Share & Share Alike?
An Exploration of Secure Behaviors in Romantic Relationships

Cheul Young Park, Cori Faklaris, Siyan Zhao, Alex Sciuto, Laura Dabbish, and Jason Hong

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Carnegie Mellon University
Human-Computer Interaction Institute
Key takeaways from our study

1. The “1 user – 1 account” model of end-user cybersecurity poses usability challenges for romantic couples.
   - Ex: Who carries the “thing you have” for two-factor authentication of shared accounts?
   - Ex: Partner as “insider threat” to personal data in a breakup or domestic dispute.

2. When designing account sharing features for romantic couples, evaluate how they support users’ functional AND emotional goals:
   - Household maintenance.
   - Trust.
   - Convenience.
   - Relationship maintenance (the novel finding of our study).
Growing emphasis on ‘social cybersecurity’

- Previous studies have looked at sharing in such social contexts as households, companies, and indigenous communities.

- Our work is among the first to examine security behaviors in romantic relationships.

Half of U.S. adults in 2016 were married, with 7% more cohabitating — Pew Research
Related works in usable security research

- **Trust & convenience as drivers of sharing**
  - Ex: Singh et al. “Password sharing: implications for security design based on social practice.” *(CHI 2007)*

- **Taxonomy of sharing types**
  - Ex: Matthews et al. "She'll just grab any device that's closer: A Study of Everyday Device & Account Sharing in Households." *(CHI 2016)*

- **Social psychology lens for security behaviors**

- **Intimate partner abuse**
  - Ex: Muslukhov et al. "Know your enemy: the risk of unauthorized access in smartphones by insiders." *(International conference on Human–computer interaction with mobile devices and services. 2013.)*
Research questions for our study

- **RQ1:** How do individual differences affect sharing behaviors — age, gender, income, education, relationship status, and relationship duration?

- **RQ2:** Do sharing behaviors differ with types of accounts and stages of a relationship — finance vs. entertainment accounts, early vs. late relationships?
Methodology: *Participants recruited on MTurk*

- We aimed to recruit workers on Amazon Mechanical Turk with
  - an approval rating >95% and
  - >1000 tasks approved.

- The study was limited to
  - U.S. residents age 18 or older
  - who had ever experienced a romantic relationship for longer than one month or
  - had broken up less than one year ago.
Methodology: Online questionnaire

We deployed a Qualtrics survey between Aug. 30 and Sep. 6, 2017, covering these questions:

1. **What accounts do people own and share?** — Original list of accounts drawn from Alexa.com

2. **How & why do people share their accounts?**
   — Ownership, frequency of usage, ease of access, reasons and methods for sharing (and hiding)

3. **Demographics:** gender, age, income, education, sexual orientation, etc.
Methodology: Data analysis

- **Quantitative analysis** to infer how demographic or relationship variables affected sharing for \( n=174 \) participants.
  - Hypothesis 1: Those who are younger and more educated would report sharing less. **Not supported.**
  - Hypothesis 2: Those who reported less income and were in a relationship or cohabiting for a longer time would report sharing more. **Partly supported.**

- **Qualitative analysis** to identify themes in open-ended responses to questions about sharing motivations and methods.
  - Iterative coding of text responses conducted by 3 authors (\( \alpha = 0.49 - 0.79 \)).
Trigger for sharing – romantic ‘leap of faith’?

- Statistically significant differences in account sharing were found for marital status, cohabitation status, relationship duration, and cohabitation duration, with positive effect sizes. (RQ1)
- Effects are more pronounced in male subgroups than females (although gender itself is not significant). (RQ1)
  - Possibly reflecting that males traditionally are registered owners of properties used by couples?
First comes Netflix, then comes Costco ...

- People in new relationships (<7 months duration) share more entertainment accounts. (RQ2)
  - Those in new relationships also share significantly fewer financial accounts. (RQ2)

- People who are in relationships that are not new (>= 7 months in duration) share more jointly owned accounts. (RQ2)
People reported sharing accounts for reasons that fell into one of four general categories:

- **Convenience** (63.8% of responses).
- **Household maintenance:**
  - Economics (60.1%).
  - Logistics (67.3%).
- **Trust** (45.3%).
- **Relationship maintenance:**
  - Relationship well-being (20.9%).
  - Support (5.6%).

Account sharing is both functional & emotional.
• “These are common streaming accounts that we share. There is no need for us to have our own accounts when it comes to streaming.”

• “We have been married for 7 years so far and have 2 kids. We both need to know what we have in the accounts in order to make purchase and pay bills. It’s important we have a working knowledge of the money we share.”
Emotional: Trust, Relationship Maintenance

- “I choose to share for utilities because I trust my partner, and believe both people should have access to them.”

- “[We share accounts] to discuss sports and see highlights of the night before. [We] use [it] for different content also.”

- “I already had a netflix account before we started dating. ... I gave her my password so she could watch when we weren't together.”
Many usability challenges for couples sharing

- Some participants reported using less-secure practices or “workarounds” for accounts that didn’t easily accommodate secure sharing.
  - Ex: “The amazon account is automatically signed in. We both use it/share the Prime account to keep costs down and use our own credit cards attached to it.”

- Some participants mentioned hiding accounts or keeping separate accounts to guard privacy or individuality, also for surprises or gifts.
Alternative to ‘1 user – 1 account’ architecture

- We suggest designing a security architecture to support the “multiple profile – 1 account” model used by Netflix & Hulu as a way to help romantic partners balance data intimacy and privacy.
Many usability challenges for those *breaking up*

- Support **easier separation and/or download of individual data** that is held in shared accounts.

- For jointly owned accounts, incorporate programming to **easily allow for the splitting of accounts** when couples part ways.

- Help users to keep track of **unauthorized usages of their accounts** through such affordances as notifications and reminders.
1. The “1 user – 1 account” model of end-user cybersecurity poses **usability challenges for romantic couples**.

2. Design for account sharing to support **relationship maintenance** along with trust, household maintenance, and convenience.

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**Any questions?**

You can find me at

- Twitter: @heycori | Email: heycori @cmu.edu
- Website: http://corifaklaris.com