53, 111] and negative outcomes (e.g., unsupportive reactions and reduced well-being) [116].

A wide range of personal, potentially distressing, and stigmatizing experiences have been contexts of inquiry in past work framed around disclosure. For example, low-income, first-generation college students face challenges on sharing content on social media due to perceived fear of judgment, perceived norms around sharing information on social media, privacy concerns, inefficiency, and perceived lack of intimacy [85]. Individuals going through life transitions (e.g., gender transition) face challenges in presenting their emerging identities to multiple audiences from the past, current, and future [55]. For veterans transitioning into civil society, the hyper-masculine identity (mirrored in perceived lack of camaraderie, disconnect with civilians, and undermining collectivism) performed while in military creates challenges for disclosures of transition-related struggles in-person and on social media. For example, not having access to similar others also transitioning into civil society with whom one can have camaraderie creates disclosure barriers [111]. Those in recovery from substance abuse using InTheRooms.com, while often have the opportunity to be somewhat anonymous, also worry about their information being shared with unintended audiences [107]. Individuals with disabilities navigate complex decisions to disclose their disability status in dating platforms and may choose to disclose to pre-emptively “weed out” potential partners for whom disability would not be acceptable; not disclosing a visible disability can lead to distrust of the non-discloser [100]. Reasons for not announcing relationship breakups on Facebook include feeling that it is inappropriate to post about this topic, it will cause drama with one’s network, it will hurt others’ feelings, and that Facebook is a place for positive content [54]. Fathers also face concerns around children’s privacy and judgment from other parents when considering sharing content about their children on social media [6]. Vitak and Ellison [120] conducted interviews with adult Facebook users (not a particularly sensitive setting) to examine how they used the site for social support exchange; yet issues around sensitive experiences came up in their data. Some participants in their study mentioned that they would be hesitant to share about a family member’s death on social media due to concerns around being seen as “needy” or having people “feel sorry” for them. Others said they would not do so because responses may not be genuine and authentic.

This body of research teaches us important things about challenges people face in disclosing distress and stigma on social media across a variety of experiences. In this article, I focus on the pregnancy loss experience to examine reasons for non-disclosure on identified social media to investigate factors that shape non-disclosures of loss and grief in stigmatized contexts like pregnancy loss in which the discloser may know of no-one with similar experiences in their network. While some people do share about challenging experiences (including pregnancy loss) on identified social media like Facebook [9], many do not [112]. In the next two sections, I focus on prior work related to pregnancy loss starting with background information about this human experience.

2.2 Pregnancy Loss

Pregnancy loss is a significant life event for many who experience it. Experiences with pregnancy loss leave many feeling isolated, empty, unloved, and “less of a woman” [127]. Many experience symptoms of post-traumatic stress disorder [88] and depression [90], and changes in interpersonal and family relationships especially when support is not available in these relationships [28]. Scholars have compared grief after pregnancy loss and that of other kinds in terms of the responses they receive. For example, after one’s spouse dies, they probably would not be told “you will have another spouse”; yet, statement such as “you can have another baby” or “at least you can get pregnant” are common after a pregnancy loss is announced [87]—responses not perceived to be supportive [87].

The American society by in large portrays pregnancy loss as a “non-event” and this can make the grieving person feel like an “unperson” [24]. Pregnancy loss is associated with significant stigma and the social identities of those who experience it as “patient,” “mother,” and “full citizen” are “spoiled” [24], leaving many feel that they can never be truly “cured” [63]. Social psychology literature tells us that such “spoiled” identities require extensive impression management considerations and efforts [45]; it is not a surprise then that individuals who experience pregnancy loss have to make challenging decisions about its disclosure to others, and many do not eventually communicate about it with others and remain silent even when they do not want to remain silent and want their stories to be heard [73].

Access to support is crucial to readjustment when facing stigma and adversities in life [2]. In the pregnancy loss context, individuals who can access social support are more likely to find meaning in the loss and process it [89]. In fact, social support is a factor in narrative reconstruction, which is a useful process in healing after loss [63]. Pregnancy loss is largely absent from societal narratives in the US and is not accompanied by grief rituals, nor it is socially recognized as a type of loss that many need to grieve regardless of ideological views or the loss’s gestational stage [58]. Identity repair work is a necessity for recovery after pregnancy loss [24], and communicating about the loss is a prerequisite to finding social support and conducting the required identity repair work. Therefore, it is important to know what factors inform individuals’ decisions to *not* share experiences of pregnancy loss.

2.3 Pregnancy Loss, Disclosure, and Social Technologies

Technology, parenthood, pregnancy, and pregnancy complications (e.g., pregnancy loss and infertility) have been subjects of inquiry in HCI and Social Computing, with the latter pertaining to less extant scholarship. Parents, expecting parents, individuals trying to become pregnant, or those who experience pregnancy loss use social media for support or self-expression among other things (e.g., [5, 9, 17, 43, 86, 109]). Other technologies such as tracking applications exist to help pregnant individuals monitor their pregnancies [64], gather data that may help them become pregnant [31, 32], or manage reproductive health more broadly [38]. Levy [76] argues such tracking on platforms like Glow can be a form of “intimate surveillance,” as it brings with it increased privacy risks both interpersonally and with respect to commercial platforms and information flow [91]. The concept of “Pregnancy ecology” proposed by Peyton considers how technologists might design technologies that not only support the expecting mother through the pregnancy journey, but also others who can be sources of support for them. Research also considers how we might design technologies to support pregnant women during and post-pregnancy [97, 101], and how new mothers and pregnant women use technology to manage personal health information [50–52].

This important body of research reviewed above has largely concentrated on desired pregnancies that proceed as expected—those that lead to the birth of healthy children. Notable exceptions are works of Hayes et al. on designing technology to help new parents of preterm infants track health data [59] and that of Andalibi and Forte [9] examining how and why women who experience pregnancy loss use social media to talk about their experiences—which is most closely relevant to this article. More broadly, HCI research shows growing interest in women’s health. A comprehensive review of all HCI research related to women’s or reproductive health is outside the scope of this article. Notably, researchers have critiqued who holds power in designing around the body, for instance by examining menopause experiences (i.e., signifying the conclusion of reproductive abilities) [74, 118], challenging the normative narratives around what it means to design for women’s health. By centering lived experiences with pregnancy loss, this present work joins other feminist-oriented scholarship in this space.

Research focusing on the intersection of pregnancy loss and technology is a growing area of scholarship. One study found that internet-based interventions could reduce negative mental health effects associated with pregnancy loss [68], highlighting that the relevant design space remains open. On disclosing pregnancy loss online, research suggests that anonymous sharing in online support groups is beneficial [41] and sometimes necessary for some [69]. More recently, Andalibi and Forte found that sometimes people engage in disclosing about pregnancy loss to identified (not anonymous) audiences on social media following anonymous disclosures on other online spaces [9]. Drawing on traditional communication literature [47] that respectively draws on Petronio [95] and Altman's [4] privacy research, they provide a DDM framework that explains the factors that lead to disclosing experiences with pregnancy loss on identified social media. This framework includes six types of decision factors related to: self, audience, society broadly, platform and affordances, network, and temporality. As I will describe in the methods section, I adopted this framework to organize this study's findings about non-disclosure decisions. This framework describes factors contributing to disclosures of pregnancy loss on identified social media—when they *do* happen—as:

- (1) **Self-related** considerations contributing to disclosures are primarily self-help mechanisms through remembrance, taking control of the parenthood narrative, processing the loss, and eliciting social support.
- (2) **Audience-related** considerations are largely about control, where people preemptively disclose the loss to avoid certain conversations, and to gain control over what personal information is known to others.
- (3) **Network-level** considerations are key when people disclose the loss because they perceive less stigma due to observing others' disclosures in their networks, or because they want to be a source of support for others in their networks. The authors define network-level reciprocal disclosures as "disclosures to one's network that are motivated by observing others' disclosures." Network-level factors are derived from the composition and structure of one's total (egocentric) social network as articulated on Facebook (e.g., homophily, size, and diversity). They differentiate network-level from subgroup, community, or dyadic relationships that might be the subject to audience-related considerations.
- (4) **Societal** considerations are relevant when people disclose hoping to reduce societal stigma around pregnancy loss more broadly, educate others, or as a call for political action related to reproductive rights.
- (5) The amount of **time** passed since the loss also facilitates some disclosures. As time passes, some may be more likely to disclose.
- (6) Finally, **platform** features also inform disclosures. These include the efficiency of one-to-many communication, asynchronicity and thus less concern about the audience's feelings (due to it being invisible to the person making the disclosure), and anonymity in other online spaces (e.g., Reddit) preparing some to engage in disclosures in identified settings after anonymous disclosures elsewhere.

Past research has also examined outcomes associated with disclosures of pregnancy loss on identified social media to networks of known ties. These outcomes are on the individual, dyad, and social/network levels [7]. This prior work emphasizes the power of connecting with similar others within networks of known ties rather than anonymous others on the internet. It also posits that such disclosures of pregnancy loss, when they do happen, can lead to relationship changes (strengthen and weaken) and can make the disclosers transition into new social roles as sources of support and mentors [7]. Additionally, helpful connections following such disclosures

can originate from various kinds of ties with different levels of closeness prior to disclosure and via diverse communication channels [7]. Finally, reciprocal disclosures both at the network and individual levels tend to contribute to reducing the stigma surrounding pregnancy loss and normalizing it [7]—which has societal and public health implications [102].

While some use social media to talk about their experiences with pregnancy loss [9], not all who stand to benefit from doing so actually do so [112]—as I also see in these data described next. To reiterate this study’s research question, taking pregnancy loss as a central context of inquiry, I ask: What are the reasons and socio-technical contexts within which people who experience stigma and distress choose to not share about them on social media?

3 METHODS

To answer this study’s research question, I draw on a phenomenological interview study and investigate how and why women who use social media do *not* disclose experiences of pregnancy loss on social media.

3.1 Recruitment

I used a screening survey and initially shared it on Facebook and Twitter (starting from my individual network). I also posted flyers locally with information about the study and link to the screening survey. The online call for participants was widely shared by people within and outside of my individual network including in many private Facebook groups of which I was not a part, as well as re-shares and retweets. The screening survey’s purpose was to find eligible interview participants and yield a strategic sample both in terms of demographics and experiences (e.g., age, used social media, and disclosure and non-disclosure on social media). The survey included information about the study and the following inclusion criteria: having experienced a pregnancy loss during the past 2 years, being at least 18 years old, using social media, and living in the United States. I did not screen based on gestational stage of loss, as the grief experience is not dependent on it [87]. The study was open to transgender and non-binary people who had experienced pregnancy loss, but none responded (I am pursuing this in separate work). I asked about social media use and their disclosures of the loss as well as demographic and contact information. The survey was active November 2016–January 2017 and I received a total of 90 responses. Among survey respondents, 36 had not disclosed the loss on any platform (relevant in this article), 51 had disclosed on one or more, and three could not recall. Among the 51 who had disclosed on one or more platforms, 41 briefly shared how they did so, out of which 22 had shared about their experience on their Facebook profiles. Those chosen for interviews were contacted via email with study information and a link to an online consent form.

3.2 Participants

I conducted interviews with 27 individuals as part of a larger study about pregnancy loss, social media, and disclosure behaviors, decisions, and strategies including and beyond non-disclosure. This current article draws on interviews with 15 of these 27 individuals due to its non-disclosure focus. The participants’ average age was 33.6 years (range: 27–42 years). One participant was in a lesbian relationship, and 26 were in relationships with men. Eight participants reported absolutely no online disclosures about their loss on any platforms, and 15 did not disclose to networks of known ties (this study’s focus); 19 reported online disclosures (e.g., Facebook profile, Facebook groups, Reddit, GOMI, Glow, and BabyCenter). Of these, 12 had disclosed on their Facebook profiles, one commented on a friend’s post and thought of it as disclosure, and 14 disclosed in support groups. Nine participants disclosed in at least two platforms. All participants reported using Facebook at the time of the interview, except one who only used Instagram and Twitter at the time of

the study. Participants had experienced losses in various pregnancy stages including stillbirth. All participants lived in the US, and were offered a \$25 Amazon gift card as a token of appreciation.

3.3 Data collection

I conducted semi-structured interviews, allowing participants to more comfortably share and reconstruct their experiences. This method also allowed me to systematically cover important data points. I conducted all interviews via participants' preferred method of video or voice call, and only recorded the audio which was then used to transcribe for analysis. On average, the interviews lasted for 92.7 minutes ($SD = 12.5$, range: 62–115). The interviews began by sharing the project's goals and ensuring participants knew what the study entailed. I then asked for permission to record the conversation's audio. Then I opened up the conversations by asking what the participant's life was like when they found out they were pregnant, and what happened next. Follow-up topics included general social media use, both disclosures and non-disclosures of the pregnancy and pregnancy loss in computer-mediated and non-computer-mediated settings, and reasons and thought processes leading to disclosures and non-disclosures. When possible, I asked participants to provide specific examples or scenarios. In this article, I only report on themes related to non-disclosure on identified social media.

3.4 Analysis

I followed an interpretivist approach to analyzing these data through which in order to understand a phenomenon (i.e., non-disclosure decisions) the researcher aims to learn about participants' lived experiences, how they reconstructed their experiences, and the meanings they associated to their experiences [114]. To analyze the data, I used the constant comparative approach—central to grounded theory. I began by open coding the data, “through which categories, their properties, and relationships emerge” [114:66], looking for patterns, consistencies, and differences in the data. I chose to begin with open coding because it allows for flexibility and creativity in the codebook development process [114]. Throughout the analysis, I iterated upon and refined codes, and assigned them to larger themes. In the process of allocating codes to larger categories, I found that they fit perfectly within the DDM framework proposed in prior work [9] that explains the factors contributing to people's disclosures (when they *do* occur) as I reviewed earlier in this article. I did not set out to use this framework to analyze these data. I engaged in open coding, developed themes, compared themes with this framework, and adopted it due to this emerging fit. As such, I organized this article's findings by adopting the DDM framework [9]. I observed no other themes around non-disclosure reasons outside of what I report here and organize using the DDM framework [9].

3.5 Limitations and Opportunities

This study focuses on women in the US and their experiences with pregnancy loss and non-disclosure. Future research could explore cultural differences in disclosure practices (e.g., collectivist versus individualistic cultures) and partners' experiences. In particular, Petronio's CPM theory [95] would be a valuable lens through which to examine likely negotiations between members of a couple in deciding to announce the loss and turbulences that may occur—which was not a focus in this study. This study also largely included cisgender straight women; other populations experiencing pregnancy loss likely have different experiences. I am not aware of representative surveys that assess what portion of social media users who experience pregnancy loss disclose about it online. However, according to my screening survey, 36 of 90 respondents did not disclose on *any* platform.

In line with a phenomenological approach, the goal of this work is not generalizability. However, these results may apply to contexts sharing similarities with pregnancy loss. There are two main stigma categories [98]: those identified by avoidance and fear (e.g., experienced by individuals with mental illness), and those identified by blame and moralization, enforcing social norms (e.g., experienced by individuals experiencing sexual assault). Experiences of pregnancy loss, the focus in this study, tend to fall into the latter category. Therefore, I anticipate that this work's findings may be transferable to other contexts for which stigma is linked to social norms, blame, and moralization. There is already promising evidence for this anticipation. A recent study [40] investigated #metoo on Twitter and showed how network-level reciprocal disclosures, a construct within the DDM framework [9], explains the traction this movement gathered. This is encouraging, even though it is an examination of disclosures that *did* occur within the #metoo movement, rather than those that did not. Future work could evaluate this present work's findings with representative samples or other populations experiencing stigma and distress.

Additionally, while I highlight relationships between this study's finding themes (i.e., the six decision factor categories) throughout the findings section when applicable, I note that other methods such as surveys can scale up these findings, draw correlational relationships, and uncover hidden relationships between the variety of decision factors identified here. Such future work could also explore relationships between personality characteristics (e.g., introversion degree) by using validated scales.

