Personalised Services in Social Situations: Principal–Agent Relationships in Account Sharing

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We present a qualitative study of how personal accounts on online services, such as Tinder, Netflix and Spotify, may be shared in particular social situations. We draw from agency theory's focus on *principal–agent relationships* and Goffman's work on *frames* in analysing situations where others are allowed to use personal accounts, either for a shared purpose or on behalf of the account owner. We deploy Goffman's concepts of *regrounding* to understand how interests behind activities are transformed and *brackets* to draw attention to the boundaries of different frames, and how these are incurred or broken in situations that exceed personal account use. Based on a set of 43 written descriptions of account sharing, we depict how employing others to act as agents to use one's personal accounts may lead to playful or serious use. Additionally, we discuss consequentiality of sharing personalised services, considering both what services might reveal about the account owner and how sharing takes place in the context of relationships. We contribute by illustrating how users' relationships with personalised services are complicated by the different interests that are served when accounts are shared.

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

Additional Key Words and Phrases: Account sharing; personalisation; principal–agent relationships; frame analysis; indirect use

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1 INTRODUCTION

Streaming services like Netflix use recommender algorithms to predict what we might like to spend time watching, drawing on data about us. Similarly, dating services such as Tinder try to predict who we might like to spend time watching Netflix with. We often engage personalised services with others, by letting them use our accounts [e.g. 48] or by using such services together [e.g. 46]. Sometimes, in turn, we use other people's accounts on their behalf. Prior research has illustrated how people share accounts and devices with others and use them collaboratively [e.g. 6, 27, 38, 45]. While some services are designed with such collaborative use in mind (modern co-authoring tools being one prime example [e.g. 24]), the personalisation integral to many popular services by definition implies and assumes individualistic use.

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We conducted an empirical study of situations where personalised services are used in social settings, focusing primarily on instances where the owner of an account gives it for someone else to use. We approach the shared use of personalised services by examining how relationships between individuals and their interests unfold in relation to these services in different frames of activity. Our research questions focus on (1) the different interests served in situations of shared use of personalised services, (2) how these interests are related to the current frame of the activity, and (3) how the relationships between different frames are (or are not) managed.

We collected altogether 43 written, empirical accounts depicting how matchmaking and personalised services are shared in the everyday. We were both interested in (1) matchmaking services where individuals have a profile that is visible for others and the main activity is related to interacting with others and in (2) streaming services geared for offering experiences tailored for individuals' personal tastes. Driven by our research materials, our analysis focuses primarily on the dating application Tinder, the music streaming service Spotify, and Netflix, a platform for streaming movies and TV shows. Theoretically, we draw from agency theory [e.g. 28, 40] and Goffman's frame analysis [13].

In presenting our findings, we discuss motivations for account sharing briefly to set the scene. Our main findings, then, describe how allowing others to use one's personal accounts – that is, authorising agents to act on one's behalf – can complicate the account owner's relationship with personalised services. First, in regards to authorising another person to use Tinder or other services where an individual has a profile from which to interact with other service users, we found a continuum from serious to playful shared use. We refer with serious use to situations where the authorised individual acts in line with the account owner's long-term interests when using their account. With playful use, we refer to activities such as making choices that the account owner would not make, for the purposes of (mutual) amusement. Second, our results illuminate that when others use services that are personalised based on prior, individual behavior, the service may end up revealing something about the account owner. When used in social situations, the prior usage data collected by these services do not necessarily match with the interests of those currently engaging the service – and, subsequently, after instances of sharing, personalised content may not match the account owner's wishes and expectations.

When we consider not only other humans but also recommendation algorithms as potential agents, it becomes clear that the two encounter different problems in acting on the account owners' situation-specific interests. Most importantly, algorithms are blind to the frame of the situation and incapable of reflexivity, while other individuals are not. On the other hand, human agents may have conflicting interests in acting on behalf of someone while trying to simultaneously attain their own goals [40]. Our study contributes to the understanding of personalised services in social situations by drawing attention to how the interests that are served in these situations complicate the relationship between the account owner and the service.

2 BACKGROUND

In the following, we first discuss prior research on the sharing of personal accounts and devices, considering both account sharing and co-located, cooperative uses of technology. We then introduce our theoretical starting points in agency theory [28, 40], with primary emphasis on principal–agent relationships, and Goffman's frame analysis [13].

2.1 Shared use of services and devices

Prior research within the Computer-Supported Cooperative Work (CSCW) community has drawn attention to practices such as password sharing [44] and the sharing of personal devices and accounts [e.g. 22, 27, 48]. While prior research has considered sharing of a variety of things, ranging from

individual preferences to physical and virtual objects [12], our focus is on how personal accounts on online services are shared between individuals. For example, in a study of device sharing within families, Matthews et al. [27] found the categories of borrowing, mutual use, help-seeking (often for setting up a device), and broadcasting for mutual viewing. In addition, they point out that sharing is sometimes accidental: individuals may grab devices that they at a glance believe to be theirs, but which actually belong to other household members. As another example, Jacobs, Cramer & Barkhuus [21] examined couples' intentional and unintentional sharing practices regarding personal accounts and devices, focusing both on participants' sharing practices and the boundaries of what they considered shared and private in the context of an intimate relationship. Furthermore, scholars have also discussed how digital services are so intertwined with our relationships with each other that when relationships fall apart these services complicate the breakup: necessary actions, such as dividing digital asset, may prove difficult [29], and digital traces left by our interactions with others persist after relationships end [20], sometimes causing distress and making it harder to move on. Thematically close to our focus in this paper, Sun, Oliveira & Lewandowski [46] considered shared uses of YouTube and found tensions related to how recommender systems reveal past information about their users and how encountering another person's recommendations affected service use as these often felt useless.

