"This is different from the Western world": Understanding Password Sharing Among Young Bangladeshis

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Abstract—This paper explores how cultural factors impact the password-sharing attitudes and practices of young Bangladeshi adults. We conducted semi-structured interviews with 24 Bangladeshi participants aged between 18 and 39 about how, why, and with whom they share passwords. Using Grounded Theory, we identified three stages of password sharing (motivations, expectations, and problems) and three cultural factors (gender identity, collectivist social norms, and religious identity) that impact password sharing in Bangladesh. We found that password sharing is pervasive, and deeply affected by Bangladeshi culture and identity. Young adults' motivations and expectations for password sharing were complex and nuanced, and often served poorly by the tools and accounts that they were attempting to share. We found that Bangladeshi culture creates a situation in which password sharing is inevitable, but where individuals are inconvenienced and sometimes endangered by the action.

I. INTRODUCTION

Developing technical security solutions does not solve the entire security problem; security tools also need to be designed to accommodate human behaviour [14] to be secure. Human behaviour and security often contrast each other: typically, the more secure the system is, the less human factors are accommodated. Password authentication is one such problematic security mechanism that poses numerous usability flaws. One of the least addressed flaws of the password system is that passwords are intended to be private and kept confidential, but password sharing is frequent in the real world. Moreover, in some cultures, passwords are shared to meet cultural norms and expectations. This behavior poses a great threat to software security and privacy for not meeting security policy expectations. When considering how to understand this situation, the questions that came to our minds were: why do people still share passwords when they usually know password sharing is wrong? How does password sharing relate to cultural norms and expectations?

Research in HCI is often criticized for centering westerners' values, knowledge, and intuition (typical HCI research participants are western, educated, industrialized, rich, and democratic) [27]. For instance, 73% of ACM CHI (the premier international conference of HCI) studies published between 2016 and 2020 considered Western participant samples, which is less than 12% of the world's population [27]. Similarly, password sharing has been investigated primarily in Western countries like the USA and Australia, along with a few studies representing Eastern countries (India, Saudi Arabia, etc.); however, culture itself is little considered in the methodology of these studies [4], [22], [38]. Previous studies have found that cultural backgrounds beyond language and country (such as Hofstede's cultural variables, especially individualism/collectivism) significantly impact adopting and practicing security and privacy [26]. When we analyzed available literature on password sharing and device sharing in terms of individualist and collectivist cultures, we noticed that gender roles and respect for parents played an important role in collectivist countries.

In our study, we focused on the password sharing experiences of younger adults in Bangladesh, an Eastern collectivist country. Levinson [25] describes the second era of adulthood as *early adulthood*: the period in which people typically complete their education, establish a career, take on their role in society, and raise a family. These younger adults are experiencing this life era in the context of urban Bangladeshi culture, but also with great exposure to and experience with Western media and technology. In this paper, we refer to this group as "young Bangladeshis".

We interviewed 24 Bangladeshi participants aged between 18 and 39 about password-sharing experiences in their day-to-day lives. We followed an Emics approach [3], [24] to try to examine cultural practices from an internal viewpoint (as opposed to explicitly examining it from the context of the West). Our lead researcher was Bangladeshi, and conducted the interviews in Bangla (the official language of Bangladesh and the researcher's mother tongue). Using the results of the interviews, we propose a model to explain password sharing in Bangladesh.

Our research questions were:
1) Why do young Bangladeshis share passwords?

2) How does password sharing relate to cultural norms and expectations of Bangladeshi people?

We first review relevant background, and outline our study methodology. We then present our analysis, identifying the key elements, the overall structure, and the role of culture in password sharing in Bangladesh. Finally, we suggest a model for understanding the issues, and offer our conclusions.

II. BACKGROUND

We broadly define password sharing as sharing a "secret" that unlocks a device or account and gives access to valuable information or abilities. We first review the literature on password sharing in general, and then briefly summarize the Bangladeshi context.

A. Password Sharing

Password sharing can result in monetary loss, impersonation and harassment [29] when shared with the wrong people. Password sharing also has negative security and privacy implications of a more subtle nature. For instance, when phone passwords are shared with close companions for a specific purpose, they may invade privacy by browsing through personal information [2], [11]. Preventing password sharing has also negative implications. Obada-Obieh et. al. [33] studied the challenges of *ending* password sharing and found that people both experienced cognitive and psychological burdens when denying or ending password sharing.

1) What Passwords are Shared and with Whom: Kaye [22] conducted a survey with participants from the United States, India, New Zealand, Canada, the United Kingdom, and Australia to understand the context of password sharing. He found that people shared their email, Facebook, instant messaging, Amazon, eBay, smartphones, and computer passwords with partners/spouses, parents, sons, daughters, colleagues, and friends. Women were found to share slightly more passwords than men. People frequently shared passwords of their office workstation and library access with colleagues and friends. In family settings, as well as sharing Wi-Fi passwords or the passwords of subscribed sites (e.g., Netflix, Expedia, etc.), people were often found to share email credentials to check emails in case of emergency. Previous studies also found that people shared their banking credentials with parents, spouses, and sometimes with non-relatives in different cultural contexts [4], [38]. People also frequently shared their mobile devices and PINs for various reasons [1], [21], [34], [36].

2) Motivation for Password Sharing: Previous research found password sharing among couples was prevalent in different cultures. Even in the context of a strict banking policy that forbids sharing online banking passwords and PINs among friends and family, one study found that couples from Australia (both married and de facto) share their online and mobile banking passwords with each other [38]. The findings of the study state that the couples share online and mobile banking passwords because of trust, convenience, and the distribution of household work. A study on password-sharing conducted in the context of Saudi Arabia found that married couples shared their banking and mobile phone passwords because it was considered as a 'need to know' factor for them as it represented mutual trust and brought convenience to their day-to-day lives [4]. Couples also answer calls, play games, or help with map navigation using their partners' mobile phones for convenience [28]. Gender usually plays a role in sharing mobile phone passwords among couples from Eastern cultures. For instance, accepted gender privilege in some cultures allows a husband to surveil his wife's phone openly, but the wife has to do the same in secret [36]. Similarly, if there is only one device in the household, typically, the male head of the family is in charge of the device and controls other members' usage [36]. If a woman (usually the mother figure) in a household owns a mobile phone, it is usually considered everyone's phone, including their children's [36].

