Privacy attitudes, perceptions, and behaviors of the German population

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Research Report

PRIVACY ATTITUDES, PERCEPTIONS, AND BEHAVIORS OF THE GERMAN POPULATION

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Contents

1
Summary of findings

With this report, we present the results of the Hohenheim study on privacy attitudes, perceptions, and behaviors in the German population. The findings in this report stem from the first wave of an ongoing longitudinal panel study in which a representative panel of participants was surveyed five times over the course of three years. The first wave, which was conducted in May 2014, was completed by 3,278 participants.

The aim of this survey is to help generate profound knowledge about the German population's attitudes, behaviors, and perceptions surrounding privacy. We are grateful that we were able to follow up on this aim with the support of the German Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) and with the support of the "Forum Privatheit" (www.forumprivatheit.de) – an interdisciplinary research consortium that has been collaborating since 2012 on questions of informational self-determination and privacy.

At the core of the survey that will be presented in this report, we measured people's behavior in different mediated and non-mediated communication settings. We believe that in Germany and around the globe, the term privacy is now mostly connected to the online world. However, online privacy has to be managed also through offline communication. Moreover, privacy in offline settings is also affected by our online communication.

In our survey, we asked respondents to report their perceptions, behaviors, and beliefs regarding typical communication situations that they might encounter in all kinds of social media and – of course – in face-to-face communication. Hence, with this report, and to our knowledge for the first time, online and offline privacy behaviors can be compared.

In sum, we observed the following key findings:

1. Germans generally **value privacy** and do not believe that the importance of privacy has decreased in our society.

2. Eight out of ten Germans think that **individuals should be able to determine for themselves** which aspects of their selves to communicate publicly.

3. The majority of the German population holds **strong views against data surveillance** by the government. Two thirds also believe that the privacy of criminals should be protected.

4. Most people **are concerned about data collection practices, data misuse, and privacy violations** by other Internet users. On average, people are more concerned about their privacy on the Internet than in offline contexts.

5. Disclosure of personal information remains **a rather big issue for two thirds** of the population. Many people do not consider it useful to relinquish personal information on the Internet.

6. In line with this, the willingness to self-disclose in public online environments (e.g., on social network sites) is generally quite low. However, the willingness to self-disclose in other computer-mediated communications (e.g., instant messenger) is significantly higher. Specifically, **younger people are more willing to disclose private and sensitive information** via social network sites and instant messenger.

7. In general, German citizens **disclose personal information quite rarely**. However, younger people generally disclose more personal information than other age groups and also disclose information more often.

8. People almost **never experience privacy violations** on the Internet. Nonetheless, younger people experience three times more privacy violations than older people.

9. Germans' online privacy literacy is moderate. Although many **citizens are quite aware of data collection and analyses** by online website providers, they are **not very knowledgeable about their rights and data protection laws**. They generally know about technical aspects of data protection, but it is specifically older people who **lack sophisticated data protection strategies**.

2
Introduction

The release of internal National Security Agency (NSA) documents in 2013 by former contractor Edward Snowden and the subsequent revelation of the so-called "PRISM affair" has brought privacy and data security issues back to the forefront of public and scholarly discourse. For the first time, it became known to the public that the NSA could perform an in-depth surveillance of almost any Internet communication (Greenwald, 2013, 2014).

Even before the revelations, the German population was quite concerned about their privacy on the Internet. More than half of the population (53%) was concerned that their online behavior (browsing, downloading files, and accessing content online) was being recorded (European Commission, 2011, p. 68). Compared with other countries at the time, German Internet users ranked among the most concerned users across Europe (European Commission, 2011, pp. 64–73).

As the revelations have resulted in much media attention and have sparked discussions at all levels of society, it makes sense to ask whether attitudes, perceptions, and behaviors related to privacy have changed in Germany. How concerned are Germans today? What opinions and attitudes do they have with regard to data collection and privacy in general? Have they changed? And how do people deal with the new media environments that are deeply integrated into their daily lives? What do they do to protect their privacy? When are they willing to disclose personal information?

The following report seeks to answer these questions and aims to present a cross-sectional view of the German population and their attitudes and opinions about privacy. We believe that such an assessment of the overall population is necessary and relevant for society. The ability to deal with security issues, policy making, legal and economic decisions, as well as interpersonal negotiations depends on the question of how people view privacy and what they expect from it. In order to find answers to pressing questions concerning the legitimacy of surveillance programs, the data collection practices of website providers, economic power constellations, or informational norms associated with the flow of information on the Internet, the views of the German population must always be integrated and reassessed.