While the personalised design of many services assumes individualistic use, prior research has challenged the notion of personal devices and accounts as the norm, especially when it comes to technology use in the Global South [e.g. 1]. This line of research illustrates how purportedly personal devices, such as mobile phones, may be shared due to a lack of skills or education, economic factors, or cultural norms [e.g. 35, 38]. Sharing allows those who do not have their own devices or lack the skills necessary to use them to still benefit from access to digital technology. When shared, more people can benefit from a single device [38]. Importantly, Rangaswamy & Singh [35] have also shown that the sharing of personal devices cannot be reduced to follow only from economic factors but that it can, rather, be better fitted with and encouraged by cultural practices. For example, in a study of mobile phone use in India, some households were found to have multiple shared phones among them, despite tensions that emerged between the norm to share and the personal nature of the device [35]. Similarly, Ahmed et al. [1] have documented how cultural expectations of sharing — for example, in situations where a husband surveils the wife's technology use — clash with desires for personal use. The authors note that the situation may be further complicated if the devices and accounts are shared beyond the married couple, as the wife may then have to account not only for her own actions but also someone else's use of the device. Similar normative expectations that women should be willing to let men control their device use in patriarchal societies have also been discussed by Sultana et al.[45].

Beyond families and households, sharing episodes with personal devices have been studied, for instance, by Weilenmann and Larsson [47]. Already in 2002, their ethnographic study of teenagers' mobile phone usage demonstrated how it became a social endeavor in face-to-face situations: phones did not stay personal but they were handed over and otherwise assimilated into the social interaction. More recently, co-located use of mobile devices has been studied in an effort to depict practices of smartphone usage for search, navigation, and messaging [e.g. 5–7]. For example, Brown, McGregor & McMillan [6] have drawn attention to how interaction with search engines is interwoven with face-to-face interaction. The authors point out how objects to search for arise from conversations among people engaged in co-located interaction. In contrast to these studies that consider cooperative, co-located practices of smartphone use or device and account sharing within households, we specifically focus on the question of whose interests are served when people share accounts in streaming and matchmaking services.

2.2 Agency theory: Principal–agent relationships

The construction of user positions has been discussed in Human–Computer Interaction (HCI) literature at least since Woolgar's [49] foundational work on how system designers construct the user. More recent research has, among other things, drawn attention to how the social media giant Facebook constructs its ideal user [11] and how location-based social networks may configure the user in ways that neglect those in rural settings [19]. The concept of a user – as defined by service designers – is often challenged when we consider empirical accounts of technology use. As one example, Baumer and Brubaker [3] bring up the indirect use of technology, referring to situations where individuals use technology on behalf of others.

In agency theory, relationships where one person acts for someone else are referred to as *principal–agent relationships*. While discussion pertaining to principal–agent relationships is more prevalent in agency theory as applied in economics than other social sciences [40], situations where someone acts on behalf of someone (or something) else are of course not limited to economic life. Rather, as Shapiro [40] points out, phenomena related to principal–agent relationships may be less discussed in fields like sociology exactly because such arrangements are so ubiquitous in everyday human activities. Where prior social scientific research has considered principal–agent relationships, this has been, for example, in the context of intensive care where agents have to make decisions on behalf of patients who cannot speak for themselves [41]. These decisions may be matters of life and death, highlighting the importance of principal–agent relationships.

There are a myriad of situations where we do things on behalf of someone or something else, rather than acting for ourselves. As individual actors, we are capable of acting for a range of other actors, including individuals, organisations, and principles [28]. Agents can choose their principals, that is, they do not act for just anyone but discern between potential options. Meyer and Jepperson [28] have emphasised that the taking up of different principals is often a rapid, even fleeting, act:

> "In fact, a striking feature of the modern system is the extreme readiness with which its actor participants can act as agents for other actors. They can do this, with rapidity and facility, as employees and consultants, as friends and advisors, as voters and citizens. They can do it in exchange for resources, or as a free good to the world around them." (p. 107)

Moreover, agents may be serving interests of groups or communities, some of which they themselves are part of, and others that they are not. Related to this, Shapiro [40] brings up the basic dilemma of principal–agent relationships: goal conflicts where not only an agent's personal interests may be at odds with those of the principal, but the agent may also serve many principals at the same time, further complicating the issue. This notion invites us to consider agency from a relational standpoint where agents act in relation to different principals. As another point of tension, the question of who is serving whom may become problematic when both parties consider that the other should serve them, such as in the case of policy implementers and entrepreneurs that Niska & Vesala [30] bring up in their research.

Connecting back to social computing and social media, another type of agents are different technologies that are – to some degree – capable of acting for interests that their human principals have defined. As Seaver [39] has emphasised, algorithms are always built by some human(s) to serve some goal and eventual users may (try to) direct them in line with their own interests:

> "There is no independent software domain from which computers send forth their agents to insinuate themselves into our cultural worlds. Like any other technology, algorithms can produce unanticipated results or prove challenging to manipulate, but they have no wicked autonomy. ... these devices work at the pleasure of people who can change them, turn them off, or reorient them toward other goals." (p. 379)

In computer sciences, recommender systems are sometimes conceptualised as personalised information agents, building on the idea that they are supposed to serve users' interests by filtering content for them [e.g. 10, 14]. Yet, these personalised services do not understand rapid changes in the status of their users and thus act (at best) as rigid agents. Problems stemming from this rigidness and, moreover, from the lack of reflexivity compared to humans have been discussed in the context of automated decision making where algorithms have to be corrected by humans to arrive at acceptable outcomes [e.g. 2, 33]. As a further example of this rigidness, we can think of instances of algorithmic cruelty where connections created or broken by technology cause distress to users [e.g. 9, 16]: Brubaker, Hayes & Dourish [8] describe a situation where Facebook reminded a study participant of their Facebook friend's birthday, and when they went to congratulate the friend, they found out that the friend had passed away. Similarly, Pinter et al. [34] discuss how social media algorithms sometimes deliver hurtful content about users' former partners.

In the following, we consider both humans and algorithms as agents in the sense of them serving someone else's interests. A noteworthy difference between human and software agents is, of course, that human agents have their own interests which they have to fit with those of any principal they agree to serve. Software, on the other hand, does not have interests of its own in the same way, even though those developing and deploying it do [17, 39].