Password sharing is also common in parent-children relationships. In some cultures, parents are positioned in an esteemed place in their children's lives. In Saudi Arabia, the parents (typically father figures) know their (adult) children's banking credentials and information because of an accepted cultural and religious belief that grants them 'ownership' over their children's assets [4]. In India, parents usually have unlimited access to their teenage children's phones, which they can use and monitor anytime just because they usually bear the cost of mobile phones [36], [39].

Previous studies indicate that colonial banking authentication systems and legislation hamper the banking accessibility of different disadvantaged groups of different cultures. For instance, in Australia's Torres Strait Islander communities, travel to the nearest bank and shops is time-consuming and expensive, so one person will travel to do friends and family's banking work, shopping and other business by taking their bank cards and PINs [38].

In some cultures, lack of affordability created a device sharing ecosystem where only a relatively wealthy family could afford a mobile phone that the family, friends, and even neighbors could use [31]. Sometimes people would pay money to make calls using such devices [12].

Password sharing is also sometimes essential for people with disabilities. They need to share passwords both in terms of physical interaction with bank staff, to use an ATM, and even to do shopping [38].

B. An Overview of Bangladesh

By the World Bank's estimation, Bangladesh is a "lower-middle income" country in South Asia with a GDP growth rate of around 8% a year [30], [42], [43]. It is the eighth-most populous country globally, having 170 million people [42]. The majority of Bangladeshis identify themselves as Bengalis (98%), and the other 2% are regarded as ethnic minority groups [37].

1) Religion: Bangladesh is officially a secular nation but Islam is mentioned as the official religion in the constitution. Bangladesh has the fifth largest Muslim population globally, with 89.1% of its population following Islam. Hindus consti-

tute 10% of the population leaving only 0.9% of the population following other religions or none [37].

The relationship between Bangladesh and Islam is complex. The partition of India in 1947 and the unification of Punjab and other areas in the west (current Pakistan) and East Bengal (current Bangladesh) to become one Pakistan, reinforced the reality of Muslim-Bengali formulation [7], [17]. On the other hand, several movements in the late 1960s and the 1971 Liberation War of Bangladesh took place in the form of a "Bengali ethnic and language-based struggle" against economic, cultural, and political exploitation by West Pakistan (current Pakistan), downplaying the Muslim identity of the country's populations [17]. Historically, it is apparent that Bangladesh's Muslims have switched from 'Bengaliness' to 'Muslimness' as the situation demanded [9].

It is vital to understand the dual identity of Bangladesh's major population — "Bengali–Muslim" or "Muslim–Bengali" – to comprehend Bangladeshi culture. This dual identity of Bangladeshi people plays a significant role in personal, social, cultural and political lives.

2) Family: Family is the center of social life in Bangladesh. A family usually consists of husband and wife, their unmarried children, and often their adult sons, their wives, and children [37]. They all live in the same household, and sometimes the paternal grandparents also live in the same household. Bangladeshi people also maintain close relationships with relatives. The father of the family is the decision-maker for essential issues like finance. The eldest woman (mother or grandmother) usually decides on domestic issues like groceries. Generally, children are expected to consult their parents on major life decisions like education, career, and marriage [37]. Dating is not socially accepted in Bangladeshi culture, and it is usually conducted secretly without the consent of the parents and elder relatives [40]. Many marriages are still arranged, and parents usually decide when their children will get married and to whom. Even if children choose whom to marry, they usually do not marry without their parents' permission.

Bangladesh is a collectivist country. For this, the general approach to family ties is communal. People often act in the best interests of the family and extended family rather than based on their individual preferences [37]. Office colleagues and friends also sometimes become family friends and are treated similarly. Generally, people respect older people and obey their words. Criticizing elders or disregarding their opinions is not accepted. Bangladeshis usually speak indirectly, avoiding strong words, assertions, or confrontations [37]. It is not socially acceptable to say *no* on the face of it to any requests. They either comply with the request to avoid saying no or phrase objection as 'I can try' [37].

3) Patriarchy: Bangladesh is a patriarchal society, meaning men hold power and control of resources, and women are usually in charge of household work but financially dependent on men [8], [13]. Religion plays a significant role in defining such patriarchal elements. For instance, a misinterpreted version of Islamic rule is typically believed in Bangladesh that a man's job is to earn for the family and a woman's job is to serve her husband and manage the household [8]. Sometimes, men dominate and oppress women through patriarchy; however, the situation of women has improved recently: women's participation in the paid workforce rose to 36% in 2019 [42]. Women are still vulnerable in society, and violence against women usually goes unchecked due to lack of legal consequences and social stigma [41].

Women in Bangladesh fear sexual harassment, which is very common [35]. Women are frequently sexually harassed on the streets, in marketplaces and in every institution, including online [8], [18]. Cyber harassment of women in Bangladesh has risen significantly in recent years [44]. One study found that around 73% of female internet users reported cyber harassment [32]. Hacking, fake IDs, harassment and defamation, cyber pornography, financial fraud by mobile, blackmail and extortion, and terrorist activity are common forms of cyber harassment complaints [20]. When women face harassment in Bangladesh, they usually walk away pretending not to notice rather than giving any response [15], [32]. Such passive response is also typical in the case of online harassment. Women are also often insecure without men's company— their fathers, elder brothers, and husbands. Sometimes, the company of a younger brother is considered a more secure option for women than being alone. These men in women's lives also behave protectively in a similar manner when women use the internet and social media.

III. Methodology

To investigate how and why young people from Bangladesh share their passwords, we conducted a semi-structured qualitative interview study about their password-sharing attitudes and expectations. Because of our interest in the cross-cultural implications of password sharing, we were influenced by the "Emics-Etics" distinction, where Emics means within the culture and Etics means outside of a culture [3], [24]. We chose to focus on Bangladesh because the lead researcher is Bangladeshi and was therefore able to conduct the study and analyze the data from an Emics perspective. We interviewed 24 participants from Bangladesh about password-sharing experiences in their day-to-day lives. To follow the Emics approach, the interviews were conducted in Bangla (the native language of Bangladesh, and of the lead researcher). Thus, we were able to take an Emics approach and minimize cultural constraints for conducting our research. We received ethical clearance for this project from the Carleton University Research Ethics Board.

Our study was designed in three parts: pre-screening survey, interview session, and analysis. Before inviting the participants to the interviews, we asked participants to fill out a pre-screening survey to determine their eligibility. 188 participants completed the survey and 24 participants were interviewed.