We believe that it is time to take stock. Therefore, we conducted a representative survey study. On the basis of the findings, we encourage policy makers, legal scholars, social scientists, and each individual as part of our society to ask how we deal with privacy issues these days and whether our actions are in alignment with our wishes, hopes, and expectations for the future.

In the following, we will present descriptive results for each variable. You will find a brief description of the respective question that was used in the survey, followed by a description of the results.

In Chapter 3, we present the results of analyses of different types of media use. We think it is important to assess people's media use before exploring privacy issues. In this way, the expressed opinions and attitudes can be placed into a wider context and can be related to different forms of Internet use. Although we investigated both online and offline contexts and privacy issues, we nonetheless focused specifically on online media and investigated in particular the use of social network sites (SNSs) and instant messenger (IM) services.

In chapter 4, we present the results of an examination of different communication patterns and communication behaviors in different non-mediated and mediated communication scenarios. In a previous qualitative study (Teutsch, Masur, & Trepte, 2016), we identified five different scenarios that people typically find themselves in when

communicating with other people. These scenarios included two offline situations (face-to-face conversation with a good friend and with a group of different people) and three online situations (IM chat with a good friend and with a group of different people, semi-public communication on an SNS through status updates or comments). People's behaviors in these scenarios will be compared.

Chapter 5 focuses on various privacy-related measures such as privacy concerns and attitudes, experiences with privacy violations, the need for privacy, and privacy literacy. At the core of this report, we present different analyses of privacy attitudes and behaviors.

Chapter 6 provides more information about the project "Privatheit im Wandel." It further contains a detailed description of the sampling strategy and the methods used in this research report.

3
Media use

3.1   Duration of media use

First, we wanted to know which types of media are being used in Germany today and how long people use these media on an average day. Accordingly, participants had to guess how many hours and minutes they use media such as TV, radio, Internet, newspapers, magazines, and video or computer games (a) on an average day during the week and (b) on an average weekend day (Saturday or Sunday). From these two measures, we computed the average duration 0f use per day by multiplying each measure by the respective number of days of the week and dividing the total score by

Germans spend more time per day watching TV, listening to the radio, and using the Internet than they spend with other media

Media use in minutes per day
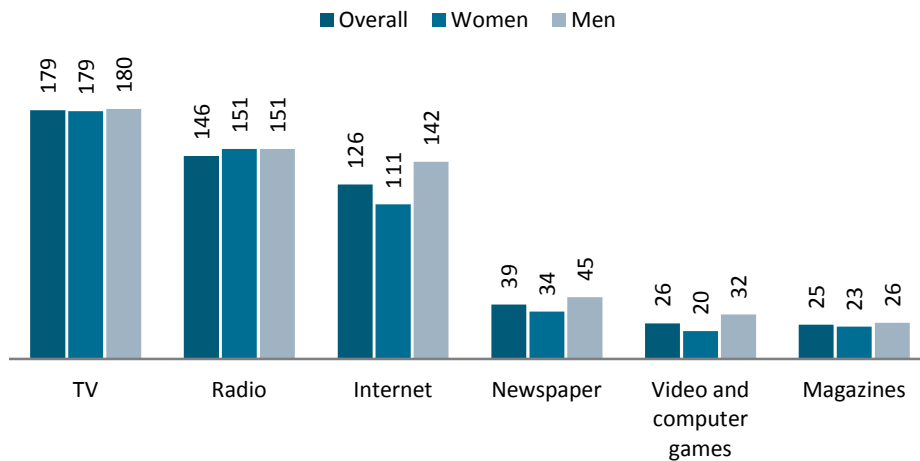
Basis: Whole sample (*N* = 3,278); non-users were coded as 0

Abb. 01   Media usage durati-on

seven.

In sum, we see that the Internet is clearly an integral part of daily life, on par with TV and radio. Reading newspapers or magazines, on the other hand, remains an important activity for older people. By contrast, young adults show a very different pattern of use as they spend less time per day reading newspapers and magazines but engage much more in Internet activities and in playing video or computer games.