As reported in findings, I found that facing multiple stressful life events at the same time often dampened opportunities for disclosures related to any of them on social media. This indicates that those who may be at most distress and in need for support and connection, might not engage in sharing about their experiences. Future research and design may consider focusing on intersecting distressing experiences to investigate unique challenges and needs.

3.6 Ethical Reflections and Considerations

In this section, I share ethical consideration both with respect to participants and researcher.

Participants. It was important to me that participants felt their grief and other feelings were respected throughout the interview. I adopted guidelines posed by Kasket [66] for conducting interviews with bereaved people either remotely or in person, based on earlier guidelines for in-person interviews. These guidelines provide signs of different stress levels that interviewers can respond to and are incredibly helpful in attending to participants' status and needs. As a practical example, when appropriate, I checked in with participants asking if they would like to take a break (or end the conversation). In my interactions, I ensured that I communicated care and was genuinely present and listening. Moreover, because I learned that this study was of importance and value to participants as well as to me, I will write a public blog post to share the results with those who have been affected by pregnancy loss and the general public. Sharing results in an accessible format will allow me to contribute back to participants and the population I worked with. The study was reviewed and approved by the institutional review board of the institution I was affiliated with when the data were collected and analyzed.

Researcher. Conducting research in sensitive settings often accompanies challenges to researcher's well-being [8, 84], yet researcher vulnerability and how it may be addressed is rarely openly discussed and shared in HCI. Due to the emotionally challenging and deep nature of these interview conversations, I engaged in self-care practices that I had learned through prior research projects or that I organically decided to experiment with during this research. I share what I found helpful for me below and encourage other researchers to consider these tips in their own work:

- First, I acknowledged that I am a human *and* a researcher, and I care about the individuals I speak with. It is okay to feel the pain that participants share with me and trust me with.
- Second, at times, I conducted one interview a day and took several hours off of heavy intellectual or emotional work during which I engaged in activities that were calming for me. While I had decided to, and been advised to, not conduct more than one interview a day, sometimes this was impossible due to participants' schedules which was a top consideration for me as well. In those cases, I tried to take extra care of myself following the interview sessions.
- Third, I had a considerate, supportive, and understanding network of people I lived or worked with whom I could share how I felt if I needed to, or who would support me to take time off. This was helpful in balancing and sustaining research and well-being.
- Fourth, I took notes after interviews to reflect on my own reactions and emotions. This journaling was part of my research process to reflect on participant experiences and to facilitate taking a reflexive stance in my own role in this research.
- Finally, I reminded myself of the importance of this work and my motivations for doing it. I also reminded myself of participants' kind comments about the value that the interview experience brought to them as well as the research itself.

I found that these activities and reflections were helpful to maintain my emotional well-being while conducting this research during data collection, data analysis, and writing.

4 RESULTS

I found that a wide variety of factors related to the self, audience, network, society, temporality, and platform shaped participants' decisions to *not* disclose experiences of pregnancy loss to networks of known ties. These themes fit within the DDM framework [9] that explains factors contributing to disclosures of stigmatized experiences on social media as described in the review of prior work. Through the findings section, I show how this high-level framework also explains non-disclosure decisions of stigmatized experiences on social media. Table 1 provides a summary of these themes and subthemes in relation to non-disclosure. I also provide section numbers in the table as a roadmap. While these are distinct themes, they are also related to each other. I highlight some of these relationships throughout this section.

4.1 Self-related Factors

Self-related factors that inhibited disclosures refer to those about one's perceptions of their own personality and other circumstances perceived as personal, rather than those related to their network, audience, or society more broadly.

4.1.1 History, Upbringing, and Norms in Family. Participants cited family history and norms (e.g., family loss history, private family or marriage, and perceived non-existence of privacy within family) as well as the ways they were socialized and brought up (e.g., conservative and ought to carry their own struggles) as factors that contributed to non-disclosures of loss on social media. For example, P2 said: "We have a weird family history of loss, my mom's generation, so I've always been very restrained." Relatedly, P19 reflected on her upbringing and said: "It probably goes back to the idea that I should carry all of my own problems myself. I don't want to be this heavy dark spot in people's days. If they're feeling good and then they come across this really sad post or something I don't want to be that person. I like lifting people up and making them feel good. It just feels hard to ask someone help you carry something." For some participants, the ways they were brought up and their family history led to their attitudes about asking for help and contributed to their non-disclosure decisions on social media as well. This theme reflects on how participants made

Table 1. Factors Informing Non-disclosure Decisions of Pregnancy Loss on Identified Social Media

Self-Related Factors (4.1)
History, upbringing, and norms in family (4.1.1)
Generic or loss-related feelings and perceptions about the self (4.1.2)
The meaning and emotional effect of disclosure (4.1.3)
Personal perceptions and judgments about others' social media disclosures (4.1.4)
Tension between needs to be seen and perceived norms on social media (4.1.5)
Other concurrent life events (4.1.6)
Audience-Related Factors (4.2)
Protect others' needs rather than the needs of self (4.2.1)
Past audience reactions to disclosures of loss or other sensitive topics (4.2.2)
Anticipated audience reactions (4.2.3):
Judgment and pre-judgment by the audience (4.2.3.1)
Critiquing the couple's choices in relation to parenthood (4.2.3.2)
Dismissing, ignoring, or glossing over one's vulnerability (4.2.3.3)
Reactions from those who may not understand what it is like to lose a pregnancy due to not having experienced it (4.2.3.4)
Generic, impersonal, superficial, or insincere comments from non-close ties (4.2.3.5)
Hurtful comments on social media (4.2.3.6)
Mismatch between reaction expectations and anticipated reactions from certain audience members (4.2.3.7)
Reactions of family members to using social media as an outlet (4.2.3.8)
Network-Related Factors (4.3)
Perception or assumption that no one in one's network has directly experienced pregnancy loss (4.3.1)
Perception that one's network is not well-informed about pregnancy loss (4.3.2)
Perceptions of difference from one's network with respect to goals and concerns in life (4.3.3)
Perceived network composition: diversity, closeness, trust, and size (4.3.4)
Societal Factors (4.4)
Perceived stigma surrounding disclosing pregnancy loss and women's health broadly (4.4.1)
Norms around not announcing pregnancies (4.4.2)
Broader reproductive health discourse (4.4.3)
Temporal Factors (4.5)
Time has passed – hurts to reopen wounds (4.5.1)
Too close and raw emotions, or too distant and no more needing sympathy (4.5.2)
Time has passed – will not receive support if disclosed (4.5.3)
Future perceptions of self by others as a result of disclosure now (4.5.4)
Platform and Affordance-related Factors (4.6)
Non-anonymity and being connected to known others (4.6.1)
Permanence of content and how others will remember (4.6.2)
Asynchronous communication and not seeing the audience's reaction (4.6.3)
Fearing the loss of privacy control (4.6.4)
Perceptions about disclosure norms on the site (4.6.5)

sense of their own cultural background and its role in informing non-disclosure decisions. Prior research shows that families play a key role in developing privacy rules in in-person settings [95]. Here we see how participants remarked its impacts on one's disclosure decisions of information on social media.

4.1.2 Generic or Loss-related Feelings and Perceptions About the Self. Participants' perceptions of themselves broadly or their emotional state as a result of the loss contributed to non-disclosure decisions as well. For example, some saw themselves as largely private or anxious individuals, and

remarked how that played a role in non-disclosure of loss for them. Others had feelings of shame, guilt, or felt “less of a woman” due to the loss and that made it hard for them to talk about their experience. As P8 said: “I imagine that there is a bit of shame there because, ‘Was it something that I did, was it something that I ate? Was it that Advil that I took? Was it the fact that I wasn’t on prenatal vitamins when I got pregnant?’ All those kinds of things can go to your head of, ‘It is not my fault because something happened, but could it have been my fault? Could it have been anything that I did, any one particular thing that I did on this hour, on this day that made it so that it wasn’t a viable pregnancy?’” Relatedly, P27 said: “I kept it secret because I was ashamed and I was embarrassed. I felt like less of a woman.” For some, the very deep and difficult feelings evoked by the loss led to non-disclosure. As social psychology literature suggests, feelings of shame and guilt are some of the most difficult to disclose [104]. These feelings also made it difficult to disclose pregnancy loss to participants’ online social networks.

4.1.3 The Meaning and Emotional Effect of Disclosure. What participants thought about the meaning of disclosure to themselves impacted their decisions. Some participants did not disclose on social media, because to them this meant admitting “failure.” Participants were also concerned that by talking about the loss experience, the loss would feel more real; so they did not engage in disclosure. As P11 said: “Because it evoked all of the feelings I was feeling about not being pregnant anymore. Every time I had to say it out loud it made it more real. The way that I deal with grief, just like my father who I was mentioning before, is to not think about it. Every time you have to express it you have to think about it. It was just physically painful every time.” Sometimes, people wanted to avoid being defined by the loss experience as P7 put it: “I really do think that you feel there’s something wrong with you... It’s really, really hard to talk about something that devastates you... It’s not something you want to define you, so you don’t talk about it.” The meaning one gave to their own disclosure and how they felt about this meaning, led to non-disclosure through suppression for some. Such suppression involves inhibiting ongoing emotion-expressive behavior, and might create a sense of discrepancy between the inner experience and outer expression, and could lead to less social support and reduced well-being [48].

Other times, disclosure of loss went beyond simply disclosing loss. As P26 said: “I was intrigued when you asked if I shared about it on social media. As a 42-year-old woman you say, ‘God, no!’ That is a public announcement rather than a personal conversation you have. If you announce to someone that you have miscarried, you are announcing that you are trying to become pregnant. As a 42-year-old woman that’s a pretty strong statement.” For some, disclosing the pregnancy loss meant disclosing other information as well, such as intending to grow the size of their family, getting pregnant, and making changes to their life rendering disclosures of loss even more complicated and multi-faceted.

4.1.4 Personal Perceptions and Judgments About Others’ Social Media Disclosures. Participants’ perceptions of other people’s pregnancy loss disclosures or how participants felt when they saw someone else’s post about difficult situations informed non-disclosure decisions as well. In particular, when participants felt uncomfortable or judgmental about others’ sensitive disclosures, they avoided disclosure themselves too. On this note, P3 said: “The problem that I have with social media sometimes is that I feel like people post things to one up each other or they do it to get a billion likes.” Similarly, P24 said: “I guess because I know that I can be judgmental like that, I didn’t want people to look at me, to judge me and to look at me that way.” People formed particular ideas about what was and was not appropriate to do online. Particularly, if one saw others behaving in certain ways and judged them for it, then they did not behave that way either. This resonates with findings about non-disclosures of relationship breakups on Facebook [42, 54], where those who

did not think it was appropriate for others to announce a relationship breakup on the site, did not do so themselves either.

4.1.5 Tension Between Needs to be Seen and Perceived Norms on Social Media. Some participants cited concerns around wanting to be deeply seen and known as whom they are in their totality, but felt exposed and vulnerable. Participants felt the need to be online and genuine but also protected and private. These challenges related to their individual needs also contributed to non-disclosure of pregnancy loss on Facebook. As P19 said: “I’m a really communicative person, so there’s this tension. Then I also have that feeling of wanting to be deeply known. All the things I’ve been through and all the things that I’m thinking. It’s a really good feeling to know that somebody sees you, sees all of that. There’s a tension that I sit in with social media between wanting that feeling of people knowing me and seeing me, and also feeling like I shouldn’t share some things. Some things are just too private, or too personal.” Participants felt that they could not genuinely express themselves on the site (to meet their needs to be seen), due to perceptions of the inappropriateness of sharing those things, whatever those perceptions were perceived to be rooted in (e.g., upbringing and anticipated audience response).

4.1.6 Other Concurrent Life Events. Some participants had a particularly rough mixture of life events at the time of the pregnancy loss (e.g., job change, moving, and other health problems) that made it difficult to share anything related to any of these events. For example, P22 said: “It was a combination of I was sick and going through the emotional stress and I also had a difficult week at work. Just, I think the combination of other life circumstances at that moment, it was just not the time to do anything, share anything.” The additional layer of distress due to other life circumstances that went beyond pregnancy loss led to some participants’ non-disclosure of all these events on social media. This signals that when people are most vulnerable as a result of several distressing or stigmatized life events, the difficulties of seeking support are even stronger.

4.2 Audience-related Factors

This theme refers to non-disclosure decisions on social media due to (1) putting audience’s needs before one’s own needs, (2) prior sensitive disclosures and unsupportive reactions to them, and (3) anticipated reactions to disclosure on social media. I provide a detailed examination of the various types of anticipated responses that inhibited disclosures of loss on social media platforms. While some of these anticipated reactions are similar to each other due to concerns around audience’s reaction, the mechanisms through which they manifest are distinct and cover a wide range of participant voices. Therefore, I chose to include them explicitly and separately.

4.2.1 Protect Others’ Needs Rather than the Needs of Self. Protecting other people and their feelings was a factor leading to non-disclosure of pregnancy loss on social media. For instance, P1 shared: “It felt like we were ignoring that child because we knew she was a girl and we had named her Anne. And so that one really made me feel like we can’t... Like the only people we’re protecting when we don’t tell anybody about our miscarriage is other people because we’re still sad and we still miss that baby. And all those plans we had. And we still remember what her heartbeat sounded like and how she looked on the ultrasound. I still have ultrasound pictures cause we were getting a lot of ultrasounds. And so really the only people you protect when you don’t tell anybody is everyone else from feeling sad.” Some participants felt like by talking about their experiences and feelings they would impose this big sadness on other people too and contribute to their worry and concern, or remind them of their own loss and difficult memories. As P2 said: “People didn’t know we were pregnant, so putting out there that we were and then weren’t felt like more of a share, more of an imposition because they didn’t know, they didn’t need to know that... we didn’t

have to put that on them.” While some did not disclose the loss due to this reason, they did feel the need to talk about their experience with their networks.

Some participants also considered currently pregnant women and how they may feel uncomfortable by hearing about others’ pregnancy loss or how they may feel anxious about their own pregnancies. As P16 said: “A lot of pregnant women are pretty anxious about their pregnancies and sometimes while you’re pregnant, it doesn’t help to hear what can go wrong. Obviously it’s different if people are much further along and I think it’s different if you’re very close to someone, maybe. You have a more sort of not quite as close a relationship, it just felt to me like I just felt uncomfortable. I felt like I was raining on their parade sort of or that I would be.” The concern that by disclosing their loss, pregnant women in their networks would feel anxious about their own current pregnancies, led to non-disclosure for some participants. In this sense, anticipated outcomes for one’s audience members rather than self, made it so that some did not disclose. Vitak and Kim [121] identified what they label as “interpersonal-based” risks such as social rejection risks and hurting friends’ feelings largely through positive news sharing. Participants in their study tried to avoid negatively affecting others’ feelings, particularly when future interactions with that person were likely.

4.2.2 Past Audience Reactions to Disclosures of Loss or Other Sensitive Topics. Prior unsupportive or hurtful experiences of disclosing pregnancy loss on or outside social media sites, or negative interactions in other sensitive contexts online was another factor leading to non-disclosure of pregnancy loss on social media. Such prior experiences led to anticipating similar reactions if one were to disclose the loss on the site, and as such led to non-disclosure altogether. For instance, P23 reflected back on their disclosures outside of social media: “There were good friends of ours who had comments like ‘oh you can get pregnant again.’ There was one person that knew about us having a miscarriage, but she never said anything to us, or anything about it, which that is fine in itself, but then in a group of people she just went on, and on, and on about how much she and her husband had baby fever. It was like within two weeks of the miscarriage, and I was really hurt by that. I guess some of those comments and things probably prevented us from telling other people.” Having experienced negative interactions in the past extended to anticipating them in the future, and thus contributed to non-disclosure decisions of the loss on social media.