Due to the COVID-19 pandemic, we conducted the interviews virtually using Zoom. We instructed participants never to share passwords with us and we reminded them not to do so several times during the interviews. Each interview was 45-50 minutes long. All the interviews were audio-recorded.

In the pre-screening survey we asked our participants about their preferred language (English or Bangla) for the interview. Most of our participants initially chose English, possibly because formal meetings are frequently conducted in English. However, after conducting the first two interviews in English, we realized that participants sometimes could not find English words to describe a particular situation and used Bangla instead. We then decided to conduct the rest of the interviews in Bangla. The researcher proactively started the interview in Bangla, and told the participants that they could use either language (Bangla or English) to answer. None of the participants chose English afterward but sometimes answered using a mixture of both languages.

We noticed that participants felt comfortable sharing their experiences because the interview was conducted by the Bangladeshi researcher. They expressed their comfort by saying things like, "you know how Bangladeshi parents monitor their daughters…we all know it" or "you know how brown mothers are". Although the researcher understood what they tried to mean, she still asked further questions like "what do you mean by this?" to validate whether her understanding was correct or not.

Each interview took between 45 and 50 minutes. Participants were compensated BDT 1000 (approximately USD 12) for participating in the interview. Payments were made via bKash[1], a popular mobile financial service in Bangladesh.

A. Recruitment

Between February and March 2021, we recruited 24 participants for the interview session. The participants were recruited through social media postings, and emails to distribution lists on university and workplace platforms. We prepared recruitment materials in both English and Bangla.

The inclusion criteria for the study were that participants were over the age of 18, comfortable giving an interview in Bangla or English, able to use Zoom, and a user of technology devices including computer/mobile phones, a user of the internet and social media, and may (or may not) have previous password sharing experiences.

B. Interview Participants

We reached saturation at the 24th participant, where we did not hear any new information. We had 11 female participants and 13 male participants. Participants' age ranged from 18-39, and 63% of our participants were aged between 18 and 29. Among our participants, nine were students studying engineering, science, social science, and humanities. The remaining 14 participants worked in banks, private companies, marketing agencies, medical centers, and pharmaceutical companies. One of our participants was on a work break.

These interviews were collected in early 2021, at time when in-person recruitment was impossible due to the COVID-19 pandemic. Because of our need to conduct interviews online, and because of the snowball sampling methodology used, our

participants all lived in large cities, and were representative of a relatively young, wealthy, and educated urban middle class. We acknowledge that this sample does not represent the entire population of Bangladesh. However, they do represent a segment of the Bangladeshi population, and one who are particularly of interest due to their awareness of Western culture (via media), while still experiencing the cultural pressures and expectations of being Bangladeshi.

C. Analysis

After the interviews, we anonymized the interview recordings and deleted any additional data saved during the interviews (for instance, a chat log). We then transcribed and translated them into English for further analysis. We followed a Grounded Theory methodology [10] for the qualitative analysis. We first analyzed the data line by line and incident by incident to assign codes in open coding. In the axial coding step, we looked for relationships in the open codes. In the later coding steps, we discussed as a group how the axial codes fit together, and the emerging relationships and patterns.

Section IV summarizes our open codes to describe our participants' experiences with password sharing. In Section V, we present our axial codes organized into our model that explains password sharing as a multistep process. , and our axial codes are presented in Section V. We identified three cultural factors as our selective codes (Section VI), and in Section VII we explain how those cultural factors affect each stage of the password-sharing model.

IV. ELEMENTS OF PASSWORD SHARING

The first step in our analysis was open coding. Initial coding was done by the lead researcher, and the code book was subsequently refined in collaboration with the other paper authors. After several coding rounds, we ended up with 168 open codes. We categorized them and summarized the main categories below. We do not report code frequencies, as our sample size is too small to produce generalizable numbers. Rather, we use our open codes to help us understand and identify patterns in how our participants discussed, understood, and experienced password sharing.

A. Password-Sharing Recipients

Although half of our participants denied sharing passwords in the pre-screening survey, in the interviews, all participants described password sharing at some point in their lives. They mentioned sharing passwords in different relationships: family, friends, and sometimes with strangers.

The family was the primary context in which most of our participants situated their password sharing. Participants described sharing device PINs, banking PINs, personal email, entertainment accounts, and social media passwords with family members including parents, spouses, siblings, romantic partners, and sometimes with cousins in case of joint families. Device PINs were also shared with children if there were any in the family.

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Participants also described sharing passwords with non-family members, including friends, neighbors, roommates, and colleagues. People described sharing a wide variety of account passwords (including personal emails and banking PINs) with close friends. Propinquity and shared circumstances also played a role in password sharing, and participants described sharing passwords with neighbours and roommates. People avoided sharing their work-related passwords with family members and personal relationships. However, they described sharing work passwords with colleagues and IT personnel.

B. Passwords that are Shared

Our participants mentioned sharing a wide variety of passwords, including banking, email, social media, entertainment accounts, personal and official laptop/desktop computers, and smartphones. They also mentioned performing many different activities with shared passwords.

Participants mentioned sharing traditional and mobile banking PINs with siblings, close friends, spouses, and colleagues. The main reason for such sharing was withdrawing cash in case of emergency or just convenience. Elderly parents shared their PINs with their (adult) children to assist them in withdrawing money from the ATM or making transactions online. Romantic partners also reported sharing banking credentials if one partner faced difficulties making transactions online. One of our participants mentioned sharing her credit card so that her friend/colleague could avail themselves of discounts. Card PINs were also shared to assist friends who were in need of money or with international transactions. One participant mentioned sharing her mobile banking account information so that her friend could buy a train ticket online.

Participants frequently mentioned sharing email passwords with friends and siblings. Email passwords were shared for checking emails or replying to emails back in case the owner did not have the technical infrastructure available to access the email.

Participants also mentioned that they created and managed their parents' email credentials. Email addresses were required for using smartphones; however, the parents did not typically have any email accounts. Therefore, participants usually opened and managed the email addresses and configured the smartphones on their parents' behalf. One participant mentioned doing the same for his wife, and she also did not know her email password.

Social media passwords were primarily shared in romantic relationships and with friends. Participants mentioned checking what their partners were doing on social media both secretly and openly. P5 mentioned a secret surveillance scenario:

> My girlfriend gave me her [Facebook] password later. After she gave me her password, I did check without her permission towards the end of our relationship. I just wanted to see whether she is backbiting with my friends or what she is doing. I used to go through her chats logs and everything, but I did not inform her about this. Fortunately, she did not do anything, so I am good (laughing). I did

not change anything; I just spied on her. If I had changed anything, I would get caught because she knew I only had the password. She is smart, right? She would definitely know that I am spying on her.

