Finding Privacy Concerns and Settings' Boundaries with Digital Assistants

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Introduction

With the increasing speed of advancements in technology over the past few decades, there has also been an increase in security and privacy concerns with digital assistants, including but not limited to Alexa, Siri, Bixby, and Google Assistant. While many users of these devices are generally aware of potential security and privacy issues, there may be a lack of concern of these issues from users [1]. Users' perceptions of data collection from these devices are often based off of their experience and interactions with the device [2].
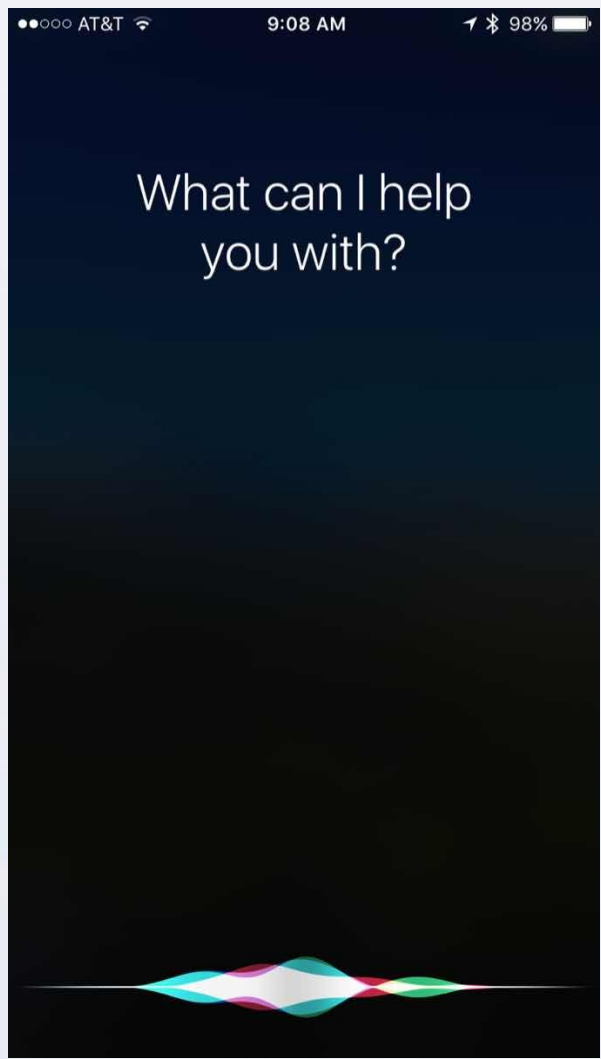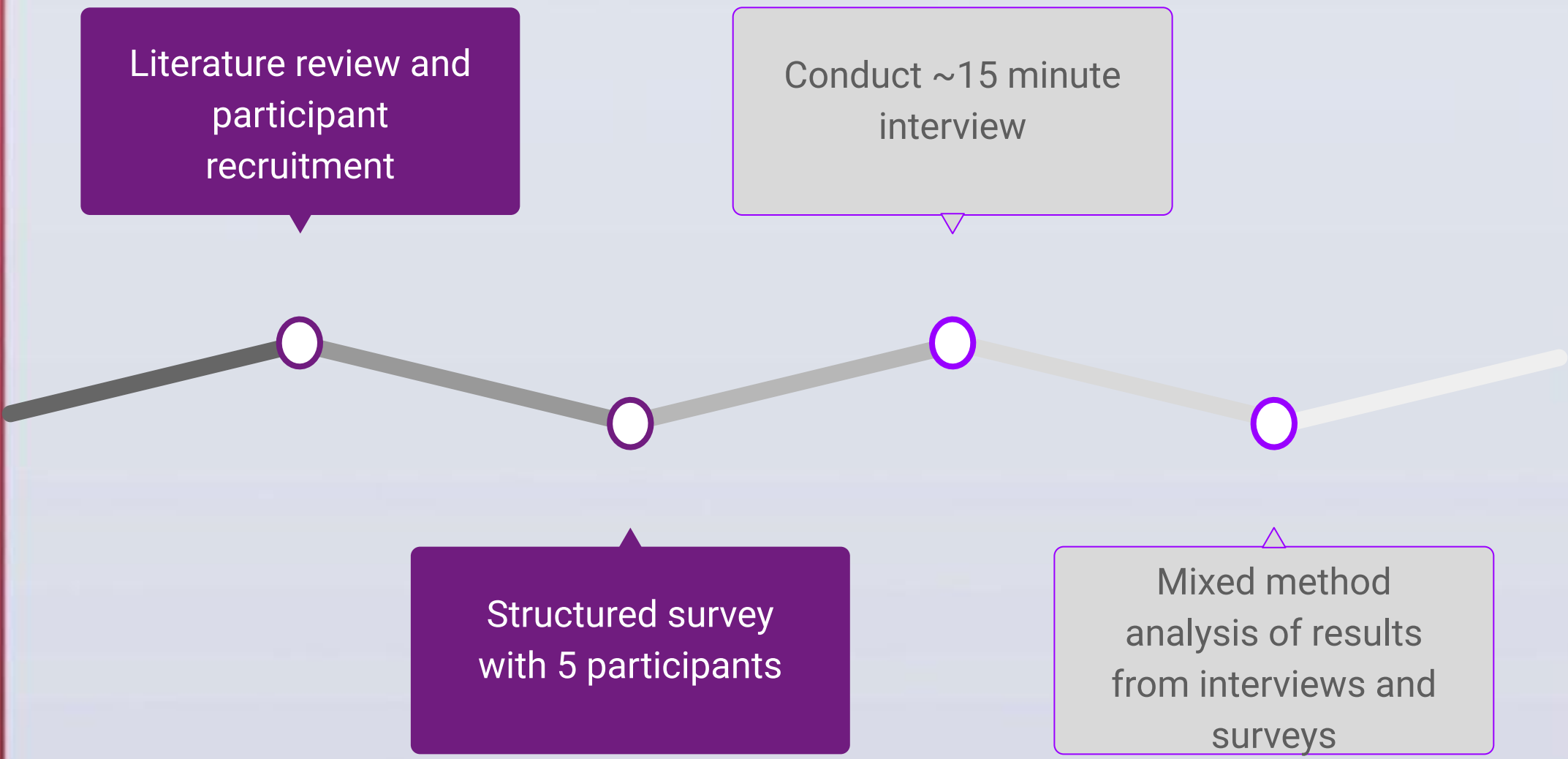
Figure 1: Siri