2.3 Goffman's frame analysis

Finally, we draw from Goffman's work on frame analysis, following prior work that has built on the concept of *frames* in studying technology use [e.g. 15, 18, 32]. Frame analysis, as its name implies, is not only a theoretical perspective but also a methodological approach. Goffman [13, p. 8-10] describes frames as providing answers to the question "what is it that's going on here?" In other words, Goffman's approach entails that people answer this question by observing and interpreting activities through different frames. Frames, then, are a way to organize different meanings individuals relate to a particular situation. According to Goffman [13, p. 85], frames incorporate both participants' responses and the world they are responding to, that is, they are thoroughly relational. Goffman [13, p. 251-252] called the borders of different frames *brackets*, referring to the spatial and temporal markers that indicate where different frames of activity begin and end. For example, in theater, the closing of the curtains serves as a temporal bracket that terminates the frame of the play.

One way of using frame analysis as a method is to identify how individuals frame the activities in which they participate[1]. An example of how participants can actively change the framing of a situation is what Goffman [13] calls the *keying* of frames. When keyed, an activity *"is transformed into something patterned on this activity but seen by the participants to be something quite else"* (p. 41.) In this study, we approach changes from individualistic use of personalised services to instances of principal–agent relationships (where another person uses the service on behalf of the account owner) as reframings of activity in this Goffmanian sense. Here, this transformation is particularly relevant on the topic of *regrounding* [13, p.74], which refers to a change in the motivation for an activity. Regrounding is especially important as it ties together frame analysis and agency theory.

To sum, our analytic approach connects frame analysis and agency theory by incorporating Goffman's idea of an answer to what is going on, while also drawing attention to the question of whose or what interests are relevant in the situation. With the help of this analytic approach, we consider using a personalised service on behalf of someone else as a regrounding where one's private interests are substituted by someone else's as the basis for action.

[1]While we focus on micro-interactional framings, frame analysis has also been used in studies of social movements and collective action to identify whose or what interests are relevant in the situation [e.g. 4, 26].

3 MATERIAL AND METHODS

We build on a qualitative study comprising 43 written, empirical accounts of sharing personalised services. We chose a qualitative, exploratory approach given the recurrent and mundane nature of account sharing and co-use. We consider what kinds of principal–agent relationships come up in the social situations that participants described, investigating what interests are served by using these services in differently framed situations and how these situations relate to both past and future instances of service use. In this section, we, first, describe our research material in more detail. We, then, discuss our application of Goffman's frame analysis [13] as the method of analysis that guides our study of principal–agent relationships.

3.1 Research Material

Our research material comprises 43 written, empirical accounts of sharing personalised services, collected between November 2019 and May 2020. The majority of these, twenty-nine, were elicited from students in two university courses, while the other fourteen were gathered with the help of an online form that we circulated via social media. Overall, our research material is best understood as a convenience sample that consists primarily of accounts written by young adults.

The student participants were asked to write descriptions of situations where they had either shared their own or someone else's personalised service. We offered pens and paper for doing the task. We explained to the participants that matchmaking and streaming services were of special interest to us, but that they would not need to limit their descriptions to those. All participants were provided information on the study and their rights as participants, and we gave them an opportunity to ask any questions they had, prior to ensuring informed consent. Participation was not mandatory, and no personal information was collected. For eliciting accounts via the online form, we provided the same information about the study and participation in written form, and provided contact details for reaching us in case potential participants had any questions or concerns.

We did not collect any demographic information from the student participants. Those answering via the web form were given the option to fill in their gender and age, but this was not mandatory. Based on the responses we got, the online participants (8 female, 6 male, 0 nonbinary) were on average 32 years old, with ages ranging from 29 to 46. In both settings, participants wrote their accounts in either Finnish or English. When it comes to translating excerpts from the original Finnish for presentation in this paper, we have striven at accuracy in both meaning and style. Written accounts included on average 120 words, with the longest at 336 and the shortest at 25 words. The accounts collected from the classes were somewhat longer (with an average of 143 words) than those collected online (which averaged at 82 words).

Most participants' written accounts discussed one or more of three services: Tinder (21 mentions), Spotify (16 mentions) and Netflix (25 mentions). As these three have large user bases in Finland where the study was conducted, we mentioned them as examples of personalised streaming or matchmaking services when introducing the study to the participants. This priming may have played a role in these services becoming the ones participants most commonly chose to write about. While all three feature personal accounts, Netflix differs from the other two in that it allows users to set up multiple profiles within one account so as to cater to multiple users. Other streaming services that were mentioned more than once were HBO (8 times) and YouTube (3 times). Additionally, a few Finnish streaming services and some international ones, such as Viaplay and Amazon Prime Video, were mentioned once each. Tinder was the only matchmaking service that participants wrote about. Finally, some participants brought up other types of services, including social network services like Facebook (7 times) and Instagram (3 times).

3.2 Analytic approach and analysis process

We draw on Goffman's frame analysis [13] to examine how consequences of sharing activities and the interests served in them may surpass differently framed situations, and how these consequences are managed by account owners. Differently framed situations are connected over their brackets as there is an ongoing reality where the resources for particular activities continue to exist beyond different framings. For example, a Tinder profile continues to exist even after a co-located situation in which it has been used in a humorous manner has come to a close. What is more, the transformations that have taken place are not available to everyone who might interact with an account owner's profile on the service, such as potential dating partners who are not in on the joke.

Principal–agent relationships as a concept help us understand how individualistic use is reframed in situations where personalised services are shared socially. From our analytic perspective, principal–agent relationships are present not only in situations where individuals are using services on behalf of others, but also when people willingly give others access to their accounts for entertainment or other purposes. These situations can be understood as encounters where individuals share their personal resources to benefit others or groups that they are part of.

With these analytic starting points in mind, we first analysed the research materials inductively with open coding. The codes generated during this process include, for example, motivations to share, what letting someone else use one's account entailed (discussing on behalf of someone else in Tinder was one instance of this), playful use, and consequences. The open coding phase was done with the purpose of getting intimately acquainted with the research materials. After this, we took on a frame analytic approach, shifting our focus to what kind of interests were served in differently framed situations, that is, how the use of different services was *regrounded* [13] in particular situations. Additionally, we paid attention to the *brackets* of different frames, that is, the temporal and spatial boundaries of framed situations. Here, we were interested in what, if any, management practices were used to regulate these boundaries and what kinds of information got leaked from one frame to another with the services that were being shared. Additionally, we considered what kinds of consequences these shifts in frames might have for the account owner.