4.2.3 Anticipated Audience Reactions. I found several ways in which anticipated audience reactions inhibited disclosures of pregnancy loss on identified social media. I detail them in this section.

4.2.3.1 Judgment and Pre-judgment by the Audience. Participants were concerned about being judged by their audience. These concerns were around the audience judging one’s identity (e.g., “defining them by the loss”) and how they were seen (e.g., “weak”), blaming them for the loss, or questioning their motivations for engaging in social media disclosures (e.g., “attention seeking” and “wanting others to feel bad for them”). For example, P17 said: “I think about it often that I still might put myself out there, ‘This is what we went through.’ Just so that many more friends can see, but I just know there will be people that read it and they’ll think to themselves something smug that would irritate me, like, ‘Why didn’t they just adopt?’ As if that’s easy. Or they’ll think, ‘Why did she just tell everybody that?’ As if you shouldn’t tell everybody that. It’s that fear of some kind of judgement. I guess I’ll never know that they thought it, they won’t say it to me, but it’s that that keeps me from doing it.” Fear of judgments for one’s most intimate feelings was important for participants to the extent that it led to non-disclosure, even if they anticipated that the audience would not express these potential judgments to them at all or ever.

Sometimes fears of judgment went beyond participants' current audiences and included potential *future* connections or others who may seek information about the participant for personal or professional reasons. Concerns about threats and judgments from actors such as employers or parents of kids' classmates and being "pre-judged" due to having lost a pregnancy stopped some people from sharing about their loss on Facebook. As P16 said: "I'd rather be a little more blank to a prospective employer or school or a playmate for my kid or whatever. I prefer not to have the ability for someone to like pre-judge me." Similarly, research in the context of gender transition on Facebook shows how transgender individuals find it difficult to manage their identity on the site in part due to not being able to predict whom their connections would be in the future and what they would want them to know and see about them and their past [55]. In the context of pregnancy loss experiences, participants did not disclose the loss to their online networks due to concerns around potential *future* interactions or opportunities.

4.2.3.2 Critiquing the Couple's Choices in Relation to Parenthood. Sometimes, participants did not disclose about pregnancy loss because they wanted to avoid questions and conversations that may have followed if they did disclose. Avoiding certain questions (e.g., progress of pregnancy) was a motivation leading to disclosure on Facebook as suggested in prior work [9]. However, the concerns leading to non-disclosure revolved around questioning the couples' or the participant's choices that may have been impacted by the loss experience (e.g., deciding to adopt a child and not wanting to get pregnant again). On that note, P17 said: "I've considered declaring [on Facebook] like, 'We're officially having an only child.' To people just so that in a way to kind of say too, we've been through infertility, we've stopped with that. I don't want to hear somebody say, 'Well just wait you never know what'll happen. Or why don't ya'll adopt a second?' Just something like that, that just kind of like I don't want to explain my choices, we've made them." Having to explain one's choices was a conversation some people did not want to have with their connections, and thus would not make a disclosure that may have prompted those conversations.

4.2.3.3 Dismissing, Ignoring, or Glossing Over One's Vulnerability. Imagining or anticipating that the post in which participants made themselves so vulnerable would be "glossed over" and "dismissed" was an important factor leading to non-disclosure on identified social media. Liking a post or leaving a comment and then moving on with one's feed and scrolling down without signaling a "pause" was one audience behavior that participants perceived to be dismissive. Additionally, participants thought those in their audience who may not really relate to their experience and see the post, might just gloss over and ignore their post and move on with their browsing. As P21 said: "I think just the fact that it was such a painful experience for me it makes me cringe about the thought, the idea of it being devalued or ignored."

Furthermore, P19 talked about how she did not want social media interactions that did not "mean" much: "Sometimes people go through their feed and like, like, like, like just because you're supposed to like people's posts. You do it out of this obligation not out of a sincere appreciation or liking. It's like, 'Well, if I don't like it then they'll see that I didn't like it.' I didn't want people to be going through and then see my post and say 'I'm so sorry,' and then just go on liking the next post and the post after that. That would take away from the heaviness of my real experience. I guess I just didn't want people to know if they wouldn't pause to understand what I was going through. It feels like it's so much easier with Facebook for that to happen. I didn't want to be glossed over, just another like that didn't mean anything." For some, the anticipation that they would receive responses or reactions from some of their audience without much pause and attention felt like devaluing their experience, leading to non-disclosure decisions.

Finally, P19 shared a perspective that was informed by her experience of living as a woman: "It's weak to be vulnerable, especially for women. There's just this thought like well no matter

what kind of birth a woman has it's just she's a woman that's what happens, so she deals with it. Miscarriage is just a part of life. This is just what happens and you move on. It's like women have to be twice as strong, because we're seen as so emotional, and that makes us weak when we're emotional. It's hard to be emotional in this public space without worrying about being brushed off." For some participants, the anticipation that their audience would brush their pain off and label them as weak for feeling and sharing the pain led to non-disclosure. This concern often had a gendered element to it; as in, participants felt that just by the virtue of being a woman, they were expected to cope with life's difficulties, "move on," and would be brushed off if they do express their pain.

4.2.3.4 Reactions from Those Who May Not Understand What it is Like to Lose a Pregnancy Due to Not Having Experienced It. The potential of receiving comments from those who do not understand what it was like to lose a pregnancy was another factor that contributed to non-disclosure of pregnancy loss on social media; these were not perceived to be hurtful necessarily, rather considerably unhelpful due to lack of similar experiences. As discussed in network-related findings next, not knowing others in one's network who have also had a loss experience is a factor leading to non-disclosure for some. This theme here, however, refers to *reactions* from those whom participants believed would not deeply understand what they were going through. For instance, P6 said: "I feel like I don't do it because when I have a miscarriage, I really only am interested in communicating with other women who know what I feel like. When you go on social media, you are in this forum that's made up of lots of different kinds of people at different stages in their lives. Although it might be helpful for a young woman to see a conversation like that happen, depending on how they react or it might be helpful for men to view a conversation like that, it's not necessarily helpful for the woman's experiencing it to be subject to their comments or to feel like those people who don't necessarily understand what it feels like to be participating in that conversation." Participants cited tensions between the value of disclosure for the self and the value of disclosure for their audience. They felt like they would find value in connecting with those who have experienced a loss, while acknowledging that exposure to their loss disclosure may be helpful to others such as younger women or men. Ultimately, anticipating receiving comments from those who did not have a deep and personal understanding of the experience led to non-disclosure decisions for some participants.

4.2.3.5 Generic, Impersonal, Superficial, or Insincere Comments from Non-close Ties. Generic comments or remarks from people that one did not really know well (e.g., acquaintances) but were connected to on their Facebook, sometimes felt insincere or superficial, especially when they did not lead to exchanges in in-person contexts. As P10 said: "I know the generic comment. 'I'm so sorry for your loss.' Maybe it's because I've done it before. When people that I don't know very well at all post really personal things, I feel obligated to respond, and I don't have any personal information to respond in any kind of real personal way. It's superficial. It's not actual comfort. It's not understanding. I don't think it would ever make me feel good. We don't have a relationship. I think it would have compounded my grief about it, rather than helped anything, because it wasn't personal, and there was no actual interaction." While generic comments coming from connections one was not particularly close to were not perceived to be hurtful per se, they were not perceived to be deeply comforting or meaningful for some either, and thus lead to non-disclosure decisions online. Similarly, in an interview study with general adult Facebook users, Vitak and Ellison [120] note a participant's remark on how they would not share about a loved one's death on Facebook because responses may not be genuine and authentic. Here lies the tension that some people, as we see here, would find such comments to be not very meaningful, yet, others can find a lot of

comfort in them [9, 60, 110]. The fact that people are connected to various kinds of ties online enables these difference experiences.

4.2.3.6 Hurtful Comments on Social Media. The potential and anticipation of receiving hurtful, insensitive, criticizing, or invalidating comments was also a factor leading to non-disclosure on social media. As P9 said: “I often got burned from people saying very insensitive things about my loss with [P9’s brother who committed suicide] or even my infertility, and I was that much more raw with the pregnancy loss. I wasn’t willing to open myself up to insensitive comments from people. It was a way of protecting my heart.” Relatedly, P4 said: “Because I feel like if you open yourself up on your own wall, you really open it up to people leaving whatever they want.” When the perceived risk of receiving hurtful comments was high, participants avoided disclosure on social media altogether to avoid that.

Participants’ reflections on the potential impacts of hurtful interactions suggest concerns about causing friction in relationships and ruminating on these negative interactions; this was particularly salient when these ties also existed in-person and were not solely or largely online. For example, some anticipated running into people in-person who may have been hurtful on social media, and this perception of hybrid intertwined computer-mediated and non-computer-mediated relationships complicated disclosures of pregnancy loss on a site like Facebook. On this note, P14 said: “If I put something out there to my regular friends, and they’re jerks about it, I can still run into them in my day to day life. There can be hurt feelings in the future, whereas people that I don’t know, I can just avoid if there are hurt feelings.” Facebook in particular, was a platform where participants were connected to those whom they knew to some extent in-person, and where nor them neither their audience was anonymous. Anticipating detrimental impact of hurtful comments on these relationships and future in-person interactions led to non-disclosure on the platform for some participants.

4.2.3.7 Mismatch Between Reaction Expectations and Anticipated Reactions from Certain Audience Members. An anticipated mismatch between the type of reaction or support that one needed and what they thought they would receive if they did disclose led to non-disclosure altogether. As P10 said: “When you expect something out of people, and they don’t come through, it’s awful. When you expect this, and something else happens, it just messes with you a bit. I think if I’d put something up there, I would have definitely had expectations for certain people. Not having them come through was probably a decent reason as to why I didn’t do it. I think it would have broken me on a different level. If I had thought that this friend that I had, we were really close when we were in sophomore year of high school, didn’t say anything at all, I think that would have upset me more than I should have been upset, because I was so sensitive at the time, so I didn’t want to open myself up to expectations from people that I couldn’t trust.” People had expectations from certain individuals they were connected to on social media. The impact of certain audience members not meeting one’s expectation was sometimes detrimental to some, leading to avoiding disclosure altogether.

4.2.3.8 Reactions of Family Members to Using Social Media as a Disclosure Outlet. Concerns about reactions of certain close ties (e.g., family members) if one did disclose online hindered disclosures sometimes. For instance, participants were concerned that close ties such as family would think that the topic is too private, sharing reflects badly on the family, information is also shared about the family, or that one should only share positive things and deal with their struggles privately. It was not necessarily the case that participants did not share the pregnancy loss with their close ties, they often times—but not always—did through more private means. Yet concerns about reactions of those ties if they *were* to share online persisted in unique ways as described below.

As P15 said: “I guess if a friend or a co-worker for some reason came to me and was like, ‘What the heck why would you share this it’s really attention grabbing or I didn’t need to know this about you,’ I would probably feel like that says more about them than it does about me. If someone first off I find it really unlikely that it would happen to begin with, but if someone did react in that way I would be like, ‘Well what’s wrong with you I don’t need your friendship or like it’s really rude that you said that in response.’ Whereas for the people who I am actually considering in terms of why I wouldn’t share it it’s because I’m thinking that it may be hurtful to them that I shared it. That they may feel like it not necessarily that it reflects on them, but you are sharing something really personal about yourself and I’m your family member. For that reason, you are sharing something personal about me too.” Anticipating responses in general was a concern as demonstrated throughout this section; however, it was also particularly a concern when it came to close ties, different from weaker or unknown ties. For example, P6 said: “If you’re not positive, all the people who can take credit for raising you would also need to take credit for your complaints, right? It would reflect poorly on them. I think that’s one of the things, why we’re expected to be positive. Because my family is on Facebook, I tend to be more restrained there.” These data illustrate how close ties and anticipating their reactions led to non-disclosure decisions for some.

Earlier I showed how upbringing and family history was a perceived self-related factor contributing to non-disclosures on social media. Here we saw how *reactions* from close ties like family members as well as not wanting to burden others with one’s sadness are audience-related concerns—illustrating one way that self-related and audience-related considerations are related to each other.

As reviewed earlier, prior work in in-person and social media contexts *broadly* highlights the important role of audiences and their reactions. Here, I *detail* the many ways in which anticipated reactions are important in the social media context when facing stigma and distress.

4.3 Network-related Factors

Perceptions of difference from one’s network on several dimensions led to non-disclosure decisions on social media. These included (1) perceptions of direct experience of one’s network with pregnancy loss; (2) indirect experience with pregnancy loss or the level to which they were informed individuals about this reproductive health complication; (3) the degree to which pregnancy and parenthood were concerns in one’s network and the extent to which life goals and concerns were perceived to be similar to one’s network; and (4) perceived network features such as composition, size, diversity, trust, and closeness. The first three network-related dimensions could be thought of as dimensions of perceived homophily [83] with one’s network, which when not enough, led to non-disclosure decisions of pregnancy loss on social media.

4.3.1 Perception or Assumption that No One in One’s Network Has Directly Experienced Pregnancy Loss. Not knowing anyone in one’s network who had also experienced pregnancy loss or assuming that no one in their network has experienced pregnancy loss, was a key factor in deciding to not engage in disclosures about pregnancy loss on social media. For example, P24 said: “With my personal Facebook profile I wasn’t aware of anyone else who had miscarried because no one really talked to me about it. I feel like I’m standing up in the middle of an auditorium and I’m like, ‘Hi, I’m [P24’s name]. I miscarried,’ and people don’t know what to say or they think like why are you posting this? Do you want us to feel badly for you?” Not knowing others within their network who had a similar experience was a barrier to disclosure, as people felt that those who do not share the experience would not know what to say or may be unsupportive.

Not seeing others post about pregnancy loss was one way through which participants formed perceptions about their network’s experience with pregnancy loss. As P3 said: “It’s hard to be that

first person to stand up and say, ‘This is what I’ve gone through.’ It’s easier for everyone to follow. It’s a very vulnerable thing to put yourself out there and reopen those wounds and that hurt and that sadness,” suggesting the importance of the network-level reciprocation procedure discussed earlier. Similarly, P21 said: “I think not being the only one. I really think that that is probably the thing that would’ve made the key difference.” She did not want to be the only person talking about pregnancy loss on social media.

Sometimes the perception that no one else in one’s network has experienced pregnancy loss was a result of previous disclosures in contexts outside of social media. Particularly, when disclosure of loss did not lead to reciprocal disclosures in in-person contexts, participants formed the perception that they are the only ones in their network who have experienced pregnancy loss, leading to non-disclosure on Facebook. As P5 put it: “Once I’d shared with a few people that I’d had a loss and they shared that they never had had any, then I kind of stopped sharing. Just the coincidence of, ‘Oh, I told six people and they all said no, they’d never had a miscarriage.’ I just stopped sharing that I’d had a miscarriage. Being able to talk to someone that was a real person that I actually knew, would have been wonderful. I just didn’t even know anyone.” Not having found others who had similar experiences in the physical world made some feel like no one they actually *knew* had experienced pregnancy loss, and therefore they stopped talking about their experience with people they knew on social media *and* in-person; many participants would have appreciated talking about their experience with someone they actually somehow *knew*. However, when people had formed a perception that their network did not have direct experience with pregnancy loss, sharing stopped.

4.3.2 Perception that One’s Network is Not Well-informed about Pregnancy Loss. For some participants, the perception that their network was not aware of pregnancy loss as a phenomenon that happens led to non-disclosure on social media. For example, P6 said: “That there would be this common understanding like we understand that it happens. If you see someone liking or reading something about that, it legitimizes the occurrence. If it’s a psychological reaction that you’re having after a miscarriage, if you’re seeing people that you trust consuming information about mental health, then I think it destigmatizes it, and it creates this assumption that they know, they get it, they understand that it happens.” The perception about one’s network was sometimes in part based on observing what kinds of content one’s network consumed or interacted with. This example illustrates that the degree to which these behaviors were *visible* to participants as a result of site’s features and algorithms also inform perceptions about networks. Not having observed interactions with content about pregnancy loss led to forming beliefs about the network’s knowledge about pregnancy loss and consequently to non-disclosure.