Entertainment accounts, such as Netflix, Amazon Prime, Hoichoi (a Bangla video streaming service), etc., were frequently shared among friends and family. The main reason for sharing entertainment accounts with friends was to split the subscription fees. Sometimes participants also shared these accounts with friends because their friends wanted to watch a particular show available there. Participants also mentioned sharing shared entertainment accounts with romantic partners and siblings. For instance, when participants shared Netflix accounts with friends to split the subscription fees, they also shared the passwords with their wives or brothers.

Personal computer or laptop passwords were usually shared among siblings and friends. Participants were found to share their PCs with siblings if that was the only computer available in the household.

Smartphone PINs were shared with parents, friends, siblings, spouses, and romantic partners for various reasons. One of the most common reasons for such sharing was for making calls, and participants also mentioned sharing their phones with friends who did not have phones to access their social media accounts. Parents, elder siblings, spouses, and partners did require passwords for protective surveillance. Friends and siblings took the passwords to take photos, check photo albums, and listen to music. Sometimes, children or younger siblings took the phone to play games and watch online videos.

Participants did not share their work passwords with family members. However, they frequently shared work passwords with colleagues for work-related tasks including accessing files, checking/sending work-emails, printing work-emails, giving work attendance, and updating information in enterprise resource planning software.

C. Privacy Management Practices

The issue of invasions of privacy caused by password sharing came up repeatedly in our interviews. Participants described various precautionary techniques that they used to mitigate these breaches.

Most of our participants considered their photos to be private data. To protect a phone's photo gallery from being viewed, some participants used application locking software, for example, Photo Vault and AppLock, which restricted access to photos even when device passwords were shared. Other participants hid private data in places where less technically knowledgeable people would not find it.

Deleting personal data was a common practice among our participants. Some of our participants mentioned not keeping photos in the phone-gallery and deleting them from fear of surveillance. P15 used her parents' phone to communicate with her boyfriend and used deletion to hide her activity trace:

> Umm...I also used my parent's phone (to call my boyfriend) when I did not have any personal phone

to make a call. He [boyfriend] knew that it was my mother's number or my father's number. I did not take any precautions but just deleted the number from history after calling. [P15]

Participants also deleted their photos and chats because they shared phones with their parents. P3's parents did not approve of her relationship, so she used to delete all of her relationship-related data including photos, chat history, and text messages. P8 deleted any "friends only" photos shared in his WhatsApp:

> My friend sent something like a funny picture with me on WhatsApp, and if my parents saw it, they might get offended because they are old. So I deleted the photos. [P8]

D. Attitudes to Password Sharing

Many instances of password sharing were clearly voluntary, typically for convenience in daily lives. People sometimes relegated and distributed tasks with other family members that required sharing passwords. For instance, financial contributions by spouses, parents, and adult children were managed by password sharing. Younger members of the family also were given money this way to perform tasks like shopping for the family. People also voluntarily shared their subscription-based passwords, for instance, entertainment accounts. P9 described how he contributed to the cost of his friend's Netflix account, along with two other friends, and the password was voluntarily shared among them.

In some cases, participants felt comfortable sharing passwords because of the significance of the relationship. P1 described her feelings when she shared her mobile phone and card PIN with her best friend:

> If I must describe more precisely, I did not actually feel like [password sharing] was a violation of privacy. She is my best friend, and I am very much comfortable with such sharing with her, and that is why I shared my password. [P1]

Participants also mentioned that they felt good when they shared passwords precisely because it was voluntary. For example, they willingly shared their passwords to give or get help, and then they felt positive about the experience. P2 shared her email credentials with her friends so that they could submit assignments on her behalf when she did not have internet access. She also voluntarily shared her entertainment account with her best friend so that her friend could watch animes.

Some password sharing described was more obligatory: done with agreement but without real choice. For instance, sometimes participants did not feel right sharing their mobile or laptop passwords with their siblings – but had to share anyway because sharing devices was necessary for their family role. In this kind of sharing, participants sometimes monitored the activities by sitting beside those they had shared with or hid personal data. Participants mentioned being obliged to share their mobile passwords with parents or elder siblings as a form of surveillance. For instance, P3 mentioned that

her parents used to confiscate her mobile phone when they became aware of her boyfriend. P22 was not allowed to lock her phone because her mother would check whether she was having a romantic relationship or not.

Participants felt some negative feelings when they felt obliged to share their passwords. Feeling fear and discomfort were commonly mentioned in these cases. Some mentioned that they regretted voluntarily password sharing because they had to face unexpected bad consequences.

Participants also mentioned feeling uncomfortable sharing passwords when there was lack of depth in relationships with the recipients. For instance, P1 was comfortable sharing her phone password with her best friend in university. However, she felt uncomfortable sharing the same password with her classmates in other contexts.

In other cases there was real fear. Sometimes this related to losing access or money, but other times it related to severe family disapproval. For instance, P17 was having a romantic relationship which she hid from her family, but feared detection because her elder sister knew her password.

V. Steps of Password Sharing

In our axial coding, we identified three stages of password-sharing: reasons for password sharing, expectations for password sharing, and issues arising from shared passwords.

A. Reasons for Password Sharing

We identified three common reasons for participants sharing their passwords: necessity, convenience, and to allow surveillance.

1) Necessity: People shared passwords when there was any necessity with no reasonable alternative. One of the major necessities was providing assistance to parents, siblings, spouses, and friends. Participants mentioned knowing the online banking credentials of parents because they did not know how to open accounts themselves. They also knew email and social media ID and passwords for the same reason. Sometimes elder siblings helped those younger to open Facebook accounts. If a malicious person got access to the account, or problems arose in social media or email, participants shared the passwords with siblings or friends to fix the problem.

2) Convenience: Sometimes sharing was not strictly necessary (i.e. there were workarounds without password sharing) but sharing passwords made the situation easy as well as beneficial. P7 and her husband shared passwords of their banking cards so that they could skip the hassle of distributing finance in their day-to-day lives. Shared subscription fees by password sharing also brought financial benefits in participants' lives. P12 felt too lazy to go to the ATM booth sometimes and sent his younger brother with his card and PIN to withdraw cash. In his words:

> I would have gone by myself [if password sharing was not an option] to withdraw cash from ATM. It is not like I cannot do that work myself. Since I have this option now – I make him [younger brother] do it – he is very young so he listens. [P12]

One reason that has aspects of both necessity and convenience was collaboration or teamwork. This was seen mainly in academia, offices, and in close friendships. Participants mentioned opening an email account and sharing the credentials with the other group members of an academic project. Sometimes, people needed to share access to the "official" desktop computer so that other team members could work on their portion of the task.