4 FINDINGS

We have organised our findings into three sections that correspond to the main themes we generated from our analysis. First, we discuss the motivations that were presented in participant accounts regarding the sharing of services. Second, we focus on instances of individuals either sharing or using someone else's account in a personalised service where the account holder has a profile that can be used for engaging with other people. In this category, the dating service Tinder was the most common example that our participants brought up. In the third section, we discuss the consequentiality of sharing personalised services, focusing mostly on Netflix and Spotify. We consider both what information services might reveal of the account owner and what kind of consequences sharing might have for the account owner.

4.1 Reasons for sharing accounts or using them on behalf of another person

In situations where an individual gave their credentials to a service for someone to use on their own, without co-located interaction, the act was often described as a favor:

> "I have shared credentials to two streaming services and to an online newspaper with two of my best friends since I use the services sporadically (with the exception of the newspaper). Sharing the credentials felt nice since if you can make a friend happy with something like that it's always excellent and I did not lose anything by doing it"

This excerpt sums up the act of sharing credentials: there is not necessarily a lot to lose by being generous to one's friends or family, and acting prosocially may even prompt positive emotions in the person doing the favor [25].

An interesting related category were exchanges. In these, one person gave their credentials to one paid system for another person in exchange for gaining their credentials to another system. In this way, individuals were able to gain access to, for example, multiple different video streaming services, such as Netflix and HBO, without spending more money. From the perspective of interests, this act clearly serves both parties of the exchange.

Another reason for sharing credentials to streaming services was convenience, e.g. it is easier to change a song in one phone rather than swap the phone that is connected to the sound system. Also, especially in stories where individuals described actions with their partners, a reason for using the other person's account was that it was already logged in on a certain device that was *"at the reach of the arm"* – easier to access than one's own. Netflix was often shared with family and/or partners. A few further stories described helping with setting up a service or demonstrating how to use it. Moreover, there were mundane scenarios of mutual use, such as watching a movie from Netflix together with someone. These three categories echo strongly those that Matthews et al. [27] identified in their study about device sharing in households.

When it comes to Tinder, some participants described sharing as part of an interaction, such as at a get-together. One participant even characterised their use of the service more as a social event than an individual one: *"We have always used Tinder more like together with my friends, so the one whose profile is been used, is kind of watching that others won't do anything 'stupid'"*. In these cases, the interests served are not only those of the account holder but also of the wider group participating, as the sharing situation offers an engaging, sociable pastime. There were also instances where someone was able to experience Tinder usage even if they were otherwise unable or unwilling to use it, for instance due to being underage, in a serious relationship, or just uninterested in using it to search for dates for themselves. In these situations, sharing served not only the principal, but also the interests of the agents who got to experience an activity that they otherwise would have foregone:

> "We 'played' a friend's Tinder in a group. I do not personally use the service so it was entertaining to see how the application works and especially to spy what kind of people there are in the service and how they market themselves. We also chose genuinely interesting candidates for dates to the friend who had not been bothered to use the application in a long time by themselves. This was done purely as a pastime. It felt communal to choose suitable and reject unsuitable candidates on behalf of the friend. It also was entertaining to appraise individuals in the application with our group."

4.2 Playful and serious transformations

We now turn to discuss the sharing of services in which account owners use their personal profiles to interact with others, that is, services where users project an identity. In our materials, Tinder was the most prominent example of this type of service and how the use of one's profile was handed over to others, although services such as Instagram and Facebook were mentioned, too. We categorised these acts of using a service on behalf of the account owner on a continuum from playful to serious transformations, based on the motivation underlying the regrounding of the activity. Sometimes the sharing shifted from somewhat serious to playful in the span of the same interaction. Principal–agent relationships were most prominent in the instances that we categorised as serious. Yet, even in playful situations, one can understand the activity in terms of acting on

behalf of another person, as one quite literally assumes another's identity and, thus, acts as and on behalf of them in relation to the service and its other users.

4.2.1 Playful transformations. Playful transformations refer to those where someone's personal account was used humorously or in a game-like manner. An extreme example of this was an incident where those involved played a game were participants' mobile phones (and access to their accounts on different apps) were used as a resource:

> "For a drinking game named 'Picolo', This game gives you tasks to do. One of them is letting somebody else use your phone to write a post. I could use somebody's phone for 5 min to do whatever I wanted. As we are on exchange I posted a story on the person's Instagram saying he was homesick with a lot of emoji's and gif's. It was made very extra so people would see it's a joke, although people still reacted on it."

Noteworthy here is both the radical transformation of service usage and the meta-language (e.g.*"made very extra"*, referring to exaggeration) that was used to mitigate the impact that the transformation might have outside of the situation.

Another example illustrates how the playful activity was "cut" from regular Tinder usage by removing unwanted matches after the sharing episode:

> "Some months ago me and my sister used each other's tinder profile for a while. It was definitely for fun and we both had a lot of matches we had to delete afterwards."

This removal of unwanted matches acts as a closing bracket for the playful activity. It marks a point where playful use is brought to a close and the service is returned back to its role as a more personal tool for engaging with others that the account owner actually wants to interact with.

There were examples of playful transformations, too, where the account owner had not agreed with the agent's use of the service. In other words, playful transformations can take place also in situations where the account owner and those who use the account are not in agreement on what is acceptable. Others may even use the account purposefully in ways that go against the account owner's wishes. For example, here is a case where the agent is not acting in line with the account owner's best interests, but rather with the aim of teasing the account owner:

> "During high school, my friends had a habit of publishing something to other persons' Facebook-walls if you lent your phone to them and were logged in to the service"

As such playful usage is not necessarily enjoyable for everyone — especially the account owner has a stake in what kind of behavior their profile is used for. In case of disagreements, the account owner might break the playful frame by setting a closing bracket:

> "About matchmaking apps, some time ago we used a friend's account to give likes to everyone that looked disgusting and talk to them if we had a match, until the owner of the phone started to get annoyed."

To continue, frame transformations require some amount of agreement among those involved in the social situation. In the above example, the account owner disagreed on the actions that those acting as agents made in relation to the account. On the other hand, if the account owner wants the usage to be playful, the agent is fulfilling their wish when engaging in playful use and thus serving the principal's momentary interests.