Relatedly, P15 added: “I think if there was that acknowledgment that it is a thing that happens to people and it is a measure of grief that people have, then if that was the case I would probably have felt more comfortable sharing it. Because it’s maybe more common to share and I would think that if I did share it people’s reaction would be more one of comfort rather than, ‘That’s inappropriate in some way for her to share that.’” For some participants, believing that one’s network does not know much about pregnancy loss and what it means for those experiencing it, led to a belief that they would deem it as inappropriate to talk about, leading to non-disclosure decisions. In other words, perceptions of unfamiliarity with the experience (i.e., indirect experience through knowledge or exposure) led to non-disclosure within one’s network.

4.3.3 Perceptions of Difference from One’s Network with Respect to Goals and Concerns in Life. Believing that one’s network was not concerned about pregnancy as a life experience in general (for example based on demographics, life stage, or profession) was a hindrance to disclosure of the loss for some. For example, P27 shared: “I was embarrassed because I felt like, especially I think the area where we live in Silicon Valley ... It seems like everyone here is extremely career driven, very

well-educated, and I felt like I was falling behind from the norm in this area.” For some participants, the perceived difference of goals and concerns in life between them and their network broadly led to non-disclosure. Not perceiving similarities in terms of broader life desires (e.g., wanting to have a child) and instead feeling different from one’s network contributed to non-disclosure decisions in the face of pregnancy loss.

4.3.4 Network Composition: Diversity, Closeness, Trust, and Size. Participants assessed their network in terms of diversity and size, as well as their relationships with them in terms of closeness and trust. They had a wide range of people in their networks (e.g., family, close friends, colleagues, and acquaintances) in various demographic groups and with perceived potentially different values; as such most participants shared primarily positive and not-loaded content with their online networks, and some sought other spaces such as specific groups or forums dedicated to the topic to connect and talk about pregnancy loss.

For example, P16 said: “The relationship I have with most of my Facebook friends is not really that close and so, if I were in person with them, I wouldn’t be sharing any particular little thing.” Similarly, P10 said: “A lot of my Facebook friends are people I don’t really interact with other than, ‘Hey, it’s cool we went to high school together, and I’d like to see little parts of your life,’ but I don’t want them knowing my super personal things. I don’t trust that. I like my personal page to be just kind of happy bullshit vacation pictures. There’s not a lot of reality that exists there, because I don’t trust those people.” It is interesting how this participant connected “reality” and “trust.” For an experience so “real” participants needed this trust to be available in their networks.

Participants were aware of their network compositions on social media and how it all flattened into one (also referred to as “context collapse” [80]), which added more complexity to the disclosure process. Sharing with only close connections whom one was not concerned about their judgments was an alternative some participants took, as described by P11 who compared sharing on social media with writing an email (which is what she did), saying: “It would have been harder [to post on social media], I think... When I was writing those emails the hardest part about them was the grief part, was what I was feeling. I was only writing to people I was close enough to that I didn’t care what the content of the email looked like. These were all people who were not going to care what words I used or how I said it. Social media, I feel like I would have lost that forgivingness...” For some, thinking about and performing for network members whom they were not close to nor did they fully trust was too hard that led to non-disclosure. In relation to network size, P7 said: “It feels like telling like a huge group of people something really personal. It’s like too many people.”

In general, many felt like their network was too large and too diverse with little feeling of closeness and trust, leading to non-disclosure of negative or difficult experiences, including but not limited to pregnancy loss. Many participants in a study by Vitak and Ellison [120] with adult Facebook users noted that large and diverse networks helped them in seeking advice and information. Their study did not focus on an experience that is associated with stigma and distress for many. Andalibi and Forte [9] showed how the ability to share news of pregnancy loss with one’s whole social network at once through one-to-many communication modes is one facilitator of disclosure on social media. Here we see that the size and diversity of one’s network can have a chilling effect on disclosures when that trust, closeness, and intimacy is not perceived to be there or where the disclosure’s goal is not seeking or sharing information per se.

Overall, network-related factors are related to other factors such as audience-related, platform-related, and societal factors. For example, an audience-related consideration around receiving comments from those who do not understand what it is like to lose a pregnancy can be amplified by the network-level consideration that one perceived their network to not include people who have experienced pregnancy loss. I will provide examples of other relationships in the following sections.

4.4 Societal Factors

Societal factors were about perceptions of societal stigma around pregnancy loss, contributing to non-disclosure decisions on identified social media. Factors related to stigma perceptions included (1) feeling like it is socially unaccepted and inappropriate to talk about pregnancy loss since so few people talk about it face-to-face or on identified social media; (2) expectations and norms surrounding pregnancy announcements; and (3) perceived social stigma surrounding abortion and the discourse surrounding reproductive health more broadly. These themes are concerned with broad views and perceptions of the society, going beyond one individual's network, and illustrate the ways these high-level perceptions informed non-disclosure decisions on social media.

4.4.1 Perceived Stigma Surrounding Disclosing Pregnancy Loss and Women's Health Broadly. Participants thought that the inappropriateness of talking about pregnancy loss in many face-to-face contexts is extended to their online social networks. For example, P6 referred to "the lack of dialogue we have just basically in our face to face culture about talking about difficult things, miscarriage, or things regarding women," to illustrate how she perceived similar expectations in in-person and social media contexts, leading to non-disclosure on social media.

The observation that people seldom share about their pregnancy loss experiences on Facebook or in face-to-face contexts, and that people instead mostly share about happy pregnancies that proceeded as hoped, added to the perception of social stigma around pregnancy loss for participants to the extent that it stopped them from sharing about the experience and feelings associated with it on Facebook. Finally, P14 said: "I think the more people that talk about it, the easier it is. In the breastfeeding space [a Facebook group P14 was part of and she talked about pregnancy loss in], lots of those people had already talked about it, so my post about it was one of many. Whereas on my wall, there are not a lot of people talking about miscarriage publicly. Then mine becomes one of few instead one of many. I think if more people posted personally and publicly about it, then it becomes more normal, people learn when it's okay to say and what's not okay to say and what's helpful and what's not helpful as they have more and more experience with people sharing that information. When it doesn't happen very often, people don't know what to say, I don't know what to share, what not to share. Just because it's not normal, so to speak. It's not talked about often." Participants believed that not talking about pregnancy loss leads to more stigma around it, more difficulty talking about it, and less experience and education about how to respond to it when disclosed. On the other hand, they noted that when more people talk about their experiences with loss, more people would feel comfortable to talk about theirs as well and the society would start to learn how to respond to pregnancy loss.

Here we see how this societal-related factor interacts with platform-related factors; for example, because if responses to such disclosures when they do happen are visible to others, the society can begin to be educated about how to appropriately respond to such posts. Similarly, the visibility of others' similar disclosures in algorithmic news feeds helps some to disclose as well; if such posts are buried in news feeds or do not appear to the right people at the right time, people form the impression that they would be alone if they did disclose and therefore, would not. This theme is also related to network-level (e.g., perceptions of similarity) and audience-related (e.g., how one's audience will respond) considerations.

4.4.2 Norms Around Not Announcing Pregnancies. Participants had formed perception of societal norms and expectations that one is not supposed to announce a pregnancy until after the first trimester. To a large extent, this perception of norms hindered disclosures of pregnancy loss too, and to the surprise of many of participants. In the interviews, many came to reflect on their experience and wondered if the reason this has become a norm is so that women would not talk about

pregnancy loss systematically. Moreover, participants felt like because they had not told people that they were pregnant, now they could not go to them and say they were pregnant and now are not. Participants felt lonely as a result and grieved in isolation. For example, P26 said: “We can also talk about the tradition of women not announcing their pregnancy until after they finish their first trimester because of the high risk of miscarriage. I had a friend tell me about his wife’s pregnancy last night and when her due date was and immediately you go through is it safe to say it yet? Or is it not real yet? I also had a friend tell me that when his wife was like six weeks pregnant, like really, really early, and she miscarried that one. He said later that he was really glad he had told the world because the whole world was there to support him. In some ways, there are so many societal undercurrents that say you shouldn’t discuss it...”

Similarly, P15 shared: “After the miscarriage occurred I wished that I had told them that I was pregnant, because I felt like it was very wonderful that I had my one friend’s support. Again it was such a huge thing that had happened to me and I felt like there was a lot that the people who were close to me couldn’t understand about what I was going through, because they didn’t know this very big thing. At the same time unless if it was like a situation of obnoxious drinking or a situation where the topic actually specifically came up. I didn’t feel like it was something that I could just approach out of nowhere.” She further explained why she had not disclosed the pregnancy itself to more people than she did, citing perceived societal expectations: “I didn’t tell other people I guess because it seemed like it was the social expectation. First off my mom and my husband’s parents were like, ‘Now don’t tell anyone and especially don’t tell anyone at work,’ so obviously I didn’t listen to that. Then even just reading things online, like I did participate in some social media on Reddit so I saw what other women were doing even just from reading other forums and not participating. I saw what other women tended to do, I witnessed other women and men telling about their wives and girlfriends who were becoming pregnant and when it occurred and their justification.”

Sometimes participants cited resources such as books as sources that informed their decisions to not announce pregnancies, and regretted it later after the loss. As P27 put it: “I think if I had seen or heard more stories about it from the beginning or if I had known that it was more common, I think I would have been more prone to posting about my experience and I think my pregnancy experience in general. I think I would have been a bit more open. I also think that if the books I was reading, I have this book called ‘Day by Day’ and ‘What to Expect When You’re Expecting’. In both of them, they say around 12 weeks is a safe time to tell people. I think if I had not read those books, I probably would have shared a bit more.” Some participants did not share about their pregnancy loss experience because they had not disclosed the pregnancy due to the perceived societal expectations around non-disclosure of pregnancy in the first trimester. This made it particularly hard to announce the loss as well and hindered access to social support.

4.4.3 Broader Reproductive Health Discourse. Some participants believed that part of the difficulty of openly talking about pregnancy loss for them was the sensitivity around abortion in the American society. For example, P23 said: “Our [US] culture’s at this juxtaposition because birth control, and abortion and different things like that have one definition for what a fetus, and the life of that is. Then, a miscarriage you’re thrown of whether is this a loss of a person? Do I get to mourn it like that? Or, is this just a procedure that happened. I think part of why society doesn’t always know how to address, or sympathize with miscarriages, is thinking you could just get pregnant again, have another baby, you never met them, things like that. Of the people we told, we had friends who said things like ‘it’s really common’, or ‘you can get pregnant again’, or things that they thought were helpful. It felt like this is not things that you would say if someone lost a parent. ‘Oh, it’s really common to lose your dad’. You’re like, well that doesn’t make it less

hard. Or like, maybe your mom will remarry, or something like that. You're like, no you don't replace this totally, even though granted, a relationship that you've had for your whole life is different than one that you knew about for a few months, but it still felt like the loss was counted very differently in people's minds." Participants discussed how abortion and pregnancy loss are two distinct experiences, and yet, raised questions around what the similarities between these experiences mean for how legitimate mourning a pregnancy loss is and ought to be.

Participants also remarked that they felt society expects one to either hold pro-choice values or does not consider and experience pregnancy loss as painful, traumatic, and grief-worthy. As P24 said: "Society kind of views early pregnancy as pregnancy tissue or like it's not a baby. It is to some people, but we can't say that... If we acknowledge that somebody who's six weeks pregnant actually has a baby, like that's a living life, then we are saying that by aborting, having an abortion at seven weeks you're killing a human. I'm not against abortion. I have very conflicting feelings about it. I'm just saying that society doesn't really, it's not like super popular to say that well life begins at conception, so I'm going to acknowledge that you just lost a baby but also then say abortion at six weeks is okay. I just think it's a really, really complicated issue and it's a very, obviously, emotionally charged issue. For whatever reason, it's this thing that we're not supposed to talk about because it makes people feel uncomfortable and we don't want to cause more pain."

In summary, some individuals mentioned that while holding pro-choice views, it becomes more difficult to publicly discuss pregnancy loss, because it is complicated to convey that one can feel both devastated by the loss of their pregnancy and hold pro-choice views at the same time. As a result, participants were concerned about how others would view them due to this complication if they did disclose their experience with pregnancy loss on social media.

These examples highlight how the societal undercurrents related to pregnancy loss, pregnancy, abortion, and reproductive health more broadly interacts with audience, network, and self-related considerations.

4.5 Temporal Factors

I found that factors related to the time since the loss, as well as, the time since a potential disclosure also contributed to non-disclosures on social media.

4.5.1 Time Has Passed—Hurts to Reopen Wounds. For some participants, disclosure on Facebook after some time had passed from the loss was challenging because they did not want to "re-open the wounds." For example, P20 said: "I guess I didn't want to be upset about it even though I knew it was okay to be upset about it. Telling myself that I was okay when perhaps maybe I wasn't or talking about them might have brought out another sort of emotion that I didn't know that I had." Similarly, P3 said: "I feel like I'm just happy to have a baby that I don't want to bring down the vibe. Then I feel like, it's been a year and a half since the miscarriage happened, so you get to a point where it's like, is it worth sharing years later?" Some participants preferred to leave the loss box closed since it hurt to open it and talk about it after time had passed.

4.5.2 Too Close and Raw Emotions, or Too Distant and No More Needing Sympathy. Sometimes participants felt like they did not need the sympathy resulting from disclosure anymore, because time had passed, leading to non-disclosure. Other times because they were temporally too close to the event with raw and intense emotions, they decided to not disclose about the loss on Facebook.

As P14 said: "When you're still having those emotions tied to it, if you don't talk about it, it's easier to put those emotions aside, and go about your daily life. If you talk about it then you're thinking about and its current emotions. Then you keep thinking about it after the conversation, you then invite that upset back into your day on the day that you're having that conversation. Whereas when the emotions are over, like they are in the context of having a baby since then I'm

able to talk about it but I'm not longer upset it. Once I'm done talking, I might make me upset while I'm talking about, depending on the context and who I'm talking to, but when the conversation is over, I look at the baby and I'm not longer upset. I can move on with my day. Whereas if I didn't have the baby, then I'd spend the rest of my day being like, why can't we get pregnant again, or I wish that we had that baby. I feel like I would just keep thinking about it instead of being able to talk about it and move on." While some participants would have needed sympathy from others when they were temporally close to the loss, their disclosure—if they were going to make one—would not have been an attempt to receive sympathy after enough time had passed. This shift was due to reasons such as a shift in emotions (e.g., due to carrying a future pregnancy to term). On the other hand, when they were too close to the loss, emotions were too raw and intense, and thus harder to disclose because they perceived such disclosures as rumination that would have extra negative emotional effects on them.

These two temporal-related themes (Sections 4.5.1 and 4.5.2) show how temporal factors are related to self-related factors, where one's personal emotional needs at different *times* after the loss contributed to non-disclosure decisions.

4.5.3 Time Has Passed—Will Not Receive Support if Disclosed. Other than not wanting to reopen wounds after a while had passed as discussed earlier, some participants remarked that although they still feel the loss and would like to talk about it regardless of their current circumstances, their audience may not be supportive or understanding as to *why* they are discussing their loss after some time has passed. Some participants anticipated that their loss would be ignored by their audience *exactly because* some time has passed; for example, if participants now had a child after the loss, they felt that their audience might find them "bragging" about their subsequent carried-to-term pregnancy, or find them to be unthankful for their now child none of which were their intentions for disclosing.