3) Surveillance: Lastly, one common reason participants shared passwords was for protective surveillance – to allow others to monitor their usage of devices or accounts. In the social context of Bangladesh, we use *surveillance* beyond its widely accepted denotation of monitoring private information – it also meant "looking out for each other". This was certainly experienced by young children, so that parents and older siblings could monitor activity to provide protection. For instance, when mothers were monitoring their children, they were not surveilling them to check what they were doing. Instead, the mothers were surveilling the children to look after them to not fall into any danger. However, this continued as children grew up, and was also experienced by women who were expected to allow monitoring by their spouses. P15 described her feelings:

> I feel sort of uncomfortable when I share [my phone/password] with parents; for instance, my chat box is open, and my phone is at my father's hand. However, I have never taken any measure for that (laughing). [P15]

B. Expectations for Sharing Passwords

When participants shared their passwords as part of different relationships, they usually had some unspoken expectations about how the recipients would use the passwords. Conversely, the recipients also had some expectations which explained why they thought passwords should be shared with them. This section will discuss some of the expectations from both the sharer and the recipient's points of view.

1) Sharer Expects No Exploitation: When participants shared passwords with family and non-family relationships, they mainly expected that the recipients would not would not harm them or voluntarily access personal data. For instance, they usually expected their siblings not to invade privacy when they shared their devices and accounts with them. Expectations remained quite similar when they shared their passwords with non-family members but they usually shared to those non-family members whom they trusted like family.

2) Sharer Expects Recipients to Forget Passwords : Participants also sometimes expected that the recipients would forget the passwords after the tasks were done. These types of expectations were for both family and non-family members. For instance, device passwords (e.g., smartphones) were seen shared in spontaneous situations in the family context, but participants mentioned believing that none remember each other's passwords. Participants also mentioned that they believed their colleagues did not remember their work-related

passwords when shared. For such expectations, participants usually did not change the passwords after sharing.

3) Sharer Expects Reciprocal Password Sharing : When participants shared their passwords with someone, they also expected that the recipients would share similar passwords with them. Such reciprocal expectations were mainly seen in romantic relationships – especially in unmarried relationships. Married couples also had mutual password sharing expectations; however, some wives were also fine with letting their husbands manage their passwords without knowing their husbands' passwords. None of our participants who were having pre-marital romantic relationships mentioned accepting one-way password sharing.

4) Sharer Expects Surveillance : Surveillance was expected in both parental and romantic relationships. Parental surveillance was culturally expected and accepted by our participants. As a result, when participants shared their passwords of mobile phones with their parents for making phone calls, they expected their parents to check their messages, photos, or other private data to find out about their romantic relationships (or other personal relationships). Similarly, in romantic relationships, participants shared the passwords of mobile devices and social accounts with their partners expecting them to check their private activities. In both of the cases, participants shared their passwords just to prove they had nothing to hide.

5) Recipient Expects Transparency : In both parental and romantic relationships, transparency of digital activities was expected by the password-recipients. In romantic relationships, partners needed to share their social media or mobile phone passwords to become transparent or demonstrate trust. Parents expected transparency for performing parental duties. P22 explained such a situation:

> I was not allowed to have a password on my phone. I had to give my phone access to my mother whenever she asked for it. She said that she needed to know what her daughter was doing. I have no issue with it. [P22]

6) Recipient Expects to Assist : In our interviews, we found that the parents of the participants generally needed technical assistance to operate their mobile phones, manage social media accounts and digital financial accounts. The adult children usually took care of these technical problems of their parents, and part of the assistance required them to know the passwords if they did not already.

Friends usually did not expect passwords of each other, however, they usually either asked for help or wanted to help. Sometimes, the only way to help friends or get help was by password sharing. For instance, P16's elder sister was having a problem with her Facebook, which she failed to fix. So P16 took her password and checked what was happening there to help her.

C. Issues Arising from Password Sharing

In our interviews, participants described a variety of problems that arose from conflicts between motivation and expectations for shared passwords. These tensions resulted in

problems affecting interpersonal relationships, privacy, and usability.

1) Interpersonal Difficulties: Tensions between motivation and expectations sometimes affected people's relationships. Our participants described incidents such as harassment (including blackmail and stalking) using passwords that had been shared in the context of a former relationship. They also described breakdowns of trust relationships between people, and instances of impersonation. Participants also described a fear of being judged, because any reason for sharing allowed some measure of surveillance, and some participants described the role of shared passwords in that concern.

2) Privacy Problems: By definition, privacy is compromised when people share their passwords. However, in our interviews it became clear that even when participants shared their passwords, they expected recipients to respect their privacy, and were unhappy when this boundary was crossed. One privacy problem resulting from sharing was notification privacy. Participants described how even in situations where they trusted participants not to snoop, they retained concerns that private notifications would appear while a device was being shared. Another tension with sharing motivation was that password recipients were sometimes inconsiderate of the privacy of the original account owner, and would share accounts belonging to more people, without consideration of the original owner's privacy.

3) Usability Problems : Our participants described a variety of usability problems they encountered when sharing passwords with different relationships in different contexts. People generally expected that systems would behave in a way that enabled sharing, but found that systems are often designed to prevent such sharing. One example of this was multiple access problems: some systems do not accept multiple concurrent logins, which caused frustration and confusion.

> I gave my PIN [to a close friend]. But quickly after that, I realized that I could no longer log into my account. [...] Later, we realized that it showed an error since the account was accessed from two separate devices. So, if she got out I could log in again, and the account was recovered. So, even though I did not lose anything, it was still very much unpleasant for me. [P4]

4) Password Management Problems : In the interviews, participants described the burden of having to create and manage their parents and spouses' passwords on top of their own. Another frustration was the password change process, which participants used more often than usual when trying to manage sharing (and un-sharing) accounts. The management of reused passwords was a problem in sharing scenarios as well, causing potential privacy problems and also causing participants to need to change multiple passwords when un-sharing accounts.

VI. CULTURAL FACTORS OF PASSWORD SHARING

During the process of axial coding, we identified aspects of cultural beliefs and practices that played an important role in password-sharing in Bangladesh. Factors such as gender, social norms, and religion impacted what passwords, which whom, and when they needed to be shared.