Moreover, while they were not discussed in the stories participants shared with us, it is worth noting that there were unwitting participants in the sharing episodes we have described in this section. For example, Tinder matches who were not present in the face-to-face situation did not know that they were actually interacting with an agent of the account owner, rather than the account owner. From this perspective, these unwitting participants were deceived: they were bracketed out from the correct interpretation of the situation by their physical (and relational)

location. As such, while there are temporal brackets that mark the rims of when an activity is transformed into playful, there are also spatial brackets that isolate the playful meaning of an activity, making it available only to those who are taking part in the sharing episode.

There were differences in the level of fabrication, that is, in the degree to which those outside of the face-to-face situation were fooled. With Tinder, the milder form of sharing and potential deception was allowing others to swipe or comment on potential matches under the supervision of the account holder, whereas in the more severe cases others were also allowed to start or continue discussions with the matches. These more severe playful transformations were condemned by only one participant who stated that in their opinion it was okay to swipe and comment on public profiles in social settings, but that the discussions between matches should be kept private and not be handed over for an agent to handle. However, as we did not ask participants to reflect on the moral dimensions of service sharing, our analysis does not encompass participants' ethical standpoints on the matter.

4.2.2 Serious transformations. We treat regroundings of activity as serious in situations where services were used on behalf of the account owner for more than momentary amusement and with the account owner's best interests in mind. For example, some descriptions of letting another person use one's Tinder profile were described in terms of the agent helping the account owner to find *"a suitable partner"* or *"a partner of their dreams"*. This fits neatly with the idea of a principal–agent relationship. In these situations, stories often mentioned that the account owner monitored the agent's actions in the service. This meant that differences in what an agent considers best for the principal and what the principal wants can become visible already in the moment of sharing:

> "My friend always matched with guys on Tinder who turned out to be… unsuitable. So she gave me her phone so that I could swipe through the guys. I don't think it worked though as she was monitoring me. The guys I wanted to swipe OK for her she said no. And so I just swiped OK on those I expected to be her type."

In these cases, in contrast to the playful uses we discussed above, the sharing situation was not intended to be cut off from the wider reality. Instead, these situations could be seen as much more future-oriented: in cases like this, the account owner was open for the interaction to have consequences beyond the sharing situation. At the same time, this indirect use respected the identity that the account owner projected to other users of the service. Here, the idea of a human agent acting for a human principal is in a sense more visible: in these situations, those involved take into consideration that the account owner has a biography in these services that continues from one situation to another. So, while an account can be put to different uses in different situations, the profile in the account has continuity and the principal may monitor the agent's actions to assure that the profile is treated in a way that is considerate of this.

Sharing episodes may be extremely consequential. If the activity is not cut from future situations, these episodes may even alter the life trajectories of the principals. Our research material included one example that illustrates how an agent's actions may lead to life-altering encounters if the account owner is open for the possibilities that a sharing episode may open:

> "Approximately five years ago, when my sister was still under-aged and couldn't use Tinder by herself I let her use my account. I was already fairly bored with the application, but my sister found it fun to swipe partner candidates from one side to another. She often asked for my opinion on the decisions, but every now and then she 'gave a heart' to a person I disliked. Using Tinder together was fun and eventually my sister chose a man from there with whom I am now married. My sister only made the choices, never initiated or participated in the conversations."

When it comes to Tinder in particular, based on our analysis, the further the usage situation is transformed towards a game-like pastime, the more likely it seems that individuals will embark on bracketing actions to isolate the situation from their ongoing biography in the service. This echoes prior work on playfulness: already in 1941, Riezler [36] stated that playful behavior differs from serious on its horizon, that is, playful behavior tends not to be future-oriented. The more an activity is framed as play, the less it can be seen to serve the interests of those who are bracketed out of it. In the case of Tinder, these would be the unwitting matches who do not know that the opposite party is not using the service seriously, or are even unaware that the person depicted in the profile is not the one they are actually interacting with. In serious transformations where the agent is acting in line with the principal's long-term interests, sharing episodes may be more consequential as the principal may not feel the urge to bracket the episode out of their future.

4.3 Social challenges in sharing personalised services

We now present our findings on how different social situations and relationships are sometimes intertwined with personalised services in troublesome ways. This manifested itself in services revealing unwanted information about the account owner and in the sharing of services leading to less relevant recommendations for the account owner after the fact. Additionally, sharing of credentials to personalised services sometimes clashed with the changing relationships of the account owner and others using the credentials, such as when romantic partners had broken up but still used the same account. In discussing the consequences that sharing personalised services may have over time, we focus mostly on Netflix and Spotify.

4.3.1 Personalised services and temporal brackets. Personalised services may leak information of prior use from one frame to another, sometimes with troublesome consequences. First, personalised features may reveal information about the user of a service like Spotify or YouTube to those who are temporarily interacting with the user's account. Second, when others use a service that is designed for personal use and that provides personalised recommendations based on prior use, this may result in consequences beyond the intended co-use situation, such as peculiar recommendations delivered later on to the account owner.

When writing about parties and Spotify, participants sometimes described making preparations, such as creating playlists. At parties or other social situations, the sharing was often initiated with the basic act of asking for permission. This can be seen as a rudimentary opening bracket. In regards to Spotify usage and parties, it seemed that account owners and those who used someone else's account took it somewhat for granted that others physically present should have a say on what music was played. Stories of sharing Spotify in face-to-face situations commonly mentioned that the password for the device that was used for playing music was shared on request. In one story, the account owner was asked to add songs to the playlist, rather than handing over access to the playlist to everyone in the situation. Here, those who share their service — either directly or by acting as a proxy for others — are not necessarily acting only in line with their own interests. What is more, acting for the interests of others may bear consequences to the account owner: as personalised services use the data they collect to make recommendations, information may leak from one frame to another in unwanted ways. One participant described that it felt confusing to use their partner's YouTube as the recommendations offered seemed strange, due to how different they were from what the participant was used to seeing in their own account. Another participant mentioned in a similar vein that using their partner's account limited the way they could use the system:

> "I sometimes use my boyfriend's YouTube account when his laptop is around/or connected to the TV, but that is more out of laziness. It's also not the best because his

> recommendations are very different from mine, so it only really makes sense when I have something in mind that I want to watch because just scrolling and looking at recommended videos doesn't always work so well on somebody else's account."

