

User Study Information

1 Part 1: Privacy Stance Assessment Questions

Explanation. In this first part you will be asked questions about privacy. Under “privacy”, we specifically mean digital privacy in online systems, either through online social networks (e.g. Facebook, Instagram, LinkedIn) or through Internet of Things (e.g. smart household appliances, smartwatches, smartphones). These questions deal with your stance on privacy related matters such as being recorded, keeping your data safe and other privacy settings. For each of the questions we ask you to provide an answer on a scale of 1 (lowest) and 5 (highest).

Question 1. How strongly do you identify yourself with the following statements? (*Likert scale 1-5, strongly do not identify, do not identify, neutral, identify, strongly identify*)

- I am probably not the target of hackers, so I do not care about privacy protection
- I do not use any form of social media because of privacy reasons
- I would not mind being monitored or watched when using digital devices
- I only change my passwords when I am forced to do so
- I would rather choose being social over privacy

Question 2. How strongly do you identify yourself with the following statements? (*Likert scale 1-5, strongly do not identify, do not identify, neutral, identify, strongly identify*)

- I am not concerned with online privacy settings such as ‘cookies’
- I tend to use multiple layers of passwords for my accounts
- I have limited trust of online privacy settings such as those of social media platforms
- I would rather choose security over convenience
- I use similar password for most of my accounts

Question 3. How much do you agree with the following statements?

(Likert scale 1-5, strongly disagree, disagree, neutral, agree, strongly agree)

- Consumers have lost all control over how personal information is collected and used by companies.
- Most businesses handle the personal information they collect about consumers in a proper and confidential way.
- Existing laws and organizational practices provide a reasonable level of protection for consumer privacy today.

Question 4. How much do you know about digital privacy issues?

1. I barely know anything about digital privacy issues. I am not concerned with passwords, cookies, or other things like that.
2. I know little about digital privacy issues. My concerns about my private information do not go beyond setting up some passwords and changing them when I have to.
3. I know something about digital privacy issues. I am informed enough when it comes to keeping my data private.
4. I know quite some things about digital privacy issues. I keep myself informed on how to keep my data private, know about using multiple passwords and not trusting a lot of digital services.
5. I know a lot about digital privacy issues. I am highly familiar with cookies, terms & services, multi-level password protection, and other privacy related topics. I have advanced knowledge about the software that I use and how it affects my digital privacy.

Question 5. How much effort do you expend to protect your privacy?

1. I barely put any effort into protecting my privacy. I trust the digital services that I use and do not worry about taking extra steps to ensure further privacy.
2. I put little effort into protecting my privacy. I slightly update my passwords when I need to and am not further motivated to protect my data as I do not worry about being the target of any malicious business.
3. I put some effort into protecting my privacy. I update my passwords when needed and I put a little extra effort into difficult passwords for

important accounts. I use some type of antivirus scanner but do not concern myself with further steps.

4. I put quite some effort into protecting my privacy. I use different strong passwords and change them somewhat frequently. I will look out for using certain digital services and sparsely use them when I think it might affect my data.
5. I put a lot of effort into protecting my privacy. I look for security claims and cookie configurations on websites. I use unique strong passwords and change them often. I look out for services that monitor or track my data and put effort into not using them, even if they might be convenient to use.

2 Part 2: Automated Privacy System Trust Questions

Explanation. In this second part you will be asked questions about decision systems and personal assistants for digital privacy. Such systems and personal assistants exist to assist users in online systems to protect their privacy. On the next page you will be given an example of the workings of such a system. Afterwards, you will be given questions about whether you would trust to use systems with different kinds of properties. Again, for each of the questions we ask you to provide an answer on a scale of 1 (lowest) and 5 (highest).

Example Scenario. Imagine a scenario between two people: Alice and Bob. Alice's expensive car is standing in the driveway of her house, and Bob comes jogging past the car. The security camera of Alice's car and Bob's smartwatch are both devices connected through the Internet of Things, each equipped with digital personal assistants that represent their users. Alice's security camera is triggered by Bob's movement and wants to record any, possibly suspicious, behavior. However, Bob does not want to be just recorded by any device he comes across.



Alice’s personal assistant and Bob’s personal assistant have a discussion digitally, each providing arguments on whether or not to record. Eventually Bob’s personal assistant convinces Alice’s personal assistant and Alice’s camera does not record Bob’s movement.

(Interview Study: Checkpoint. Make sure that participant understands the workings of the system.)