Figure 2: Bixby

Research Goal

This research focused on finding the extent to which users have concerns with privacy settings with digital assistants (DAs), their level of comfort of sharing specific information, and general issues users have about their collection of personal information.

Methodology

- We primarily used two different methods of interviewing - an oral structured interview and a written questionnaire sheet to fill out.
- We did one-on-one interviews with the participants, asking a number of different general questions, DA-specific questions, and privacy questions.
- **Five** different participants were selected.Three were males aged 21-22 and the other two were females aged 21 and 42.

Literature review and participant recruitment

Conduct ~15 minute interview

Structured survey with 5 participants

Mixed method analysis of results from interviews and surveys

Reasons For Liking/Disliking Digital Assistants

✓ Convenient
✓ Easy, Hands-free
✓ Communication
✓ Accessing Information
✓ Entertainment

✗ Privacy Concerns
✗ Voice Detection Accuracy or Inconsistency

User-Suggested Improvements

- When asked what they would change about chatbots:
  - Participant 2 said that he wished the **voice detection and accuracy was better**.
  - Participant 3 would add the ability to **choose exactly what information the chatbot has access to** and stores
  - Participant 4 would **remove the ability for it to store their data** altogether.

Level of Comfort of Sharing Information With DAs

Participants were asked to share their level of comfort with sharing certain information with digital assistants on a 5-point scale. Our participants were **most comfortable with sharing their social media details** with DAs, with the average level of comfort being 4.0. Users were **least comfortable with sharing login information** with DAs, with the average level of comfort being 1.6.
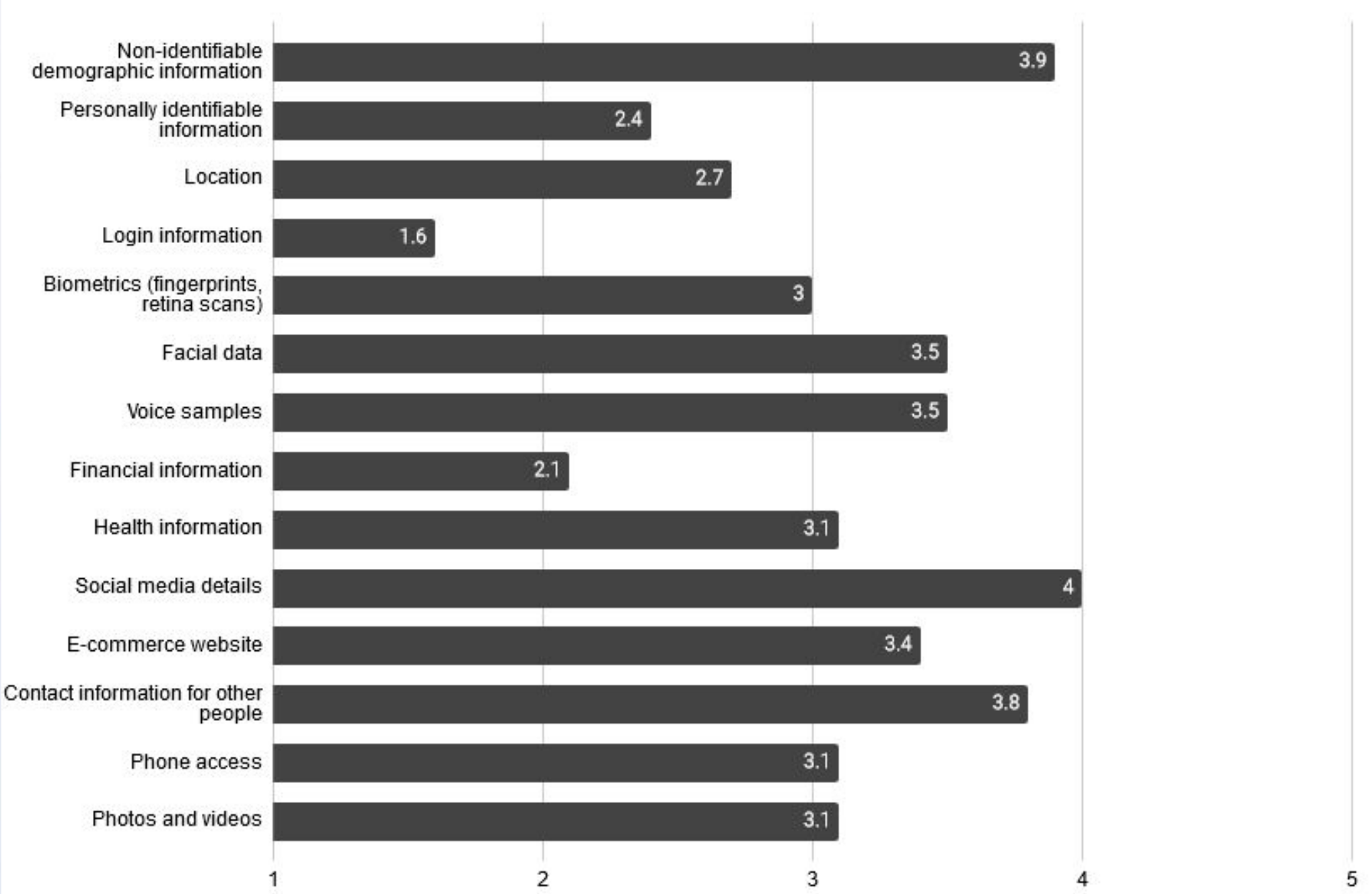