Sharing one's Spotify account in a party may reveal information that the account owner would prefer not to share. Additionally, sharing can have consequences after the sharing itself has ended:

> "I've let people use my Spotify on student parties. It's quite intimidating because I don't want them to scroll through my playlist. And the next day Spotify recommends me "bad" music. But I still do it because music without ads is essential, and apparently not too many have premium…"

Here, the frame of a student party requires that someone acts on the interests of the group by sharing their personal account. Yet, the prosocial act of sharing one's account may risk unintended disclosures and result in making a mess of the user's personalised recommendations. On a more positive note, our materials also included examples of individuals sharing their Spotify accounts with friends so that they could make playlists for the account owner.

If the shared usage is tied to a specific device, other services (that are seemingly irrelevant to the activity at hand) may deliver information from outside of the frame of the face-to-face situation:

> "I have taken my roommate's phone from a table multiple times (without asking for permission) in order to change a song from Spotify, but they react really strongly and insist that I shouldn't touch their phone even for a moment since 'I do not know what there might come for example with a message'"

This example is interesting in that it goes against the general sentiment of participants' stories: especially with Spotify, there seemed to be something of a norm among our participants that one should let others use one's account in co-located social situations. This norm of sharing brings some potential risks for unintended disclosures with it: the devices and services shared might reveal something that the owner would not like to show to others. As the example of the roommate illustrates, this could, for instance, be in the form of an incoming text message — a type of content that the owner of the device has scarce control over.

Personalised systems' incapability to recognise the motivations underlying how they are being used opens up possibilities for taking advantage of this limitation for social purposes. One participant shared an example where this rigidity was made use of in an attempt to prank a friend in a playful manner by regrounding the act of playing music to listen in order to it to more devious motivations of "training" [e.g. 42] the recommendation algorithm to do something the account owner would not want:

> "Me and my friend got an idea to play Cheek[2] on repeat on another friend's Spotify account on mute (the friend in question is a professional musician and not a fan of the artist in question). With this the Spotify algorithm would only recommend similar music to the friend."

This kind of "fake listening" has been documented before when deployed for the purposes of profile work [43], whereas our example illustrates its use technically on behalf of another person, but in effect in a way that turns the algorithm against the account owner's interests, revealing an untrustworthy side of the software agent in service of its principal.

In the case of personalisation, this example illustrates how recommendations are thought to tell something about the person they are aimed at. Since individuals often understand that services collect data about their behavior, they are also capable of interpreting recommendations offered to others as reflecting something about them and their prior behavior:

[2]Cheek is a Finnish rap artist.

> "I have been sharing a Netflix account with my girlfriend, simply because we mainly watch stuff together and we want to split the costs. But we do have separate user profiles on the platform, so I suppose our recommendations etc. are not shared. The other day she was joking "you really don't have any secrets with this", alluding to the fact that she could see what I've been watching and what was recommended to me."

While this example mentions that Netflix shows details about past behavior, that is, what one has been watching, it also mentions the recommendations. Since recommendations do not reveal specific prior actions, they might be treated as revealing something more general of an individual, e.g. what movie genres they prefer.

Many of our findings related to unintended disclosure resonate with the insights Sun, Oliviera & Lewandowski [46] discuss in their article about shared YouTube use. Our findings suggest that these findings are not related only to a certain type of media (e.g. YouTube videos), but may have more general relevance across different personalised services.

4.3.2 Relationships and the sharing of personalised services. We now turn to consider how personalised services fit together with social relationships over time: what kind of sharing is permissible based on a particular relationship? What about when the frame of the relationship changes, for instance when a romantic couple breaks up? Our interest, then, moves towards the frames of relationships. While we have focused so far primarily on cases of handing over the use of personal service or device in specific, co-located situations, here, the examples are more commonly about the co-use of personal accounts, that is, the sharing of credentials to services like Netflix or Spotify.

Giving another person the right to use one's personalised account can be understood as a favor that serves the interest of that person. Yet, this might not serve only the interests that the account owner meant to serve, for instance when the credentials end up in the hands of people who the account owner would not like to use them. If one considers sharing one's credentials as a favor and, as such, an act of an agent in the behest of a principal, limiting who should gain from this act can be understood as an individual wanting to choose their principal. This relates to the capability of an agent to choose who they act for (as discussed in the Background). Here, Netflix credentials have not been shared as part of a face-to-face situation and that introduces a potential complication:

> "Apparently, he had forgotten that he gave me his account information and permission to use it because last time I spoke with him on the phone, he told me that he's super annoyed about his friend's girlfriend who lives in his home country. When I asked why, he said that he is sure that this girl has been using his Netflix account. He said that she has watched some stupid TV-shows and messed up with the shows he has been watching. He even said that he tried to revenge by messing up with the shows she had been watching, so that she would get confused and wouldn't know which episode she is supposed to watch next. When I told my friend that it's been me all along who has used his Netflix account, we laughed a lot."

This story illustrates that, at least for some individuals, sharing their personal accounts does not feel like a cost-neutral act: the sharing itself may have some negative consequences for the account owner, even if these are not necessarily large. It also shows that the relationship between the account owner and the person using their account is consequential: a friend's girlfriend was seen to have no right to use the account, while the account owner had no hard feelings towards the person who wrote the story.

When it comes to acts of sharing, relational boundaries are held up by trust. Our research materials show how credentials may circulate through trusting relationships to individuals who have not gained a first-order permission from the account owner:

> "My boyfriend asked if he could use my brother's Neflix which has so-called family account. I gave permission and every now and then when I log into my account I notice that he has added content to the favorites etc."