Thinking about a pregnancy loss she had before, P5 said: "I thought that they [her Facebook connections] would think that I was being too, not like oversharing, too open. That polite society doesn't talk about miscarriages. It's similar to how I think our society has trouble dealing with death, in general. We don't have a set mourning period that's in our society. People are very sympathetic when someone very first dies, but then there's a very short window, or weeks even, before they're like, 'Well, we'll just never mention this person again, and they won't be sad then' The person who has experienced loss is still grieving, for months and years, and society ignores it. I think I felt like women would feel the same, like if you're sharing about your miscarriages that you had before, you should just be quiet about things like that, because nobody wants to hear about sad, gross things. I don't think there's as much sympathy around it..." Disclosing a pregnancy loss *after a while* was perceived to receive unsupportive or dismissive responses, and as such led to non-disclosure to one's online social network.

This theme shows how temporal factors relate to audience-related factors (e.g., not anticipating sympathy and support). The reference to a "polite society" and how it deals with loss and grief over time as well as the perception that no one wants to hear about "sad things," also show how time-related factors interacted with societal factors in participants' experiences.

4.5.4 Future Perceptions of Self by Others as a Result of Disclosure Now. Another temporal factor that contributed to non-disclosure of pregnancy loss on Facebook was the anticipated impact of disclosure on how one or one's audience would perceive them at a *future* time.

On the one hand, fear of regretting disclosure in the future was a concern for some. As P6 said: "It might help me process, but five years from now would I wish that I hadn't done it? I think that I might." On the other hand, some participants raised concerns about others viewing their other social media posts *in relation to* pregnancy loss or for the audience to always see them as the person

who lost a pregnancy. As P14 said: “If I were to post while I was having a miscarriage, and then the next day I posted running around the playground with my kids, then you get less sympathy for the miscarriage, because clearly you’re feeling fine, hypothetically. Whatever combination of stuff you’re posting on Facebook is how they think of you. Miscarriage plus Starbucks plus playground, who knows what that means, but they’re going to see all those things together as cluster of who you are. Miscarriage and then you post about a job loss later, then people have the thought of thank goodness you’re not pregnant, because you now don’t have a job.” The ways one imagined their audience would perceive them and all of their online activities in the future and in the context of each other, led to non-disclosure of the loss on Facebook for some.

Particularly, participants remarked that what their audience thinks of them is the aggregate of all the things they share about and present about themselves—enabled by site features like timelines. Sharing about a loss and then an “ordinary” or happy-looking content raised concerns about their audience wondering if participants were “really” grieving. This anticipation of how others would see them and their *future* online activities—outside of pregnancy loss experience and expressions related to it—led to non-disclosure of loss on social media for some participants. This example illustrates how audience-related and platform-related factors interact with temporal factors in non-disclosure decisions.

4.6 Platform and Affordance-related Factors

I also identified several factors related to the sites’ design as well as perceived norms around their use that contributed to non-disclosure of pregnancy loss for some. As I will point out, these findings show how platform-related factors interact with other decision factors such as audience and temporal considerations.

4.6.1 Non-anonymity and Being Connected to Known Others. For some, the very fact that they were connected to people on Facebook who knew them and their judgments was a concern leading to non-disclosure on the site.

As P24 said: “My mom’s family is a family that you don’t talk about bad things. You don’t talk about negative things. When something bad happens to me I have this automatic need to tell people because it’s going to make me feel better. It’s going to make me feel like I’m not alone. Kind of the compromise there then is telling people anonymously. There’s just something safer about being anonymous. That way if you post something on your Facebook page then everyone knows this about you. They may judge you one way or the other for it. I didn’t feel comfortable putting it on my page whereas it felt safer to do it anonymously because those people don’t know me and I have no connection to them and no one knew who I was.” Many felt the need to talk about their experience. The fact that one would not be able to be anonymous on Facebook and they were connected to those they knew, led to feeling unsafe about potential hurtful judgments from the audience who knew them. This led to non-disclosure of the loss on Facebook.

It is important to note that while prior work [12, 78] also resonates with the notion of anonymity’s importance in disclosing personally sensitive information on social media (as described by this participant), it also highlights important beneficial outcomes that connecting to similar known others within one’s network of known ties has [7]. This example shows how the degree of identifiability between the audience and the participants (as a platform feature) interacts with audience-related factors (e.g., concerns about being judged, reactions from close ties, and hurtful comments from known ties) and is in tension with people feeling less alone—a self-related personal need [9] that can be met through engaging in disclosures.

4.6.2 Permanence of Content and How Others Will Remember. Participants who were concerned about the permanence of the content shared on Facebook, felt so, largely because they felt the post

and the audiences' interactions with it will always remain there and would define them and their identity. Participants cited concerns around how their audience will (1) remember and (2) react to the post when they read it, and compared it with face to face conversations where they are able to see how someone reacts and where there are more communication cues.

As P6 said: "It doesn't belong to you anymore once it's gone. For me there's more of an anxiety about how is it going to be remembered or reacted to..." She further elaborated on this point: "When we think about ourselves, we can have those moments of just really bad parenting, depression or financial bad straits, and we can know that in another 10 minutes, another day, or another hour it'll get better. When you create a post, it's like this snapshot. It makes it forever. It's like this is what I am. It doesn't change... When you send a tweet or when you create this Facebook post, it's this really concrete thing. Then if you are talking about having a bad parenting moment, are you a bad parent in people's minds forever or as long as that post lasts or as long as people remember it." Not being able to assess what one's audience *really* thought after seeing their post and the perception that the information and the meanings people make of it will permanently remain out in the world contributed to non-disclosures on Facebook. This example illustrates how content permanence, a platform-related factor interacts with audience-related factors such as how one will be thought of and remembered by their audience.

4.6.3 Asynchronous Communication and Not Seeing the Audience's Reactions. Asynchronicity sometimes meant that participants would not know how their audience would react in real time. As P6 said: "You don't know what's on the other side of what they're thinking and feeling when they're reading this. Whereas if you're having the face to face, you can tell. I can tell how they're feeling and how they're reacting." Not being able to make this assessment led to non-disclosure for some people. In our review of prior work, we discussed how the very same feature facilitates some disclosures [9] because it enables people to take care of their own needs in times of extensive distress rather than that of others'. This example of participants' accounts illustrates how affordances' roles are dependent on other disclosure needs and criteria such as audience-related considerations. Lack of visual cues in this kind of computer-mediated communication setting may be a drawback that can be overcome over time [124, 125]. However, this process becomes complicated when people think about one-time sensitive broadcast disclosures that do not occur gradually and over time.

4.6.4 Fearing the Loss of Privacy Control. Perceptions of the potential for loss of privacy and privacy controls due to understandings of how the site worked, was another factor contributing to non-disclosures. Sometimes participants were not clear whom among the connections that the post was visible to, would actually *see* their post if they did disclose on Facebook. For instance, P7 described this concern as: "Posting to like just a bunch of people, who you don't even know who sees it and who doesn't." Making one's self vulnerable and perceptions of losing control over their information or not knowing who would end up having that information led to non-disclosure decisions on the site for some. Part of having control over one's privacy is knowing who has access to what information. Here, we see that when people did not know who would actually see the content they share even within their intended audience had a chilling effect on disclosures. This is challenging, because making visible who has seen a post through design also has implications for the audience who may not want their knowledge of the event to be known.

Participants also feared that unintended audiences such as friends of friends would see their post because they imagined that the post would pop up on their news feed. As P3 said: "You open up a piece of your life onto someone else's feed, it may be others that you know who didn't know you went through that, or others that don't know you at all, now suddenly know. 'Oh, hey, this girl that I don't know just opened up about her miscarriage on my friend's Facebook page.'" Whether

or not a post actually does show up in unintended audience's feed is a separate issue from the worry that participants cited about their post ending up on some unintended audience's feed. It is these fears, perceptions, and concerns that I uncover, regardless of whether the technology does what the participants fear.

This finding highlights how concerns about losing privacy controls were partially informed by perceptions of site design. Prior work suggests that social media users tend to have distrust in how privacy settings work, leading to less information sharing [128]. Here, we see how participants' image of who will or will not see their post among intended and unintended audiences can have a chilling effect on disclosures, highlighting connections between site features and audiences. We also see that the audience-related factor of being prejudged by the audience (described in Section 4.2.3.1) can be informed by platform-related factors such as content permanence (described in Section 4.6.2) and fearing the loss of privacy.

4.6.5 Perceptions About Disclosure Norms on the Site. Participants' perceptions about how *most* people use Facebook influenced their decisions related to pregnancy loss disclosure on the site. These factors included feeling like sharing on Facebook would cheapen their pregnancy loss experience as most people shared largely positive and happy content on the site, and they found it shallow, too positive, and unreal. It was striking to me that many participants referred to these "positive" posts as "unreal." This perception of positivity also led to thinking that it is not appropriate or polite to talk about "sad" events on the site.

As P4 said: "Facebook is just supposed to be fun and I didn't wanna share something that personal and that hurtful on Facebook where I feel like it's a very shallow and... I didn't want my post about my miscarriage to be mixed in with other people's post about partying, or their pet wearing a costume, or anything like that. I just felt like it would cheapen it." Participants viewed what they may have shared in the larger context of all the content that existed on the site, and felt that it did not fit in there. These considerations did not refer to perceptions of pregnancy loss in one's network in particular (i.e., a network-level consideration), rather, referred to the way participants felt most people use the site more broadly.

Some other participants who did not disclose about the pregnancy loss on Facebook held the ideology that this platform is not for truly personal content or interactions such as, but not limited to, pregnancy loss. They believed a post on Facebook about their experience to be more like a public announcement and not appropriate for their intimate experience. As P26 said: "The truly personal should be physical. For the important communication should be on paper." In this sense, the ideologies surrounding appropriate ways of discussing certain topics with others, led to non-disclosure decisions on identified social media for some individuals.

These findings resonate with prior work in disclosures of relationship breakups on Facebook suggesting perceptions of inappropriateness contribute to non-disclosures on Facebook [54], and other work suggesting there is a "positivity bias" (i.e., preference for positive and light content) on identified social media like Facebook [103, 121].

In this final section, I discussed perceptions of platform features and characteristics that contributed to participants' non-disclosure decisions. It is important to note that these factors interact with other themes and do not function in isolation. For example, the self-related factors (e.g., personal perceptions one had formed about others' social media behaviors) can be amplified and informed by platform-related factors (e.g., perceptions about disclosure norms on the site). Audience-related factors such as fear of judgment can also be amplified by these concerns and norms; as such self-related, platform-related, and audience-related factors can dampen disclosures together. A self-related factor (e.g., needing to be seen and its tension with perceived norms) can be shaped by platform-related factors (e.g., perceptions about disclosure norms on the site),

and amplified by societal factors (e.g., perceived stigma) and audience-related factors (e.g., being judged). As another example, an audience-related factor (e.g., anticipating that the audience would dismiss one's vulnerability) can also be informed or amplified by platform-related factors like perceptions about disclosure norms on the site (e.g., positive and "unreal" content).

5 DISCUSSION

In this section, I first position this study's findings within the broader self-disclosure and social media research. I then zoom out and situate these findings within privacy research. I conclude with implications for social technology design to remove barriers to disclosure and reduce stigma.

5.1 Disclosure Decision-Making Framework Explains Non-Disclosure Decisions

Prior Social Computing work [9] draws on the communication literature [47] and provides the DDM framework [9] to explain why people *do* disclose potentially stigmatizing information about themselves to networks of known ties on social media. The DDM framework includes six categories of decision factors related to the self, audience, network, society, temporality, and the platform. Here, I show how these high-level decision factors identified in the DDM framework also explain non-disclosure decisions of pregnancy loss to networks of known ties on social media. To make this point, I first provide background on self-disclosure research in in-person dyadic settings, and then I shift to social media disclosure research.

Traditional communication literature provides several models to examine non-disclosure in dyadic contexts in in-person settings (e.g., [29, 34, 47, 92]). Andalibi and Forte's DDM framework, as they describe [9], parallels some features of a DDM model proposed by Greene et al. that explains disclosure decisions in in-person dyadic contexts [47]. Specifically, Greene et al. proposed that "self, other, interpersonal, and situational-environmental-focused" reasons contribute to disclosure decisions. In that model, "self-focused" non-disclosure reasons are about psychological and physical risks of disclosure (e.g., fear of rejection and losing privacy). "Other-focused" reasons for non-disclosure refer to the perception that the recipient cannot or will not provide help, or wanting to protect the recipient from feeling hurt or upset. "Relationship-focused" reasons for non-disclosure are concerned with losing the relationship, dissimilarity, a superficial relationship, or the idea that the information is not relevant or significant in the context of the relationship. Finally, "situational-environmental" reasons for non-disclosure refer to cases where the potential disclosure recipient is either not available or already knows what is being considered for disclosure.

In this study's analysis, the audience-related theme resonates strongly—although not completely—with Greene et al.'s [47] other-focused theme. That said, although elements of self-, relationship-, and situational-environmental reasons as referenced above can be found in these data, my analysis highlights that these factors are considerably different in the context of social media than in dyadic in-person disclosures; for example, while losing privacy is a self-related consideration in Greene's model [47], in the social media context, this consideration is in part dependent on the platform on which disclosures might occur. I also show how the stigma associated with the potential disclosure's topic in the society is an important decision factor more broadly. I suggest that the DDM framework provides an excellent organized lens to understand non-disclosure reasons in the social media context in ways that models proposed in the dyadic in-person contexts understandably do not.

5.2 Disclosure Decision-Making Framework as a Comparative Lens to Examine Self-Disclosure in Stigmatized Contexts on Social Media

I build on and extend prior social media disclosure research, provide new insights, and make suggestions as to how research findings can be compared across social media disclosure studies in stigmatized contexts.

I found that protecting others' needs and several other considerations (i.e., family members' reactions and being judged by current and future audiences) were some audience-related considerations that contributed to non-disclosures on social media. In an interview study with graduate students about social media use and disclosure behavior, Vitak and Kim [121] identified what they label as "interpersonal-based" risks such as social rejection risks and hurting friends' feelings largely through positive news sharing. Participants in their study tried to avoid negatively affecting others' feelings, particularly when future interactions with that person were likely [121]—which would be the case of identified social media in our conceptualization. Vitak and Kim also labeled the loss of control such as future employers seeing one's posts as an "impression management-based" risk, and identified "affordance-based" risks related to how Facebook's affordances shaped by whom and how posts could be viewed. These included high visibility (compared to a public square), persistence of content, and content privacy on the site. In our platform-related factors, we also found that people feared losing control over their privacy (related to participants' trust in how the site changes its privacy policies) and therefore did not disclose information to begin with. I also found that content permanence, another platform-related factor, contributed to non-disclosures. Furthermore, I observed that non-anonymity (being identified) and being connected to known ties, asynchronous communication and not seeing the audience's reaction, and perceptions about what one is expected to share on the site (i.e., positive content) contributed to non-disclosure decision for participants in this study.

Other prior work has also examined disclosure behaviors across a variety of sensitive human experiences as I described in the literature review. In summary, not having access to similar others [35, 111], changing identities and audiences across time [55], fear of judgment [5, 85, 120], perceived norms around sharing information on social media [54, 85], privacy concerns [85, 107], sharing inefficiency [85], perceived lack of intimacy [85], causing drama within one's network [54], and hurting others' feelings [54] are some reasons people do not disclose what they consider as sensitive on identified social media. I found evidence for these observations in presented findings as well across the six high-level categories I identified.

In summary, some of this study's findings resonate with that of prior research both in general and more sensitive contexts as described above. In addition, I provide extant detailed characterization of other considerations that contribute to non-disclosure decisions in contexts associated with stigma that prior work has not identified. On a higher level, I also add to the conversation around non-disclosure and stigma through showing how the DDM framework [9] also explains pregnancy loss non-disclosure decisions on social media. I suggest that the DDM framework creates a space within which prior—as exemplified above—and future disclosure (and non-disclosure) research related to sensitive and stigmatized settings can be unified and systematically compared.