Question 1 (Default Privacy Assistant). In this scenario, Alice and Bob are represented by their personal assistants that will automatically discuss such privacy issues for them. Based on the outcome of the discussion, privacy related actions such as taking a recording or sharing a photo are automatically taken. We call this the default version of the system. Now, imagine that you yourself would make use of an automated privacy discussion system like this. Then, a personal assistant would make all privacy decisions on your behalf, based on the outcome of whether it wins discussions. Depending on this description of the default version of the system, we ask your initial consideration on how much you would trust such a privacy assistant. With trust we indicate how much you would be willing to use such a system.

Question 1: How much would you trust to use such a privacy assistant?

(Likert scale 1-5, strongly distrust, distrust, neutral, trust, strongly trust)

Question 2 (Privacy Assistant that is adjusted to Sharing Preferences). In the default version of the system, personal assistants make no distinction of importance between their arguments, and will use all provided information to win discussions. However, another version of this system can be considered. In a system with privacy assistants that are adjusted to sharing preferences, personal assistants will make decisions about which arguments to show or hide from their opponent. Your personal assistant can then know what arguments you would not mind sharing and what type of arguments you might rather keep for yourself, even if it means losing more discussions. Your personal assistant would therefore be adjusted to your preferences on what kind of information you would rather keep private.

Question 2: How much would you trust to use such a privacy assistant?

(Likert scale 1-5, strongly distrust, distrust, neutral, trust, strongly trust)

Question 3 (Privacy Assistant that is Personalized). In the default version of the system, all personal assistants work the same, with equal approaches toward adding arguments. Consider instead of a previous version, a system version with privacy assistants that are personalized. In this system each user’s personal assistants will make decisions based on their type

of user's privacy stance. This way, each user benefits from their personal assistant in their own way. Your personal assistant can then know how to adjust its behavior based on your beliefs and desires on privacy issues.

Question 3: How much would you trust to use such a privacy assistant?

(Likert scale 1-5, strongly distrust, distrust, neutral, trust, strongly trust)

Question 4 (Privacy Assistant that can Collaborate). In the default version of the system, all personal assistants work individually. Even if multiple assistants are on the same side of a discussion (e.g. shared content), each assistant works on its own to defend the discussion. Consider instead of a previous version, a system version with privacy assistants that can collaborate. In this system personal assistants will be able to cooperate with assistants that are on their side of the discussion. Your personal assistant can then cooperate with other assistants to take turns in adding arguments to the discussion.

Question 4: How much would you trust to use such a privacy assistant?

(Likert scale 1-5, strongly distrust, distrust, neutral, trust, strongly trust)

Question 5 (Privacy Assistant that provides Feedback). In the default version of the system, no feedback is given to the users about the workings of your personal assistant. Consider instead of a previous version, a system version with privacy assistants that provide feedback. In this system personal assistants can give insight on how they performed in the discussions. This can be done through textual and visual feedback, providing information on how discussions went. Your personal assistant can then give you insight on its performance.

Question 5: How much would you trust to use such a privacy assistant?

(Likert scale 1-5, strongly distrust, distrust, neutral, trust, strongly trust)

Question 6 (Privacy Assistant with Combined Behavior). Consider a version of the system with privacy assistants with combined behavior. In this system, the capabilities of privacy assistants are a combination of all earlier described versions. So in this system, your personal assistant would make choices on what arguments to show based on your preferences, it would adjust its behavior based on your privacy stance, it would be able to cooperate with other personal assistants and it could provide you with textual and visual feedback on its performance.

Question 6: How much would you trust to use such a privacy assistant?

(Likert scale 1-5, strongly distrust, distrust, neutral, trust, strongly trust)

Question 7 (System default version reconsideration). With the knowledge that other versions of the system exist, you might reconsider the default system. In the default system, your personal assistant would continue sending arguments back and forth without making choices on arguments to show based on your preferences. Your personal assistant furthermore would not adjust its behavior based on your privacy stance, it would not be able to cooperate with other personal assistants and it could not provide you with textual and visual feedback on its performance. With this new knowledge in mind, reconsider:

Question 7: How much would you trust to use such a privacy assistant?

(Likert scale 1-5, strongly distrust, distrust, neutral, trust, strongly trust)

Question 8 (Final comments). This brings us to the end of the survey. The following question is optional and is meant for if you have any additional comments you would like to share with us.

Question 8: Do you have any final comments to add? (open)