When it comes to sharing credentials, individuals may have limited ways of monitoring others' usage. The above example illustrates an unclear framing that may arise if the temporal limits of a sharing episode are not identified properly, be it because of forgetting or because of unauthorised continued usage. Much like in social media use where people may assume that others share their understanding of where the boundaries of sharing lie and will do their best not to break them [23], the sharing of credentials seems to rely on expectations of implicit agreement. This has the implication that what is considered acceptable is revealed only when someone breaks such expectations. What is more, individuals do not necessarily honour the explicit or implicit rules that come with sharing an account. Our materials feature examples where individuals continued to use services paid by others (e.g. Netflix and HBO) even if they had only received permission to use them to watch a certain movie or during a certain period. In one example, an individual wrote that they had given their login details to a friend for the duration that the friend was in a hospital. The friend had later confessed that they had used the account also afterwards.

Sometimes, it is not the humans but the digital traces within a service that reveal when the closing bracket has not been honoured. This example shows how implicit rules regarding who has the right to use an account can be broken and how this may be revealed through digital traces:

> "Some months ago, I gave my Facebook account on someone else's laptop and didn't log out. Then weeks later, I saw on Facebook when I wanted to search for one's name in the history of search requests that this person had searched for her ex-boyfriend while using my account."

Having discussed the limits of sharing in the context of who has been given access and for what period, we now turn to situations where the relationship between the individuals sharing the service has changed. Many of our participants mentioned sharing video streaming services with partners or family. However, relationships may end, yet the access to a shared service can continue. This was brought up in a few stories, such as in this example:

> "I still used my former partner's HBO account after our breakup since they didn't log out on my computer. I used it until the subscription ended."

One reason for the need to manage relationships between situations was to avoid negative emotions. One story described how the writer removed matches that others made with the writer's Tinder account due to embarrassment. A phenomenon discussed by Pinter et al. [34] was brought up in our materials, too: the same writer described how getting Netflix recommendations that were clearly tailored for their former partner caused distress and made it harder to move on:

> "They watched series' long after we had already gone our separate ways. It sometimes felt fairly bad when Netflix recommended me series' based on their watch history (+notifications when they logged in etc.) Now that I consider it afterwards it really made it more difficult to get over the relationship".

To sum, our analysis offers examples of how principal–agent relationships are formed in different ways and how these relationships may differ in their time span, from momentary sharing to longer term arrangements (that sometimes exceed the duration of the social relationship that gave grounds for the sharing). Individuals both take on the role of an agent in different ways and enlist agents for themselves. In these relationships, different interests may clash. If we consider the type of software discussed here as agents that are built to serve a certain kind of user, we also see how human principal–agent relationships complicate the situation.

Table 1. Summary of main findings.

Section	Overview of findings
Reasons for sharing accounts or using them on behalf of another person	Favors, Exchanges, Convenience, Help with set-up, Demonstrations, Mutual use, Sharing as a part of an interaction event
Playful transformations in sharing	Usage is carnivalised and serves the purpose of momentary amusement, Principal's interests are served by acting according to their wishes regarding playful use, Sharing episode is more likely to be "cut" from future events
Serious transformations in sharing	Usage aims to help long-term interests of the principal, Sharing episode is allowed to have consequences beyond the situation
Sharing and temporal brackets	Unwanted information may be revealed during the sharing episode, Data collected during the sharing may affect future usage through recommendations
Relationships and the sharing of personalised services	Sharing of credentials may be risky as others may share them further, Individuals do not necessarily stop using an account as agreed, When relationships end, account sharing may persist

5 DISCUSSION

With a focus on *principal–agent relationships*, we have illustrated how whose interests are served differ between differently framed situations. We employed the frame analytical concepts of *regroundings* to tie agency theory to frame analysis and *brackets* to discuss how these situations are separated from others both physically and temporally. Our main findings are summarised in Table 1. We also illustrated some techniques individuals use to control the consequences that actions taken in different frames may have for the future. In what follows, we first discuss principal–agent relationships in the context of account sharing and moral questions related to the shared use of personalised services. After this, we return to the issue of how humans and algorithms can both be considered as agents serving principals. We close with brief reflections on design.

5.1 Serious and playful approaches to principal–agent relationships

While prior research has illustrated that principal–agent relationships may involve questions of life and death [41], we discovered both serious and playful approaches to acting as an agent for another person when using personalised services in social situations. In other words, the co-use and sharing of matchmaking and streaming services may be playful or serious, playful referring to situations where the use is undertaken for momentary amusement and is more tightly cut from future events, and serious to those moments where another individual is using the service with the account owner's best interests in mind. Both serious and playful transformations have motivational regroundings, and especially in the case of playful ones the motivations are typically not aligned with the uses the service has originally been designed for. As personalised services are often shared

for the purposes of pleasant pastime activity, in many cases as a part of a face-to-face encounter, account owners willing to let others use their accounts offer something of their own for others to enjoy. Even the transformations we have described as serious, then, can be a source of enjoyment for the participants of the encounter, in addition to serving the account owner's longer-term interests.

Highlighting everyday acts of sharing accounts and devices can be used as one way of challenging the traditional user position. As mentioned above, Baumer and Brubaker [3] have considered this type of indirect use as an example of how this position can be afflicted. In this paper, we focused on similar uses through the lens of principal–agent relationships, illustrating how who the user is can change rapidly in micro-level interactions. By this, we wished to illustrate how common and mundane indirect use is and to examine how this is reflected in account owners' relationships with personalised services.

An account owner can also be in the position of an agent who, by sharing their resources, acts on behalf of others. Social situations and relationships may force expectations on individuals regarding how they should share their access to different services. This may lead to information collected by these services being revealed to others in unwanted or unexpected ways. Sharing credentials may lead to unwanted consequences, such as less relevant recommendations, or unwanted users for the account. Sharing may also be initiated precisely as it may leave a mark from others that has consequences beyond the situation at hand. This was illustrated with examples of letting others use one's Tinder seriously. In such instances, account owners may even actively hope that others' use of their account would end up being consequential.