5.3 Disclosure Decision-Making Framework Situated Between Communication Privacy Management and Contextual Integrity

Self-disclosure and privacy are inherently related yet distinct concepts. In this section, I draw from Petronio's CPM theory [95, 96], Altman [4], Nissenbaum's CI [91], and Andalibi and Forte's DDM framework [9] to illustrate the connection between privacy and non-disclosure, particularly in contexts associated with stigma on identified social media. Altman posits that humans achieve privacy through regulating their boundaries (e.g., closing a door in the physical world) [4]. Petronio draws on Altman and proposes the CPM theory [95], which I use to relate our research on non-disclosure decisions to privacy research. Finally, Nissenbaum's CI theory [91] formulates appropriate information flows and their role in supporting privacy as reviewed earlier.

In the remainder of this section, I describe how DDM complements CPM and CI when we consider disclosure decisions and levels in stigmatized contexts on social media. To do so, I first discuss

the similarities and differences between insights that DDM and CPM provide, noting where CPM does not go as far in explaining disclosures in stigmatized and sensitive contexts on social media. I then outline what CI provides that the DDM does not and vice versa, with attention to factors that this article identifies as relevant to non-disclosure of stigmatized experiences on social media as one privacy management strategy. Next, I summarize how the DDM is situated between CPM and CI, providing a unified and useful lens to examine disclosure decisions and motivations in often stigmatized contexts on social media.

Disclosure Decision-Making and Communication Privacy Management. According to CPM, when disclosures do not occur, boundary protection is present [96]. An individual's privacy is maintained through decision criteria or "protection rules" that one uses to preserve the privacy boundary [96]. Focusing on a stigmatized context (children's disclosures of sexual abuse) in non-computer mediated settings, Petronio identified two major "protection rules" that informed the choice to preserve boundaries or not disclose: (1) target characteristics (i.e., distrust and responsiveness—children would not disclose to someone who does not care or to those who would not understand their predicament); and (2) anticipated ramifications (i.e., loss of control) [96].

In bridging this work on non-disclosure to the CPM, I argue that the "decision factors" as described by the DDM framework [9] encompass "protection rules" in CPM's terms, but go beyond CPM to account for the socio-technical contexts within which boundary protection decisions are made on social media and in settings associated with stigma.

This argument is inspired by Child and Petronio's suggestion that examining the decision criteria behind rule use and development and learning how a variety of factors inform privacy management practices has the potential to provide us with deep understanding to how people regulate their privacy [30]. In my analysis of considerations contributing to non-disclosure decisions, I therefore inherently examined the decision criteria people use to protect their privacy and boundaries through information non-disclosure (where boundary is fully closed with no disclosure at all). I lay out this argument in detail next.

First, like [96], I also found support for instances of target characteristics and anticipated ramifications (in CPM terms) in our data. For example, I show how when considering disclosing on social media, participants considered a variety of "target" levels (e.g., at the societal, specific audience-level, or network level more broadly); these distinctions are not articulated in CPM as discussed in [96]. Second, in terms of anticipated ramifications and risks, I show how a variety of factors related to the self, audience, platform, society, network, and temporality inform ramifications' assessment as organized via the DDM.

Second, in other work and in general contexts rather than what was discussed in [96], Petronio suggests that protection rules are also predicated on factors such as culture, context, and gender [95]. While I found evidence for cultural concerns in these data, my analysis provides rich detailed ways in which cultural expectations matter in the social media context across several dimensions. For example, self-related factors (e.g., family's culture), societal factors (e.g., norms around pregnancy announcements), and platform-related factors (e.g., perceptions about disclosure norms on the site) can all be seen as dimensions of culture. On context and incidents that act as catalysts to alter existing rules as suggested by the CPM theory, as an example, we saw how past audience reactions to disclosures of loss (i.e., an audience-related factor) contributed to non-disclosure decision in our data. Finally, regarding gender, we saw how perceived gender expectations and norms informed participants' decisions, for example in audience-related concerns and societal-level factors.

All in all, as described above, we see some resonance between uncovered non-disclosure decision factors in this work and what the CPM theory suggests as factors that predicate protection rules in in-person general settings. Specifically, the ways that participants in this study

protected their boundaries highlights the importance of a wide variety of factors related to the self, audience, network, society, temporality, and social media platform features as prescribed by the DDM framework. As such, these factors outlined in the DDM framework and in this study's findings encompass what the CPM theory identifies as factors predicating protection rules, but also go beyond those to account for the socio-technical contexts within which these boundary protection decisions are made.

Disclosure Decision-Making and Contextual Integrity. Next, I draw connections between this study's findings (and the DDM framework more broadly) and CI (summarized in the literature review). We can use elements of CI as a lens to make sense of some concerns raised by participants in this study. For example, concerns around one's audience sharing the information disclosed to them with others the poster did not intend to disclose to—which I identified as “trust” in network-level factors—means that information was taken from one social context to another, and therefore information flow was inappropriate and privacy was disrupted. However, my analysis illustrates that these concerns are substantially different when we consider stigma, disclosure, and personal networks (rather than fear of inappropriate information flows from personal networks to health-care contexts, as an example) on social media. Specifically, if we were to identify elements of CI (i.e., data subject, sender, recipient, information type, and transmission principle) [91] in the context of this present study, we would still be missing many factors that participants found to be important in negotiating information sharing in stigmatized contexts on social media.

Disclosure Decision-Making, Communication Privacy Management, and Contextual Integrity. In this section, I have argued that CI has limitations in accounting for many of social media users' considerations in deciding to (not) share information in stigmatized contexts on identified social media, such as the ones I identified and organized via the DDM framework. On the other hand, CPM provides protection rules, some of which resonate with what the present analysis identifies as organized via the DDM framework, but that CPM also does not account for *all* factors that shape non-disclosure decisions in stigmatized contexts on social media.

Therefore, the DDM framework can be seen as situated between and bridging together CPM and CI theories by identifying factors that account for the socio-technical milieu (e.g., design features, perceived platform norms, and perceived norms about the topic more broadly in society), as well as individual-level factors (e.g., self-related factors), and other contextual factors such as temporality (e.g., the amount of time passed since the event) that the CPM and CI each account for to some extent. Yet neither CPM nor CI completely address the barriers perceived by individuals who experience stigma in sharing potentially stigmatizing information about themselves or their experiences with members of their social network on social media.

In summary, the DDM builds from and bridges existing privacy theories by explaining motivations for choosing various information regulation levels: non-disclosure, indirect disclosure, and direct disclosure—articulating how decision factors impact how much information crosses the “boundary” and how. In the case of non-disclosure as discussed in this article, the DDM identifies factors that shape a decision not to let information cross that boundary. It would be a fruitful theoretical contribution to conduct a rigorous comparison between the DDM framework [9], CPM [95], and CI [91], both in other sensitive or more general settings in the future.

5.4 Design for Removing Barriers to Disclosure to Facilitate Beneficial Disclosures and Reduce Stigma

Many of the challenges that people who experience pregnancy loss and others who experience stigma and distress face could be eliminated if less stigma surrounded their experiences. Perceived stigma is associated with reduced well-being and isolation [1]. I suggest that removing barriers to disclosures related to the six decision factors identified in this study has the potential to reduce

perceptions of stigma within networks of known ties on identified social media. This is feasible because research suggests that once people do engage in disclosures of stigmatized experiences on identified social media, they may perceive less stigma as a result, provided that their audience is supportive [7]. As such, I see potential to reduce stigma by removing barriers to disclosure I identified in this work and organized using the DDM framework. How this might be done is an area for extensive future research requiring other methods such as experiments, longitudinal studies, and design work. That said, I provide example ideas below to how this article provides the theoretical grounding within which such future work might be conducted.

5.4.1 *Mindful Social Media Interactions that Communicate Care.* I found that sometimes participants imagined their audience would encounter their post when quickly and mindlessly browsing social media. They imagined interactions such as liking a post or leaving them a comment *and* then moving on with the rest of their feed and scrolling down without signaling a “pause.” Participants felt that these interactions, even though sending light signals of support, would be dismissive of the “realness” of their pain; thus they did not disclose. Somewhat to the contrary, prior work [9, 110] suggests that some individuals do perceive such quick interactions to be supportive and helpful. I ask, how might we design social interactions that communicate care and the “pause” that deep, personal, and difficult disclosures may require? How might we design social interactions that mirror “sitting in” with someone who is sad, but that also allow communicating simple signals of support that some may find valuable? This study’s findings identify this as a valuable design exploration for future work.

5.4.2 *Educating Potential Responders About Interactions Perceived to be Supportive.* Some, but not all, audience-related considerations I observed in these data were about people worrying that their audience would not know *how* to be supportive, even if they intend to be so. Prior work [10] shows that this is also a concern for potential responders to sensitive expressions on social media; as in, sometimes people do want to be supportive, but are not sure what would be helpful and appropriate, and what would not be so. Some even Google questions such as “how do I respond to someone who just had a miscarriage?” [10]. In contexts like pregnancy loss, there is a lack of societal scripts in our society’s repository [112], which further exacerbates these challenges. On another note, I found that temporality-related factors informed non-disclosures sometimes because people worried disclosing at a much later time might lead to undesired reactions from their audience. How might we design features into social media that help potential responders engage in meaningful ways, at any time close to the loss or not, without compromising the perceived authenticity of these interactions? Potential designs could provide prompts for those who encounter such posts to recommend reactions that are deemed to be helpful by most, or by the specific poster. Such recommended content could also be informative and educational, for example indicating that the impacts of loss may go well beyond a few days, weeks, or months.

5.4.3 *Facilitating Shifts in Social Norms and Expectations.* I found that societal factors like perceptions of stigma around pregnancy loss itself, and more broadly other reproductive health issues, as well as norms and expectations around announcing pregnancies (i.e., announcing after the first trimester when the chance of loss is reduced) contributed to non-disclosures for many participants in this study. For example, as we saw, when people did not disclose their pregnancies early on, they were not able to access support afterwards because they did not feel they could disclose the loss about a pregnancy that was unknown to others. This suggests that reducing stigma in one context (e.g., pregnancy loss) should be seen within the context of other relevant experiences (e.g., pregnancy, abortion, and other reproductive health issues). This study’s participants largely included cisgender straight white women. Those who experience marginality due to their

racial/ethnic, gender, sexuality, or socio-economic status (or intersections thereof) are likely to face even more barriers to seeking support and disclosure in contexts such as pregnancy loss. Future work should further investigate how non-disclosures and their outcomes may be exacerbated for those in the margins. What shifts in norms and practices would be most inclusive of a variety of human experiences, and how might social media designs facilitate shaping and shifting these norms and expectations in inclusive ways? How might we proactively design for disclosures to reduce inequities in who chooses to disclose or not?

This study's findings suggest that norm shifts that acknowledge that it is okay to announce pregnancies earlier (if one wishes to) might prove to be helpful in the face of loss. Similarly, shifts such as including in our societal narratives and repositories that one can hold feminist and pro-choice views and still feel immense grief as a result of a pregnancy loss might help remove some of the societal-level barriers to which participants referred. How social media design can facilitate or inhibit these shifts is an important area for further research and design.

5.4.4 Reducing Network-level Barriers. Beyond societal-level shifts, I suggest that removing network barriers also has the potential for reducing stigma within networks of known ties. I found that perceptions of difference with one's network in terms of direct experience with pregnancy loss (e.g., thinking there is no one else in one's network with a similar experience), and indirect experience and knowledge with pregnancy loss (e.g., social media connections interacting with others' posts or other content like articles about pregnancy loss) contributed to non-disclosures and perceptions of stigma. On the other hand, when people see others in their network of known ties disclose, they feel less stigma and choose to do so as well through a mechanism called network-level reciprocal disclosure [9]. I suggest that one way in which social media site designs can help reduce stigma through removing network-level barriers is to surface such similarities and experiences, perhaps in aggregate ways. For example, what would it mean if one knew that members of their network have consumed content about pregnancy loss or have engaged with it in supportive ways in privacy-preserving ways? Prior work [56] also suggests facilitating finding similar others within one's network, and these findings about perceptions of difference echo that this would be a fruitful design direction to facilitate disclosures and reduce stigma. That said, it is both important and challenging for such explorations to responsibly account for entities who may gain access to and exploit sensitive data that people contribute as part of destigmatization and norm shifts. The legitimate existence of such worries makes this tension more complex. Yet, as this work has demonstrated, because existing stigma, norms, and expectations often cause harm, I advocate that they should be disrupted, as complex as such disruptions might be.

6 CONCLUSION

In this study I identified factors that inform decisions to *not* disclose stigmatized experiences on identified social media. I draw on in-depth phenomenological interviews with women in the US who were social media users, had experienced pregnancy loss within the past 2 years, and had not disclosed about their loss on identified social media. I organized findings around six types of decision factors related to the self, audience, network, society, platform, and temporality (summarized in Table 1). I show that the DDM framework introduced in prior work to explain disclosures when they *do* occur, also explains non-disclosure decisions of stigmatized experiences on social media. I build on and contextualize the findings within the broader social media and disclosure research; I suggest that because the DDM framework explains both disclosure and non-disclosure decisions, it creates a space within which prior and future disclosure (and non-disclosure) research related to sensitive and stigmatized settings can be unified and systematically compared. I posit that the DDM provides a structure that would facilitate comparative studies and developing theoretical

insights in this space more broadly. I also contextualize findings within privacy theories, namely, CPM and CI. I show how DDM builds from and bridges existing privacy theories by explaining motivations for choosing various boundary regulation levels: non-disclosure, indirect disclosure, and direct disclosure while accounting for social media's socio-technical context and stigma in tandem. Lastly, I discuss design implications around removing barriers to disclosure to facilitate beneficial disclosures and reduce stigma.

ACKNOWLEDGMENTS

This is a solo-authored article, but I owe thanks to many individuals for their support and generosity. I am thankful to the participants who trusted in me and allowed me to learn from them. I also thank the many individuals who helped with my recruitment efforts. I am grateful to Luke Stark, Oliver Haimson, and Nora McDonald for feedback on earlier or partial drafts of this article. The data analyzed for this article were collected while I was affiliated with Drexel University with support from Andrea Forte and the NSF grant #1253302. This work would not have been possible without this support.