A. Gender Roles

Bangladeshi society defines different roles and expectations for men and women, including the motivations and expectations for password sharing.

1) Gendered Surveillance: In our interviews, gender had a clear impact on the supervision and surveillance of online activity. Particularly, parents and elder siblings (usually elder brothers) monitored women to ensure that they were not conducting illicit romantic relationships. This surveillance seemed to relate to the vulnerability of women in Bangladeshi society. For instance, even in graduate school, P3 endured strict surveillance where she had to share passwords of her mobile phone devices, and go to lengths to conceal her communications:

> During my Master's program, I met my (ex) boyfriend. During that time, my phone was seized or checked for messages by my family. So I would always keep my phone clean. I would delete the call history or chat afterward. [P3]

Both male and female participants mentioned surveillance by parents and elder siblings, but the nature of the surveillance differed by gender. Parents and elder children generally did not monitor younger male siblings' online activities. Younger brothers' romantic relationships were tacitly accepted and silently ignored by their elder brothers.

> I have never monitored him intentionally, but I accidentally noticed a few of his activities. For instance, his phone rang, and the screen was lit with the picture of the person who called [younger brother's girlfriend]. I realized just looking at the phone who called and what the relationship was, that is it. I ignored it. [P20]

2) Gender-Related Harassment: In our interviews, participants related a number of incidents of bullying and harassment that happened as a result of password sharing. In these stories, participants mainly talked about how women's private information was leaked and used to harass them. It appeared that the same password-related actions rendered women more vulnerable than men. One situation mentioned multiple times was harassment after a breakup as a result of passwords shared during a relationship. Gendered harassment using social media accounts seemed to be a particular threat: boyfriends leaked personal photos, chats, and videos and sometimes impersonated their girlfriends. In one example, a male friend of P18's had access to his girlfriend's social media. The friend used to log into his girlfriend's account and abuse her male friends from the friend list. In another example, P8 described the harassment that her female friend faced after her breakup:

> She shared her Facebook account password with her boyfriend. He found some personal information from her Facebook and later used those in a harmful way.

I felt terrible – I think she should not have shared her password...He showed her private conversations to his friends. ... He showed those in personal chats, and he also uploaded the screenshots of the conversations in his Facebook story. [P8]

In extreme cases this harassment led to severe impacts and social estrangement for women. P22's female friend had to leave school because a sensitive video shared by a friend of a friend went viral.

On the contrary, similar password sharing actions did not lead to the harassment of men in Bangladeshi culture. None of the participants mentioned any incidents of harassment affecting men. P12 did not even change his Facebook password after breaking up because he did not think that her girlfriend could harass him.

Yes, I thought about it [harassment]. But again, I thought how much she could do there – she could knock my friends or post something bad on my account. I do not think we will do something like this – I have that strong belief. I do not know, but I do believe that. [P12]

3) Gendered Mothers' Role: In our interviews, we noticed that children (including adult children) had more access to their mother's phones than their father's. For instance, P5 mentioned that he knew the password and had access to his mother's phone to make calls anytime, but he did not have any access to his father's phone. Culturally, mothers' devices are considered as shared devices in the family. Besides, children were more comfortable taking mothers' phones and would not consider taking their father's [36].

B. Social Norms Gave Collectivist Identity

Social norms refer to social guidelines of acceptable and unacceptable behaviors or actions of the member of the society. These norms may be either unique to a specific culture or common in multiple cultures. Social norms also have an impact on participant's identities. For instance, one of the social norms of Bangladeshi culture is for people to help each other, often by sharing (property, personal belongings like clothes, and devices). According to Hofstede's definition [16], this cultural characteristic is called the collectivist dimension. In this way, social norms create the collectivist identity of Bangladeshi people. This identity motivates them to "help" because they are supposed to help others, and the person receiving help is entitled to get the help. So when our participants shared their passwords, they were not only sharing their passwords, but were also trusting the password recipients with their secrets and helping them. Similarly, surveillance was also expected and accepted in society for collectivist identity [23].

1) Parental Surveillance is Accepted: Parental surveillance was expected and accepted in Bangladeshi culture. However, participants were not always happy about such surveillance. For instance, they repeatedly referred to them as "brown" parents with a criticizing expression that they should be like this. But they complied with the demand for surveillance

anyways. P22 described the nature of the surveillance that she faced when she was a medical student:

I was not allowed to have a password on my phone. My mom would get angry if I did. My mom was like, I need to give my phone access to my mom whenever she asks for it. She said that she needed to know what her daughter was doing. I had no particular issue with it. So, when I was in the hostel [student dormitory], I would use a simple PIN to unlock my phone, but no app locks were there back then. But whenever I was at home, I would remove the password for my mom because she would often check my phone. And at night, I would have to leave my phone with my phone before I went to bed. [P22]

Some participants did not use passwords in the family context because the presence of passwords implied there was something to hide. For instance, P2 did not put any password on her Facebook or Messenger because the lock would create questions about what she was hiding there. So, if she did not have any lock, it would mean that she had nothing to hide and would not create suspicion.

P3 endured extreme parental surveillance, and she expressed great frustration about the situation.

This is different from the Western world. In the West, they do understand personal space. Our parents cannot think of yet that their children might have personal lives. They still think we are kids. My family does not want to understand that I completed my bachelor's and master's, and currently, I am doing a job. I might have a personal life. [P3]

2) Culturally Impolite to Say "No": In general, participants found it difficult to say no to password sharing with friends and colleagues. It was culturally impolite to say no on the face when someone asks for something. Also, password sharing was a widespread scenario, and other people around them also shared passwords. Therefore, people might find it impolite if the participants had not shared their passwords when asked. For instance, P15 could not say no to her colleagues when they asked for her bank card PIN to take advantage of a promotional offer. She was also okay with this sharing because she noticed her other colleagues doing the same. She feared rejecting the request to share a password might harm the relationship. P9 also shared passwords because he did not want to be impolite, but he described his uncomfortable feeling during the interview:

At work – someone would say that their system was not working. Can I use yours? - They are colleagues, so I cannot say just no on the face. Although everyone signs that we will not share the passwords, but we all do it. So I cannot say no. [P9]

C. Religious Identity

In our interviews, participants described ways in which they perceived elements of their password sharing behaviour to be influenced by their religious identity. The majority

of the Bangladeshi population follows Islam, and Islamic identity is sometimes more important for some people than other identities [17]. Such identity also shaped participants' motivation to share (or not share) passwords.