Figure 3: Participants' Comfort Levels of Sharing Information

Level of Appropriateness of Sharing Conversations

Similarly, participants were also asked on a 5-point scale how appropriate they believed it was to share their conversations. Users believed it was **most appropriate to share conversations for personalization, research and development for the general public, and product improvement**, each resulting with a mean score of 3.8, 3.6, and 4.0 respectively.
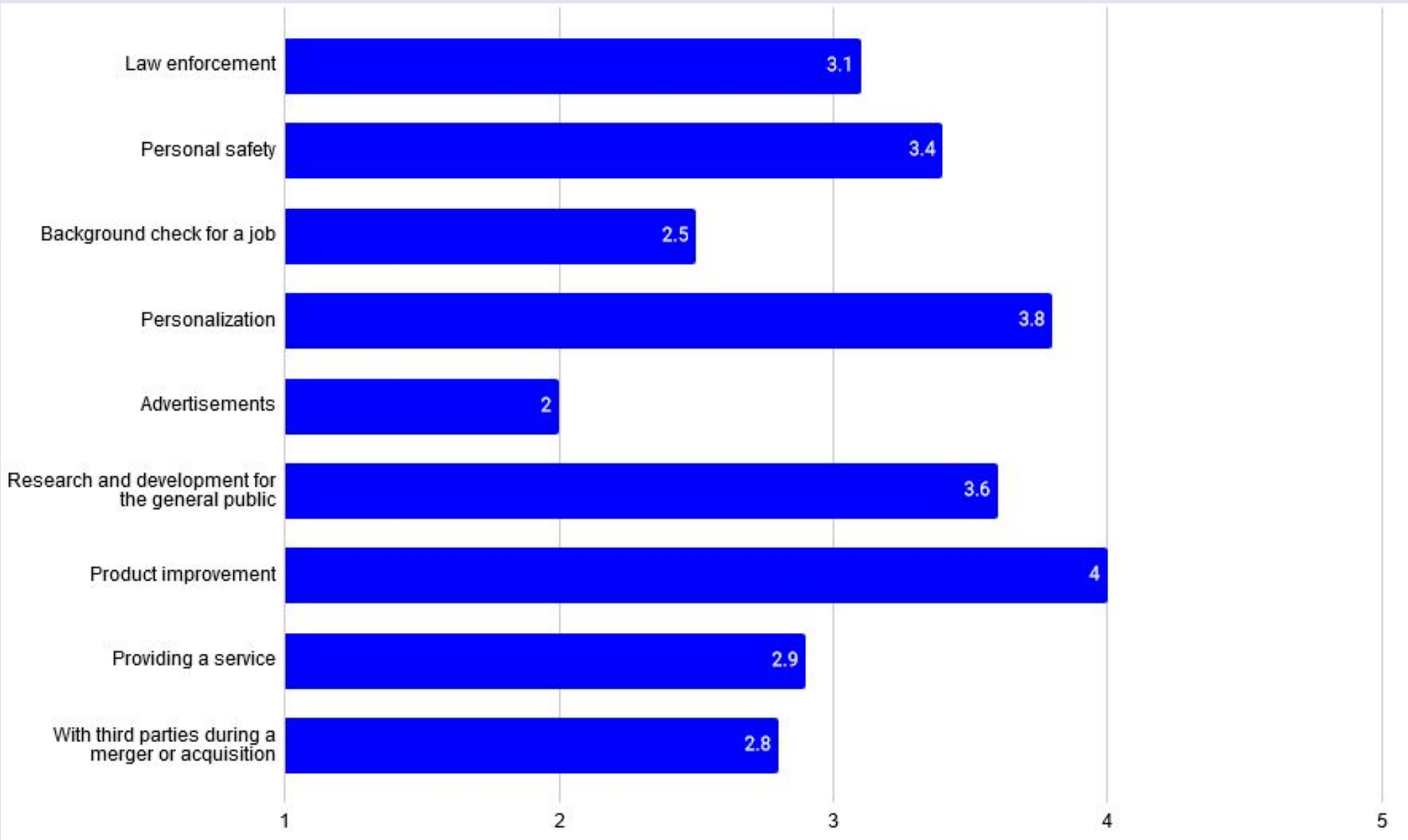

Figure 4: Participants' Level of Appropriateness of Sharing Conversations

What to Takeaway

- Users have **more privacy concerns with DAs when it pertains to sensitive information** such as login information or financial information
- There are times where users **think is appropriate to share information** with DAs such as for product improvement
- **Context matters** with privacy settings and concerns with DAs

References

[1] Zeng, E., Mare, S., & Roesner, F. (2017). End user security and privacy concerns with smart homes. In *Thirteenth Symposium on Usable Privacy and Security ({SOUPS} 2017)* (pp. 65-80).
[2] Tabassum, M., Kosinski, T., & Lipford, H. R. (2019). " I don't own the data": End User Perceptions of Smart Home Device Data Practices and Risks. In *Fifteenth Symposium on Usable Privacy and Security ({SOUPS} 2019)*