3.2   Duration of online media use

The use of social media has become an integral part of the daily lives of many Internet and smartphone users. Applications that allow one-to-one and one-to-many communication rank among the most downloaded and popular media. Specifically, IM services and SNSs have become more popular than any other social media. As we will analyze both IM and SNS use more closely in later parts of this report, we specifically asked respondents to estimate how much they use these two types of social media on an average day. We further contrasted the two measures with overall Internet use.

Germans spend about 43 minutes per day using SNSs and about 58 minutes using IM services

Media use in minutes per day

	Internet	Social Network Sites	Instant Messenger
Overall	126	43	58
Women	111	42	58
Men	142	44	58
24 years and…	271	121	196
25 to 39 years	208	74	80
40 to 54 years	150	40	40
55 to 69 years	111	28	30
70 years and older	54	13	20
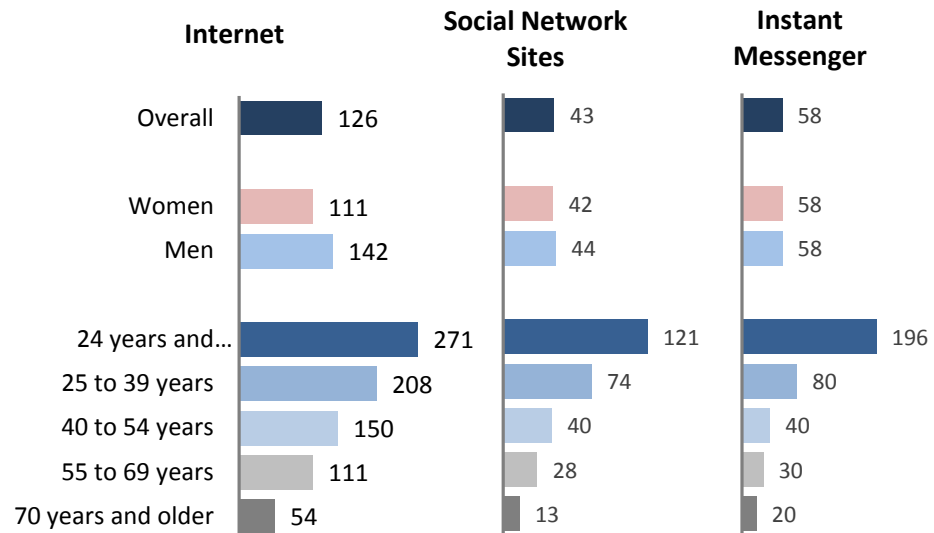
Abb. 02 Duration of online media use

Basis: Whole sample (*N* = 3,278); non-users were coded as 0

Young adolescents differentiate between "Internet use" and "social media use"

People spent about two hours on the Internet, 43 minutes on SNSs, and 58 minutes using IM services. There were no significant gender differences in SNS and IM use. Looking at different age groups, however, we found large differences between younger and older people:

- Young adults between 16 and 24 years spend the longest time using SNSs with 121 minutes per day and using IMs with 196 minutes per day. IM use in the youngest age group was more than twice as long as in the next older age group.

- It is interesting that when IM and SNS use are combined, their use surmounts the overall estimated duration of Internet use. This finding is interesting as it could be interpreted as a sign that younger adults do not regard IM as part of their overall Internet use. Mobile communication, although transmitted via the Internet, may hence not be perceived as being online.

- Usage duration decreases with every generation: German citizens older than 55 use SNS and IM services a maximum of 30 minutes per day.

3.3 Frequency of online service use

People who indicated that they were Internet users were further asked how often they use a number of different online services (e.g., search engines, e-mail services, online banking…). Answer options ranged from 1 = *never* to 4 = *daily*.

More than 90% of all Internet users in Germany use search engines and e-mail services; more than 60% of Internet users use online banking and online shopping

Left: Among the users of each online service, the % who use the site with the following frequency
Right: % of users in the German population