1) Impact of Religion in Password Sharing: Islam is the primary religion of Bangladesh, and more than 90% of our participants were Muslims. We noticed that participants' religious values were greatly intertwined with their cultural pattern of sharing passwords, and they frequently cited religion as the basis of their password sharing, although it could have been because of cultural practice itself. For instance, participants, especially female participants, repeatedly mentioned that they came from "conservative Muslim" families to describe the nature of parental surveillance. Sometimes, participants used their religious beliefs to define which data was sensitive to them. For Muslim women who wore the hijab, non-hijab portrait photos were considered too sensitive to be seen by others or potentially leaked. This belief sometimes led them not to share passwords or at least, become extra cautious when sharing was a necessity. For instance, P4 wore a hijab, and head-covering was really important to her. When P4's phone was giving trouble, she was very concerned about her non-hijab photos as the technician who would repair the phone might see those. Therefore, she uploaded the photos on her Facebook with "only me" access and removed the photos from the phone. P4 also had to share her phone with relatives' children when they came to visit. She mentioned remaining vigilant while such sharing so that they could not go to her photo album where she kept her non-hijab photos.

VII. A Model for Understanding Access Sharing

When we reflected on our data, we realized that all our participants knew password sharing was bad for security. However, they were still sharing the passwords because it was necessary to allow access to some accounts for some reasons in some relationships. They wished to allow *access* and the easiest (and often only) way was to share *passwords*. Our analysis also indicates that cultural factors (gender, social norms, and religion) meant that sharing accounts was accepted, and even imperative. This then led to complex expectations related to account-sharing, and sometimes gave rise to stressful issues.

A. Reasons

In our interviews, participants shared passwords out of necessity, convenience, and to allow surveillance. Cultural factors have impacts relating to these reasons. For example, the collectivist social norm of Bangladesh is that people should trust their family members with their financial information and share them when necessary. Thus, unwillingness to share access to the finances means unwillingness to share access to the finances in case of necessity, which is not socially acceptable. It contradicts their collectivist value that families should help each other. Also, such unwillingness refers to a lack of trust in family members – which is not socially acceptable either. Similarly, gender roles also affected participants' reasons for

sharing passwords; for instance, women voluntarily shared their passwords with their mothers for surveillance because they acknowledged their mother's role to protect them from gendered harm and harassment.

B. Expectations

When participants considered sharing their passwords, they had some preconceived expectations from the recipients of the passwords. Generally, these expectations were rooted in cultural factors. For example, after sharing financial account access, the participants expected that recipients would not harm them by stealing money from their bank. It mirrors the idea of collectivism, where people take care of each other even by sharing finances. Similarly, parental surveillance is culturally accepted in Bangladesh; thus, when parents were given access to any accounts (e.g., mobile devices), participants expected that the parents would go through their phone log to check what they are doing using phone, with whom they were talking etc.

C. Issues

In our interviews, many of the problems that participants described with password sharing had to do with the tensions between the desire (or pressure) to give access, and the wish to limit or change access to accounts.

Although access was often shared as a friendly, conciliatory, or prosocial gesture, it sometimes led to a variety of problems. Sharing access sometimes created interpersonal tensions, whether major (such as harassment), or more ephemeral (such as the fear of being judged). Participants shared passwords as a means of giving access, but sometimes encountered technical problems where multiple users were not allowed to use a system.

Participants sometimes described mixed or contradictory sentiments about password sharing: participants moaned about surveillance even as they accepted it for cultural reasons (among them the impoliteness of saying no). They were frustrated by privacy problems, but still willingly shared their devices and expected their friends and family not to snoop. These pressures were often described with a gendered dimension, with women experiencing more surveillance and greater invasions of their privacy.

VIII. Discussion

The cultural norms and values of Bangladeshi people make it essential to share access to information. These cultural values pre-date connected devices and online activities. Sharing typically happened in person, and the action was more visible to everyone involved. Before the rapid expansion of mobile phones, a typical urban and middle-class family would have landlines (5.2% homes in Dhaka still have landlines [19])— and parents would listen in on their adult children if they used it for talking to friends. When the internet, smartphones, and social media came into the picture, the act of surveillance became more complex, but the expectation of surveillance remained the same.

Moreover, these technological inventions from the West also encourage the idea of "personal space" in the form of personal devices and online accounts, which contradicts the collectivist values of Bangladeshi society. Outside of the family, when friends needed monetary help, writing a cheque was an approach to do it in the past. Now friends still expect these kinds of monetary help, but going to the bank to withdraw money using a cheque is not convenient anymore since sharing card credentials serves the same purpose more efficiently (albeit more insecurely). Since the cultural expectations remain unchanged, it is not acceptable to say no to a request and deny giving such help. These mismatches between cultural expectations and technological behavior make people adopt insecure behavior like sharing passwords to share access. Besides, password sharing is very usable — all the users need to do is to tell the username and password. This share-all-or-nothing model poses great security risks but there has been little design work to create sharing tools that support such cultural factors.

A. Privacy and Security Technology

Sharing passwords is a ubiquitous practice in part because of its ease, but it grants *full* account access, even when that is not necessary. This full access allows impersonation in a way that was typically not possible in offline contexts: for example, if a boyfriend phoned a family landline and was answered by his girlfriend's mother, he would just hang up because he would know that even asking to speak to the girlfriend could was being surveilled and could create trouble for her. Password sharing has no transparency: all roles are collapsed into one, making the spy indistinguishable from the account owner.

In enterprise settings, a similar issue is addressed by role-based access control (RBAC) mechanisms. Having multiple levels of access to information, along with auditable records of that access might partially relieve some of these inequities. For example, there might be a separate credential set to access online banking, and see transactions, but not make transfers. Enterprise RBAC has struggled with usability problems [6], and these management and usability problems would presumably persist, but could perhaps be adapted for this kind of context.

An existing successful implementation of this kind of technology might be the sharing features in some password managers[2]. These tools at least acknowledge the multiplicity of roles in a personal setting and offer features such as allowing sharing access to documents or folders without sharing passwords among team members. Sharing changed passwords is an option also offered by password managers. Password managers also delegate access and credentials to the designated candidate after a certain period of inactivity or death.

Our study found usability challenges like multi-login errors and difficulties in un-sharing access when participants shared their passwords. Such problems could be reduced with a password-sharing management tool. The features of this tool could be to allow multiple access (for example, Apple ID allows family sharing[3], monitor shared access activities, and remove the shared access easily.