REFERENCES

- [1] Joan Ablon. 1981. Stigmatized health conditions. *Social Science & Medicine. Part B: Medical Anthropology* 15, 1 (1981), 5–9. DOI: [https://doi.org/10.1016/0160-7987\(81\)90003-X](https://doi.org/10.1016/0160-7987(81)90003-X)
- [2] Francesca Agostini, Fiorella Monti, Leonardo De Pascalis, Marcella Paterlini, Giovanni Battista La Sala, and Isaac Blickstein. 2011. Psychosocial support for infertile couples during assisted reproductive technology treatment. *Fertility and Sterility* 95, 2 (2011), 707–710. DOI: <https://doi.org/10.1016/j.fertnstert.2010.06.011>
- [3] Sara Ahmed. 2010. *The Promise of Happiness*. Duke University Press Books, Durham NC.
- [4] Irwin Altman. 1975. *The Environment and Social Behavior: Privacy, Personal Space, Territory, and Crowding*. Brooks/Cole Pub. Co., Monterey, Calif.
- [5] Tawfiq Ammari, Meredith Ringel Morris, and Sarita Yardi Schoenebeck. 2014. Accessing social support and overcoming judgment on social media among parents of children with special needs. In *Proceedings of the 8th International AAAI Conference on Weblogs and Social Media (ICWSM'14)*.
- [6] Tawfiq Ammari and Sarita Schoenebeck. 2015. Understanding and supporting fathers and fatherhood on social media sites. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI'15)*. 1905–1914. DOI: <https://doi.org/10.1145/2702123.2702205>
- [7] Nazanin Andalibi. 2019. What happens after disclosing stigmatized experiences on identified social Media: Individual, dyadic, and social/network outcomes. In *Proceedings of the Conference on Human Factors in Computing Systems Proceedings*. DOI: <https://doi.org/doi.org/10.1145/3290605.3300367>
- [8] Nazanin Andalibi and Andrea Forte. 2015. Social computing researchers as vulnerable populations. In *Proceedings of the Workshop on Ethics for Studying Sociotechnical Systems in a Big Data World*. Retrieved from <https://goo.gl/fcIb9m>.
- [9] Nazanin Andalibi and Andrea Forte. 2018. Announcing pregnancy loss on Facebook: A decision-making framework for stigmatized disclosures on identified social network sites. In *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI'18)*. DOI: <https://doi.org/10.1145/3173574.3173732>
- [10] Nazanin Andalibi and Andrea Forte. 2018. Responding to sensitive disclosures on social Media: A decision-making framework. *ACM Transactions on Computer-Human Interaction* 25, 6 (2018), 1–29. DOI: <http://dx.doi.org/10.1145/3241044>
- [11] Nazanin Andalibi, Oliver L. Haimson, Munmun Choudhury, and Andrea Forte. 2018. Social support, reciprocity, and anonymity in responses to sexual abuse disclosures on social media. *ACM Transactions on Computer-Human Interaction* 25, 5 (2018), 1–35. DOI: <http://dx.doi.org/10.1145/3234942>
- [12] Nazanin Andalibi, Oliver L. Haimson, Munmun De Choudhury, and Andrea Forte. 2016. Understanding social media disclosures of sexual abuse through the lenses of support seeking and anonymity. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI'16)*. 3906–3918. DOI: <https://doi.org/10.1145/2858036.2858096>
- [13] Nazanin Andalibi, Margaret Morris, and Andrea Forte. Testing waters, sending Clues: Indirect disclosures of socially stigmatized experiences on social media. In *Proceedings of the ACM on Human-Computer Interaction*. DOI: <https://doi.org/https://doi.org/10.1145/3274288>
- [14] Nazanin Andalibi, Pinar Ozturk, and Andrea Forte. 2017. Sensitive self-disclosures, responses, and social support on Instagram: The case of #depression. In *Proceedings of the Conference on Computer Supported Cooperative Work & Social Computing (CSCW'17)*. DOI: <https://doi.org/10.1145/2998181.2998243>

- [15] Richard L. Archer and Christie E. Cook. 1986. Personalistic self-disclosure and attraction: Basis for relationship or scarce resource. *Social Psychology Quarterly* 49, 3 (1986), 268–272.
- [16] Philippe Ariès and Patricia Ranum. 1974. *Western Attitudes toward Death: From the Middle Ages to the Present*. Johns Hopkins University Press.
- [17] Ifeyinwa V. Asiodu, Catherine M. Waters, Dawn E. Dailey, Kathryn A. Lee, and Audrey Lyndon. 2015. Breastfeeding and use of social media among first-time African American mothers. *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 44, 2 (2015), 268–278. DOI: <https://doi.org/10.1111/1552-6909.12552>
- [18] Natalya N. Bazarova, Jessie G. Taft, Yoon Hyung Choi, and Dan Cosley. 2012. Managing impressions and relationships on Facebook: Self-presentational and relational concerns revealed through the analysis of language style. *Journal of Language and Social Psychology* 32, 2 (2012), 121–141.
- [19] Lindsay Blackwell, Jean Hardy, Tawfiq Ammari, Tiffany Veinot, Cliff Lampe, and Sarita Schoenebeck. 2016. Lgbt parents and social Media: Advocacy, privacy, and disclosure during shifting social movements. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI'16)*. 610–622. DOI: <https://doi.org/10.1145/2858036.2858342>
- [20] George A. Bonanno and Stacey Kaltman. 2001. The varieties of grief experience. *Clinical Psychology Review* 21, 5 (2001), 705–734. DOI: [https://doi.org/10.1016/S0272-7358\(00\)00062-3](https://doi.org/10.1016/S0272-7358(00)00062-3)
- [21] Charles F. Bond Jr. and Evan L. Anderson. 1987. The reluctance to transmit bad news: Private discomfort or public display? *Journal of Experimental Social Psychology* 23, 2 (1987), 176–187.
- [22] Danah Boyd. 2008. *Taken Out of Context: American Teen Sociality in Networked Publics*. Social Science Research Network, Rochester, NY. Retrieved March 7, 2019 from <https://papers.ssrn.com/abstract=1344756>.
- [23] Danah Boyd and Alice Marwick. 2011. Social Steganography: Privacy in networked publics. In *Paper presented at the ICA (International Communication Association) Conference*. <https://www.danah.org/papers/2011/Steganography-ICAVersion.pdf>.
- [24] Lyn Brierley-Jones, Rosalind Crawley, Samantha Lomax, and Susan Ayers. 2015. Stillbirth and Stigma: The spoiling and repair of multiple social identities. *OMEGA - Journal of Death and Dying* 70, 2 (2015), 143–168. DOI: <https://doi.org/10.2190/OM.70.2.a>
- [25] Moira Burke and Mike Develin. 2016. Once more with feeling: Supportive responses to social sharing on facebook. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*. 1462–1474. Retrieved from <http://dl.acm.org/citation.cfm?id=2835199>.
- [26] Moira Burke and Robert Kraut. 2013. Using facebook after losing a job: Differential benefits of strong and weak ties. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work (CSCW'13)*. 1419–1430.
- [27] Moira Burke, Cameron Marlow, and Thomas Lento. 2010. Social network activity and social well-being. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 1909–1912.
- [28] Brant R. Burleson, Terrance L. Albrecht, and Irwin G. Sarason. 1994. *Communication of social support: Messages, interactions, relationships, and community*. Sage Publications, Inc.
- [29] Stephenie R. Chaudoir and Jeffrey D. Fisher. 2010. The disclosure processes model: Understanding disclosure decision-making and post-disclosure outcomes among people living with a concealable stigmatized identity. *Psychological Bulletin* 136, 2 (2010), 236–256. DOI: <https://doi.org/10.1037/a0018193>
- [30] Jeffrey T. Child and Sandra Petronio. 2011. Unpacking the paradoxes of privacy in CMC relationships: The challenges of blogging and relational communication on the internet. In *Computer-mediated Communication in Personal Relationships* (2011), 21–40. <https://www.peterlang.com/view/9781433150753/chapter02.xhtml>.
- [31] Mayara Costa Figueiredo, Clara Caldeira, Elizabeth Victoria Eikey, Melissa Mazmanian, and Yunan Chen. 2018. Engaging with health Data: The interplay between self-tracking activities and emotions in fertility struggles. In *Proceedings of the ACM on Human-Computer Interaction*. DOI: <https://doi.org/10.1145/3274309>
- [32] Mayara Costa Figueiredo, Clara Caldeira, Tera L. Reynolds, Sean Victory, Kai Zheng, and Yunan Chen. 2017. Self-tracking for fertility Care: Collaborative support for a highly personalized problem. In *Proceedings of the ACM on Human-Computer Interaction*. DOI: <https://doi.org/10.1145/3134671>
- [33] Valerian J. Derlega and Alan L. Chaikin. 1977. Privacy and self-disclosure in social relationships. *Journal of Social Issues* 33, 3 (1977), 102–115.
- [34] Valerian J. Derlega and Janusz Grzelak. 1979. Appropriateness of self-disclosure. In *Self-disclosure: Origins, Patterns, and Implications of Openness in Interpersonal Relationships*. Jossey-Bass, 151–176.
- [35] Bryan Dosono, Yasmeen Rashidi, Taslima Akter, Bryan Semaan, and Apu Kapadia. 2017. Challenges in transitioning from civil to military Culture: Hyper-selective disclosure through icts. In *Proceedings of the ACM on Human-Computer Interaction*. DOI: <https://doi.org/10.1145/3134676>
- [36] Nicole B. Ellison, Charles Steinfield, and Cliff Lampe. 2007. The benefits of facebook “friends”: social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication* 12, 4 (2007) 1143–1168. DOI: <https://doi.org/10.1111/j.1083-6101.2007.00367.x>

- [37] Nicole B. Ellison, Charles Steinfield, and Cliff Lampe. 2011. Connection strategies: Social capital implications of Facebook-enabled communication practices. *New Media & Society* 13, 6 (2011), 873–892. DOI : <https://doi.org/10.1177/1461444810385389>
- [38] Daniel A. Epstein, Nicole B. Lee, Jennifer H. Kang, Elena Agapie, Jessica Schroeder, Laura R. Pina, James Fogarty, Julie A. Kientz, and Sean Munson. 2017. Examining menstrual tracking to inform the design of personal informatics tools. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI'17)*. 6876–6888. DOI : <https://doi.org/10.1145/3025453.3025635>
- [39] Andrea Forte, Nazanin Andalibi, and Rachel Greenstadt. 2017. Privacy, anonymity, and perceived risk in open Collaboration: A study of tor users and wikipedians. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW'17)*. 1800–1811. DOI : <https://doi.org/10.1145/2998181.2998273>
- [40] Ryan J. Gallagher, Elizabeth Stowell, Andrea G. Parker, and Brooke Foucault Welles. 2019. Reclaiming stigmatized Narratives: The networked disclosure landscape of #metoo. In *Proceedings of the ACM Human-Computer Interaction*. DOI : <https://doi.org/10.31235/osf.io/qsmce>
- [41] Pamela A. Geller. 2012. The role of emerging technology in women's response to pregnancy loss. *Expert Review of Obstetrics & Gynecology* 7, 1 (2012), 19–23. DOI : <https://doi.org/10.1586/eog.11.80>
- [42] Ilana Gershon. 2010. Media Ideologies: An introduction. *Journal of Linguistic Anthropology* 20, 2 (2010), 283–293. DOI : <https://doi.org/10.1111/j.1548-1395.2010.01070.x>
- [43] Lorna Gibson and Vicki L. Hanson. 2013. Digital Motherhood: How does technology help new mothers? In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI'13)*. 313–322. DOI : <https://doi.org/10.1145/2470654.2470700>
- [44] Erving Goffman. 1959. *The Presentation of Self in Everyday Life*. Doubleday.
- [45] Erving Goffman. 1986. *Stigma: Notes on the Management of Spoiled Identity*. Simon & Schuster, New York.
- [46] Kimberly R. Goldner. 2008. Self disclosure on social networking websites and relationship quality in late adolescence. Dissertation/Thesis.
- [47] Kathryn Greene, Valerian J. Derlega, and Alicia Mathews. 2006. Self-disclosure in personal relationships. In *The Cambridge Handbook of Personal Relationships*. Cambridge University Press.
- [48] James J. Gross and Robert W. Levenson. 1997. Hiding Feelings: The acute effects of inhibiting negative and positive emotion. *Journal of Abnormal Psychology* 106, 1 (1997), 95–103. DOI : <https://doi.org/10.1037/0021-843X.106.1.95>
- [49] Tamy Guberek, Allison McDonald, Sylvia Simioni, Abraham H. Mhaidli, Kentaro Toyama, and Florian Schaub. 2018. Keeping a low Profile?: Technology, risk and privacy among undocumented immigrants. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI'18)*. 114:1–114:15. DOI : <https://doi.org/10.1145/3173574.3173688>
- [50] Lucia Guerra-Reyes, Vanessa M. Christie, Annu Prabhakar, and Katie A. Siek. 2017. Mind the Gap: Assessing the disconnect between postpartum health information desired and health information received. *Women's Health Issues* 27, 2 (2017), 167–173.
- [51] Lucia Guerra-Reyes, Annu Prabhakar, Asia Harris, Vanessa Christie, and Katie A. Siek. 2016. Postpartum health information seeking using mobile Phones: Experiences of low-income mothers. *Maternal and Child Health Journal* 20, Supplement 1 (2016), 13–21. DOI : <https://doi.org/10.1007/s10995-016-2185-8>
- [52] Lucia Guerra-Reyes, Katie A. Siek, Asia Harris, Annu Prabhakar, and Vanessa M. Christie. 2015. Between knowledge and social Support: Health information seeking using mobile phones among low income new mothers. In *Proceedings of the American Public Health Association Annual Meeting*.
- [53] Oliver L. Haimson. 2018. The social complexities of transgender identity disclosure on social media. University of California, Irvine. Retrieved from <https://escholarship.org/uc/item/19c235q0>.
- [54] Oliver L. Haimson, Nazanin Andalibi, Munmun De Choudhury, and Gillian R. Hayes. 2017. Relationship breakup disclosures and media ideologies on Facebook. *New Media & Society* 20, 5 (2017), 1931–1952. DOI : <https://doi.org/10.1177/1461444817711402>
- [55] Oliver L. Haimson, Jed R. Brubaker, Lynn Dombrowski, and Gillian R. Hayes. 2016. Digital footprints and changing networks during online identity transitions. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI'16)*. 2895–2907. DOI : <https://doi.org/10.1145/2858036.2858136>
- [56] Oliver L. Haimson, Kathryn Ringland, Simone Simpson, and Christine T. Wolf. 2014. Using depression analytics to reduce stigma via social Media: Bluefriends. Retrieved August 9, 2017 from <https://www.ideals.illinois.edu/handle/2142/48827>.
- [57] Keith Hampton, Lauren Sessions Goulet, Lee Rainie, and Kristen Purcell. 2011. Social networking sites and our lives. *Pew Research Center: Internet, Science & Tech*. Retrieved August 2, 2017 from <http://www.pewinternet.org/2011/06/16/social-networking-sites-and-our-lives/>.
- [58] Sarah Hardy and Rebecca Kukla. 2015. Making sense of miscarriage online. *Journal of Social Philosophy* 46, 1 (2015), 106–125. DOI : <https://doi.org/10.1111/josp.12089>