5.2 Moral questions regarding the sharing of personalised services

An issue we have not discussed in any detail are the potential moral questions related to the types of principal–agent relationships that our study illustrates. Principal–agent relationships where someone uses a service on behalf of another person may have a hint of deception in them, even if no harm is meant. This was most evident in situations where agents interacted with other Tinder users on behalf of the account owner, as those matched with the owner did not (necessarily) know who they were interacting with. Additionally, interactions where an agent is not acting seriously and is not open about this, as depicted in our discussion of playful use, can easily appear deceptive. Allowing others to use one's profile, then, raises questions about a moral dimension of co-located or shared use of services: where is the line between immoral and moral co-use when we consider services that are used to communicate with others? Who should get to determine this? Additionally, service providers have their own ideas of allowable use, often codified in the terms of service. While there is some contention over whether or not breaking terms of service should or could be considered as morally wrong, individuals typically do not even read them [e.g. 31]). Our participants seemed to disregard this aspect completely, typically describing their accounts as if these were their personal property with which they could do as they wished and considering account sharing primarily in an interpersonal frame.

A normative expectation to share one's account sometimes came up in our research materials, especially in relation to Spotify — there seemed to be particular situations, such as parties, where norms encouraged sharing and participants had experienced some pressure to share. In other contexts, such expectations may stem more profoundly from the power structures of the surrounding society and take on a moral import that was absent from our research materials. For instance, in some societies norms may dictate women to share with their husband's information about their smartphone usage [45]. Moreover, as smartphones are less common in developing countries than in Finland where we conducted our study, sharing may be more the norm than the exception also in settings beyond intimate relationships, for instance due to economic constraints or unequally distributed access to education [38]. Here, principal–agent relationships may take on a different

form where those who have access to devices and the skills to use them act as access points to technology use and its benefits for those who would otherwise be excluded.

5.3 Humans and algorithms as agents acting for a principal

We now return to reflect on what it means to consider both humans and algorithms as potential agents acting for a principal. First, an important difference between these two is, of course, that humans are capable of reflexivity and algorithms are not [2, 33]. This makes it much easier for a human agent to react to the changing wishes of their principals. For example, when we consider playful use of Tinder where a friend acts on behalf of the account owner, it is evident that the human agent's flexibility and capability of contextual understanding in relation to the principal is on a completely different level than what we might expect of a recommender algorithm. Algorithms cannot understand humorous use and personalised services tend to struggle with recognising motivational regroundings of seemingly similar looking usage.

Additionally, the services discussed here do not have a model for what frame it is used in and what interest it should be serving within that frame — and the user cannot communicate this to the service in any straightforward way. To give a simple example, there is no separate mode for capturing Tinder use that is taking place merely for the amusement of those in a co-present situation like a party. Moreover, the prior, more private relationship with the service — the one that both matchmaking services like Tinder and streaming services like Netflix have supposedly been designed for — carries over to the sharing situation. Prime examples of this are situations where a service reveals something that the account owner would have preferred not to share. Human agents typically make some effort not to reveal potentially embarrassing details regarding their principals, but services are not capable of assessing what information is appropriate to bring up in the present company. Similarly, the sharing event carries over to later situations where the account owner has returned to the usual, more individualistic relationship with the service.

While personalised services are designed with an individualistic perspective of user interests in mind, our ways of weaving them into our social interactions reveal shortcomings in this approach to personalisation. Prior work by Sun, Oliveira & Lewandowski [46] demonstrates this in describing how couples' decisions regarding what to watch on YouTube had to fit their shared interests. Here, the recommender system was usually not deemed helpful in achieving a satisfactory outcome. Human interests are context dependent and it is often in our interest to consider the interests of those with whom we interact. As Meyer & Jepperson [28] have stated, and as we have discussed here in some detail, individuals may shift their principals in a rapid fashion as they go about their everyday endeavours. Yet, while it may feel easy to critique algorithms as agents, humans are far from perfect, too, when they serve a principal: mistakes are made, and the potentially conflicting goals between human principals and agents mean that betrayal is possible [40] in a way that we would likely not attribute to actions performed by an algorithm.

Finally, having discussed problems that recommender algorithms as agents may have in serving an account owner, it should be noted that the overall impression from our research materials is that many participants considered recommendations both useful and valuable. After all, there would be little sense in being annoyed about account sharing leading to irrelevant recommendations, if the recommendations were always useless! Participants' mixed feelings echo prior research where personalisation has been found to feel pleasurable even in the context of targeted advertisements, even though individuals may, simultaneously, be annoyed by it [37].

5.4 Reflections on design

While our primary objective with this study was not to generate ideas for design but to contribute empirically and theoretically to the understanding of account sharing in the context of personalised

services, we close with a brief reflection on what our findings mean in relation to design. First, our study indicates that there are situations where individuals might value chances to "cut" their actions from the future. A simple example of this is being able to keep the music played at a party from impacting one's algorithmic playlists. Also, based on our analysis, individuals are not naivë about the consequences of their actions in relation to these services and they are able to recognize when they are acting on interests other than purely their own. As such, it might be viable to give individuals more tools to control from which situations data is collected, and allow them to communicate with the services the relevancy of different data.

Additionally, participants described how they occasionally allowed others to use their credentials to streaming services for a limited time, but how those receiving the right to use the account did not always respect such time limits. One participant brought up a tactic for addressing this issue: the individual who wrote the story described changing their password frequently. This meant that any permissions granted could not be extended indefinitely by those using the credentials, at least not without a new act of sharing. While this is something personalised services may not be inclined to due given their business model, from a purely interpersonal point of view offering the possibility to create temporary passwords that expire after a specified time period could be helpful.

6 CONCLUSION

We have presented a study of how personal accounts on online services — primarily Tinder, Netflix and Spotify — are shared in both co-located social situations and as a part of ongoing social relationships. Theoretically, we connect agency theory with frame analysis by incorporating Goffman's idea of an answer to what is going on, while also drawing attention to the question of whose or what interests are being served. Attending to principal–agent relationships, that is, the tendency and capability to take on different principals and act for their interests, complicates understandings of the mundane uses of personalised services. These services are built to serve the interests of an individual user but these account owners sometimes allow others to use the service on their behalf or use their account to serve others' interests. In these situations, the service may inadvertently disclose information that the account owner would prefer not to share. Moreover, acts of sharing might also have an impact on later, individual engagements with the service, depending on how effectively sharing episodes are bracketed out. Connecting to the longstanding discussion within CSCW on how the position of a user is constructed and how it matches with use-in-practice, our findings illustrate that users' relationships with personalised services are often complicated by the different principal–agent relationships that they are involved in.

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