A contrasting approach might be to allow some activities without any need for authentication. For instance, on some mobile devices, photos can be taken without unlocking the phone. While the phone is locked, only pictures taken in the current session may be viewed. Since information is leaked when passwords are shared, designers should carefully consider whether passwords are needed at all. The line between public and private information (and accordingly, access to it) might be different in different cultural contexts.

Another factor that could affect transparency in online accounts and devices might be the way that information is recorded (or not recorded). For example, monitoring can be prevented by activities that leave no lasting record, such we see with Snapchat and Facebook's vanishing message mode (which emulate the transient quality of conversation). Conversely, logging all access could reveal when surveillance has occurred.

Exploring and improving such design concepts might be helpful in better matching technological support to cultural norms. Care is needed, however. One consideration is that sharing passwords is relatively quick and easy, so alternatives must match or exceed that level of usability. More importantly, the cultural context cannot be ignored. If the act of sharing is itself a cultural imperative, it must remain an act of easy generosity on the part of password sharers. The case of allowing surveillance is even more challenging, because preventing or restricting surveillance itself contradicts expectations.

As an imagined example of how technology could better support password sharing norms in collectivist cultures, we offer the following hypothetical scenario:
Fatema is traveling to a rural area without cell data access, and needs Abdul to send an email on her behalf immediately, and she wants to give him access to her email to do so. She uses a send-only account token for granting access that can be shared easily but securely by a phone call. By using this token, Abdul is able to log into her email account, and create and send the email. He cannot read any previous emails since he does not have that permission. To meet his expectation that she trusts him, he will see a "no new emails" notification when he logs in, instead of being shown that his email-reading permission is blocked. When Fatema is able to be back online, she accesses the log file to see what actions were completed, and sees that Abdul did not log out of her account. She revokes the access from the code she shared with him, meaning he will no longer be able to access her account, and must contact her for a new token if he needs further access.

This is a hypothetical example of how existing technologies might be adapted to share passwords in a secure but culturally acceptable way in the context of Bangladesh. However, more research is required for writing security policies and devel-

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[2]https://www.lastpass.com/features/password-sharing

[3]https://support.apple.com/en-ca/HT204976

oping authentication mechanisms for different applications to develop culturally appropriate and secure password sharing.

B. Culture and Technology

Our study showed that some interpersonal issues arose from the mismatch between cultural expectations and technology behavior. For instance, when participants felt obliged to share their passwords but at the same time felt the need to protect their privacy, they felt uncomfortable and afraid of being judged. At the same time, access sharing sometimes led to the breakdown of trust and relationships when the recipient gets hold of the data that were not meant to access, causing relationship tensions. We acknowledge that technological solutions cannot resolve such tensions and interpersonal conflicts because these are human-specific and culture-related issues.

C. The Cultural Expectations of being Young in Bangladesh

The participants in our study were relatively young, and members of a demographic group who were in the process of establishing adult identities. Most were educated, held jobs, and were in the process of establishing lasting romantic relationships. They were also widely exposed to media and cultural expectations from the West. However, they were simultaneously experiencing the cultural milieu of being Bangladeshi: living with family, expecting to be monitored by family members, highly gendered roles, and general adherence to collectivist norms. The tensions in these roles create a group of people who give an interesting insight into the tensions of password sharing.

In our interviews, participants expressed different attitudes toward different aspects of how culture affected password and information sharing. In general, we mainly heard frustrations expressed about the surveillance of communications, and the impact on interpersonal relationships – it seemed like this was the place that the mismatch of technological affordances and cultural norms was a problem for participants. The cultural expectations around surveillance and sharing, and how they affected money and finances seemed to come up less in the interviews, and not to bother people.

Young adulthood in the West is often framed as being about a progressive move toward individual decision-making and responsibility [5], and the cultural Western expectation is that parents will relinquish control over interpersonal relationships (particularly romantic relationships) much earlier. In our interviews, the collectivist nature of Bangladeshi society shaped the meaning of adulthood, and the emphasis on sharing and "togetherness" created a very different journey into early adulthood. Of course these cultural norms are expressed differently by different people, and there may be significant variation from family to family. However, passwords and account access are largely designed around the cultural expectations for adults in the West, and do not necessarily serve the Eastern cultural context well.

IX. CONCLUSION

This paper explored the factors affecting and motivating password sharing for young adults in Bangladesh. We found that password sharing is a common phenomenon in Bangladesh, and young Bangladeshi people share their passwords for various reasons in different situations. However, when young Bangladeshis share their passwords, they actually share access to different accounts through passwords because sharing access is necessary, convenient, and sometimes culturally obligatory. Since the current technical ecosystem does not accept shared access, this sharing must be done by sharing passwords. When people share their access, they do not necessarily mean to share all information or share all the control of their accounts. Nevertheless, sharing access by password gives the same controls as the account owner to the recipients of the passwords. This unmet expectation from technology devices causes different security and usability problems.

Our qualitative analysis found three cultural aspects that impacted people's password sharing: gender roles, social norms, and religion. We also identified stages of password sharing: reasons to share passwords, expectations of the sharing, and issues that arise. We discussed how cultural factors affect these stages of password-sharing. We identified some tensions and interpersonal conflicts due to cultural factors' impact on password sharing; however, we acknowledge that some cultural and human problems cannot be solved with security solutions.

Our study focused on a narrow segment of Bangladeshi users, those aged 18 to 39 years old, who were relatively wealthy and well-educated. This sample undoubtedly affected the results of our study, as these participants had access to a variety of technology and experiences that are not accessible to all Bangladeshi people. However, our model still suggests that cultural factors impact how security mechanisms are used in practice, and that the Western-centred design of password systems and access mechanisms does not reflect the context of use for many users. In future work, it would be interesting to triangulate the perspectives seen here by interviewing different demographic groups within Bangladesh. For example, we could conduct more interviews in person with Bangladesh's older populations and rural populations. These groups might give different perspectives on the cultural norms and roles expressed in our interviews with young people.

Our proposed model may not be valid for all cultures but can still be applied to similar cultures as Bangladesh, and may yield insight helpful in understanding other contexts. In future, our study also could be used to compare password sharing in different cultures to better explore the issues that we identified. We might also explore, with caution, technological support that better aligns with cultural norms and expectations. Our main finding is that password sharing is not about sharing passwords, but rather allowing access: and that involves strong cultural norms and expectations.

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