- [59] Gillian R. Hayes, Karen G. Cheng, Sen H. Hirano, Karen P. Tang, Marni S. Nagel, and Dianne E. Baker. 2014. Estrellita: A mobile capture and access tool for the support of preterm infants and their caregivers. *ACM Transactions on Computer-Human Interaction* 21, 3, (2014), 1–19:28. DOI : <https://doi.org/10.1145/2617574>
- [60] Rebecca A. Hayes, Caleb T. Carr, and Donghee Yvette Wohn. 2016. One click, many meanings: interpreting paralinguistic digital affordances in social media. *Journal of Broadcasting & Electronic Media* 60, 1 (2016), 171–187. DOI : <https://doi.org/10.1080/08838151.2015.1127248>
- [61] Andrew C. High, Anne Oeldorf-Hirsch, and Saraswathi Bellur. 2014. Misery rarely gets company: The influence of emotional bandwidth on supportive communication on facebook. *Computers in Human Behavior* 34 (2014), 79–88. <https://doi.org/10.1016/j.chb.2014.01.037>
- [62] Bernie Hogan. 2010. The presentation of self in the age of social media: Distinguishing performances and exhibitions online. *Bulletin of Science, Technology & Society* 30, 6 (2010), 377–386.
- [63] Jennifer Leanne Fairchild. 2009. What might have been- The communication of social support and women’s post-miscarriage narrative reconstruction. *University of Kentucky*.
- [64] Sophia Alice Johnson. 2014. “Maternal devices”, social media and the self-management of pregnancy, mothering and child health. *Societies* 4, 2 (2014), 330–350. DOI : <https://doi.org/10.3390/soc4020330>
- [65] Ruogu Kang, Stephanie Brown, and Sara Kiesler. 2013. Why do people seek anonymity on the internet?: informing policy and design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 2657–2666. Retrieved December 2, 2015 from <http://dl.acm.org/citation.cfm?id=2481368>.
- [66] Elaine Kasket. 2009. Protocol for responding to participant distress, adapted version for telephone/skype. London Metropolitan University.
- [67] Anita E. Kelly, Julie A. Klusas, Renee T. von Weiss, and Christine Kenny. 2001. What is it about revealing secrets that is beneficial? *Personality and Social Psychology Bulletin* 27, 6 (2001) 651–665. DOI : <https://doi.org/10.1177/0146167201276002>
- [68] Anette Kersting, Kristin Kroker, Sarah Schlicht, and Birgit Wagner. 2011. Internet-based treatment after pregnancy loss: concept and case study. *Journal of Psychosomatic Obstetrics & Gynecology* 32, 2 (2011), 72–78. DOI : <https://doi.org/10.3109/0167482X.2011.553974>
- [69] Jessica Killeen. 2015. The rules of bereavement work: emotion work in online perinatal loss support groups. *BMC Pregnancy and Childbirth* 15, 1 (2015), A16. DOI : <https://doi.org/10.1186/1471-2393-15-S1-A16>
- [70] Ohbyung Kwon and Yixing Wen. 2010. An empirical study of the factors affecting social network service use. *Computers in Human Behavior* 26, 2 (2010), 254–263. DOI : <https://doi.org/10.1016/j.chb.2009.04.011>
- [71] Airi Lampinen, Vilma Lehtinen, Asko Lehmuskallio, and Sakari Tamminen. 2011. We’re in it Together: Interpersonal management of disclosure in social network services. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI’11)*. 3217–3226. DOI : <https://doi.org/10.1145/1978942.1979420>
- [72] Airi Lampinen, Sakari Tamminen, and Antti Oulasvirta. 2009. All my people right here, right Now: Management of group co-presence on a social networking site. In *Proceedings of the ACM 2009 International Conference on Supporting Group Work*. 281–290. DOI : <https://doi.org/10.1145/1531674.1531717>
- [73] Linda L. Layne. 2002. *Motherhood Lost: A Feminist Account of Pregnancy Loss in America*. Routledge, New York.
- [74] Amanda Lazar, Norman Makoto Su, Jeffrey Bardzell, and Shaowen Bardzell. 2019. Parting the red Sea: Sociotechnical systems and lived experiences of menopause. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI’19)*. DOI : <https://doi.org/10.1145/3290605.3300710>
- [75] Irving G. Leon. 1992. *When a Baby Dies: Psychotherapy for Pregnancy and Newborn Loss*. Yale University Press.
- [76] Karen Levy. 2015. *Intimate Surveillance*. Social Science Research Network, Rochester, NY. Retrieved December 16, 2019 from <https://papers.ssrn.com/abstract=2834354>.
- [77] Han Lin, William Tov, and Lin Qiu. 2014. Emotional disclosure on social networking sites: The role of network structure and psychological needs. *Computers in Human Behavior* 41, (2014), 342–350. DOI : <https://doi.org/10.1016/j.chb.2014.09.045>
- [78] Xiao Ma, Nazanin Andalibi, Louise Barkhuus, and Mor Naaman. 2017. “People are either too fake or too Real”: Opportunities and challenges in tie-based anonymity. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI’17)*. 1781–1793. DOI : <https://doi.org/10.1145/3025453.3025956>
- [79] Alice Marwick and Danah Boyd. 2014. Networked privacy: How teenagers negotiate context in social media. *New Media & Society* 16, 7 (2014), 1051–1067. DOI : <https://doi.org/10.1177/1461444814543995>
- [80] Alice E. Marwick. 2011. I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society* 13, 1 (2011) 114–133.
- [81] Alice E. Marwick and Danah Boyd. 2011. I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society* 13, 1 (2011) 114–133. DOI : <https://doi.org/10.1177/1461444810365313>

- [82] Tara Matthews, Kathleen O'Leary, Anna Turner, Manya Sleeper, Jill Palzkill Woelfer, Martin Shelton, Cori Manthorne, Elizabeth F. Churchill, and Sunny Consolvo. 2017. Stories from survivors: privacy & security practices when coping with intimate partner abuse. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI'17)*. 2189–2201. DOI : <https://doi.org/10.1145/3025453.3025875>
- [83] Miller McPherson, Lynn Smith-Lovin, and James M. Cook. 2001. Birds of a Feather: Homophily in social networks. *Annual Review of Sociology* 27, 1 (2001), 415–444. DOI : <https://doi.org/10.1146/annurev.soc.27.1.415>
- [84] Wendy Moncur. 2013. The emotional wellbeing of Researchers: Considerations for practice. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 1883–1890. Retrieved September 28, 2015 from <http://dl.acm.org/citation.cfm?id=2466248>.
- [85] Tsubasa Morioka, Nicole B. Ellison, and Michael Brown. 2016. Identity work on social media Sites: Disadvantaged students' college transition processes. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing (CSCW'16)*. 848–859. DOI : <https://doi.org/10.1145/2818048.2819959>
- [86] Meredith Ringel Morris. 2014. Social networking site use by mothers of young children. In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW'14)*. 1272–1282. DOI : <https://doi.org/10.1145/2531602.2531603>
- [87] Christine Moulder. 1994. Towards a preliminary framework for understanding pregnancy loss. *Journal of Reproductive and Infant Psychology* 12, 1 (1994), 65–67.
- [88] Joann O'Leary. 2009. Never a simple journey: pregnancy following perinatal loss. *Bereavement Care* 28, 2 (2009), 12–17. DOI : <https://doi.org/10.1080/02682620902996004>
- [89] Shirley A. Murphy, L. Clark Johnson, and Janet Lohan. 2003. Finding meaning in a child's violent Death: A Five-year prospective analysis of parents' personal narratives and empirical data. *Death Studies* 27, 5 (2003), 381–404. DOI : <https://doi.org/10.1080/07481180302879>
- [90] R. Neugebauer, J. Kline, P. O'Connor, P. Shrout, J. Johnson, A. Skodol, J. Wicks, and M. Susser. 1992. Determinants of depressive symptoms in the early weeks after miscarriage. *American Journal of Public Health* 82, 10 (1992), 1332–1339.
- [91] Helen Nissenbaum. 2004. Privacy as contextual integrity. *Washington Law Review* 79, 1 (2004), 119–158.
- [92] Julia Omarzu. 2000. A disclosure decision Model: Determining how and when individuals will self-disclose. *Personality and Social Psychology Review* 4, 2 (2000), 174–185. DOI : https://doi.org/10.1207/S15327957PSPR0402_05
- [93] Leysia Palen and Paul Dourish. 2003. Unpacking privacy for a networked world. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 129–136. Retrieved December 2, 2015 from <http://dl.acm.org/citation.cfm?id=642635>.
- [94] James W. Pennebaker. 1995. *Emotion, Disclosure, & Health*. American Psychological Association.
- [95] Sandra Petronio. 2002. *Boundaries of Privacy: Dialectics of Disclosure*. Suny Press.
- [96] Sandra Petronio, Heidi M. Reeder, Michael L. Hecht, and Theresa Mon't Ros-Mendoza. 1996. Disclosure of sexual abuse by children and adolescents. *Journal of Applied Communication Research* 24, 3 (1996), 181–199. DOI : <https://doi.org/10.1080/00909889609365450>
- [97] Tamara Peyton and Pamela Wisniewski. 2019. Improving a design Space: Pregnancy as a collaborative information and social support ecology. In *Proceedings of the Future of Information Communication Conference*.
- [98] Jo C. Phelan, Bruce G. Link, and John F. Dovidio. 2008. Stigma and prejudice: one animal or two? *Social Science & Medicine* 67, 3 (1982), 358–367. DOI : <https://doi.org/10.1016/j.socscimed.2008.03.022>
- [99] James Pierce, Sarah Fox, Nick Merrill, and Richmond Wong. 2018. Differential vulnerabilities and a diversity of Tactics: What toolkits teach us about cybersecurity. In *Proceedings of the ACM on Human-Computer Interaction*. DOI : <https://doi.org/10.1145/3274408>
- [100] John R. Porter, Kiley Sobel, Sarah E. Fox, Cynthia L. Bennett, and Julie A. Kientz. 2017. Filtered Out: Disability disclosure practices in online dating communities. In *Proceedings of the ACM on Human-Computer Interaction*. DOI : <https://doi.org/10.1145/3134722>
- [101] Annu Prabhakar, Lucia Guerra-Reyes, Anne Effron, Vanessa M. Kleinschmidt, Maggie Driscoll, Charles Peters, Vanessa Pereira, Majdah Alshehri, Tom Ongwere, and Katie A. Siek. 2017. "Let me know if you need Anything": Support realities of new mothers. In *Proceedings of Pervasive Health*.
- [102] Diane M. Quinn, Michelle K. Williams, Francisco Quintana, Jennifer L. Gaskins, Nicole M. Overstreet, Alefiyah Pishori, Valerie A. Earnshaw, Giselle Perez, and Stephenie R. Chaudoir. 2014. Examining effects of anticipated stigma, centrality, salience, internalization, and outness on psychological distress for people with concealable stigmatized identities. *PLOS ONE* 9, 5 (2014), e96977. DOI : <https://doi.org/10.1371/journal.pone.0096977>
- [103] Leonard Reinecke and Sabine Trepte. 2014. Authenticity and well-being on social network Sites: A two-wave longitudinal study on the effects of online authenticity and the positivity bias in SNS communication. *Computers in Human Behavior* 30 (2014), 95–102. DOI : <https://doi.org/10.1016/j.chb.2013.07.030>
- [104] Bernard Rimé. 2009. Emotion elicits the social sharing of emotion: Theory and empirical review. *Emotion Review* 1, 1 (2009), 60–85.

- [105] Sidney Rosen and Abraham Tesser. 1972. Fear of negative evaluation and the reluctance to transmit bad news. *Journal of Communication* 22, 2 (1972), 124–141.
- [106] Craig Ross, R. Robert Orr, Emily S. Orr, Mia Sisic, Jaime M. Arseneault, and Mary G. Simmering. 2009. Personality and motivations associated with Facebook use. *Computers in Human Behavior* 25, 2 (2009), 578–586. <https://doi.org/10.1016/j.chb.2008.12.024>
- [107] Sabirat Rubya and Svetlana Yarosh. 2017. Video-mediated peer support in an online community for recovery from substance use disorders. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW'17)*. 1454–1469. DOI : <https://doi.org/10.1145/2998181.2998246>
- [108] David A. Savitz, Irva Hertz-Picciotto, Charles Poole, and Andrew F. Olshan. 2002. Epidemiologic measures of the course and outcome of pregnancy. *Epidemiologic Reviews* 24, 2 (2002), 91–101.
- [109] Sarita Yardi Schoenebeck. 2013. The secret life of online Moms: Anonymity and disinhibition on youbemom. com. In *Proceedings of the International AAAI Conference on Weblogs and Social Media*.
- [110] Lauren Scissors, Moira Burke, and Steven Wengrovitz. 2016. What's in a Like?: Attitudes and behaviors around receiving likes on facebook. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing (CSCW'16)*. 1501–1510. DOI : <https://doi.org/10.1145/2818048.2820066>
- [111] Bryan Semaan, Lauren M. Britton, and Bryan Dosono. 2017. Military masculinity and the travails of Transitioning: Disclosure in social media. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW'17)*. 387–403. DOI : <https://doi.org/10.1145/2998181.2998221>
- [112] Rachel E. Silverman and Jay Baglia. 2015. *Communicating Pregnancy Loss: Narrative as a Method for Change*. Peter Lang Inc., International Academic Publishers.
- [113] Kandi M. Stinson, Judith N. Lasker, Janet Lohmann, and Lori J. Toedter. 1992. Parents' grief following pregnancy Loss: A comparison of mothers and fathers. *Family Relations* 41, 2 (1992), 218–223. DOI : <https://doi.org/10.2307/584836>
- [114] Anselm Strauss and Juliet Corbin. 1998. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. SAGE Publications.
- [115] John Suler. 2004. The online disinhibition effect. In *Cyberpsychology & Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society* 7, 3 (2004), 321–326. DOI : <https://doi.org/10.1089/1094931041291295>
- [116] Stephanie J. Tobin, Eric J. Vanman, Marnize Verreynne, and Alexander K. Saeri. 2014. Threats to belonging on Facebook: Lurking and ostracism. *Social Influence* 10, 1 (2014), 1–12.
- [117] Jeffrey W. Treem and Paul M. Leonardi. 2012. Social media use in organizations: Exploring the affordances of visibility, editability, persistence, and association. *Communication Yearbook* 36, 1 (2012), 143–189.
- [118] Agatha Tutia, Kelda Baljon, Lan Vu, and Daniela K. Rosner. 2019. HCI and Menopause: Designing With and Around the Aging Body. In *Proceedings of the Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems (CHI EA'19)*. DOI : <https://doi.org/10.1145/3290607.3299066>
- [119] Jessica Vitak. 2012. The impact of context collapse and privacy on social network site disclosures. *Journal of Broadcasting & Electronic Media* 56, 4 (2012), 451–470.
- [120] Jessica Vitak and Nicole B. Ellison. 2013. 'There's a network out there you might as well tap': Exploring the benefits of and barriers to exchanging informational and support-based resources on Facebook. *New Media & Society* 15, 2 (2013), 243–259. DOI : <https://doi.org/10.1177/1461444812451566>
- [121] Jessica Vitak and Jinyoung Kim. 2014. "You can't block people offline": examining how Facebook's affordances shape the disclosure process. In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*. 461–474. DOI : <https://doi.org/10.1145/2531602.2531672>
- [122] Jessica Vitak, Cliff Lampe, Rebecca Gray, and Nicole B. Ellison. 2012. "Why won't you be my facebook Friend?": Strategies for managing context collapse in the workplace. In *Proceedings of the 2012 iConference*.
- [123] Jessica Vitak, Pamela Wisniewski, Zahra Ashktorab, and Karla Badillo-Urquiola. 2017. Benefits and drawbacks of using social media to grieve following the loss of pet. In *Proceedings of the 8th International Conference on Social Media & Society*. DOI : <https://doi.org/10.1145/3097286.3097309>
- [124] Walther, J. B. and Parks, M. R. 2002. Cues filtered out, cues filtered in, Computer mediated communication relationships. In *The Handbook of Interpersonal Communication* (3rd ed.). Sage Publications, Thousand Oaks, CA, 529–559.
- [125] Joseph B. Walther. 1996. Computer-mediated Communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research* 23, 1 (1996), 3–43. DOI : <https://doi.org/10.1177/009365096023001001>
- [126] Mienke W. H. Weenig, Arieneke C. W. J. Groenenboom, and Henk A. M. Wilke. 2001. Bad news transmission as a function of the definitiveness of consequences and the relationship between communicator and recipient. *Journal of Personality and Social Psychology* 80, 3 (2001), 449.
- [127] Robert S. Weiss. 2001. Grief, bonds, and relationships. In *Handbook of Bereavement Research: Consequences, Coping, and Care*, M. S. Stroebe, R. O. Hansson, W. Stroebe and H. Schut (eds.). American Psychological Association, Washington, DC, 47–62.

- [128] Pamela Wisniewski, A. K. M. Islam, Heather Richter Lipford, and David Wilson. 2016. Framing and measuring multi-dimensional interpersonal privacy preferences of social networking site users. *Communications of the Association for Information Systems* 38, 1 (2016), 235–258. <https://doi.org/10.17705/1CAIS.03810>
- [129] Pamela Wisniewski, A. K. M. Najmul Islam, Bart P. Knijnenburg, and Sameer Patil. 2015. Give social network users the privacy they want. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*.
- [130] Jill Palzkill Woelfer and David G. Hendry. 2010. Homeless young people’s experiences with information systems: life and work in a community technology center. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 1291–1300. DOI : <https://doi.org/10.1145/1753326.1753520>
- [131] Eliezer Yariv. 2006. “Mum Effect”: Principals’ reluctance to submit negative feedback. *Journal of Managerial Psychology* 21, 6 (2006), 533–546.

Received June 2019; revised December 2019; accepted March 2020