Less than weekly · Weekly · Daily · Share of users
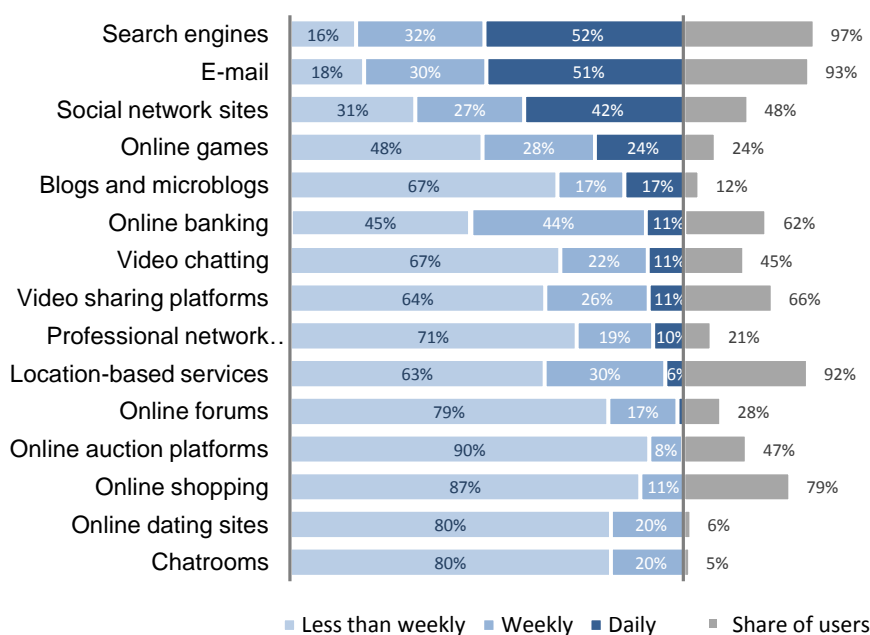
Basis: Left: Users of each respective online service
Right: Internet users (*n* = 2,482)

Abb. 03 Frequency of using online services

As can be seen in the figure above, search engines, e-mail services, and location-based services (e.g., Google Maps) are used by more than 90% of all German Internet users (grey bars). More than two thirds of Internet users use online shopping platforms, video sharing platforms, and online banking. Half of Internet users engage with SNSs, online auction platforms, and video chatting services. All other services are used by considerably fewer Internet users.

- Of the 97% who use search engines, most than half use them on a daily basis. 84% use them at least once a week.

- Similarly, of the 93% who use e-mail services, 51% use them daily. 81% check their e-mail at least once a week.

- Although only half of all Internet users use SNSs, 42% of them engage with SNSs every day. Only 31% use SNSs less than weekly.

- Online banking is used by 62% of the Internet users in Germany; however, only 55% of them manage their finances online at least once a week.

- Although location-based services are used by 92% of all users, 63% of these users use them less than once per week.

- Despite the popularity of online shopping (79% of all Internet users), most people buy products online less than once a week.

- In comparison, only a few Internet users use blogs or microblogs, online dating sites, or chatrooms.

3.4   Social network site use

One third of the German population uses Facebook

Which of the following social network sites do

Facebook	30%
Google+	9%
XING	3%
Stayfriends	3%
Pinterest	1%
Wer kennt wen	1%
LinkedIn	1%
Other	2%
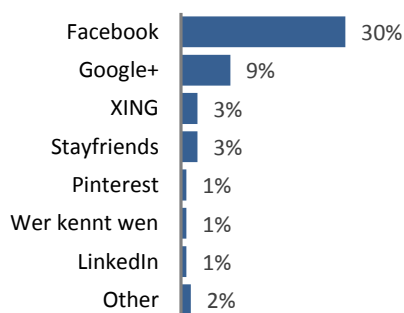
Basis: Whole sample (*N* = 3,278)

Primarily younger people use Facebook

% that uses Facebook

Women	32%
Men	30%
24 years and younger	88%
25 to 39 years	68%
40 to 54 years	38%
55 to 69 years	19%
70 years and older	8%
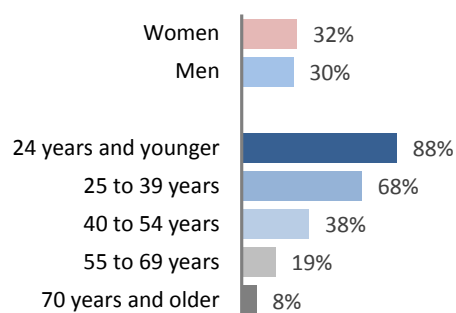
Basis: Whole sample (N = 3,278)

Abb. 04   Social network site use

As we specifically investigated platforms that allow for data sharing and communication between users, we wanted to know which SNSs are used most frequently.

- Facebook is by far the most used SNS. Almost one third of the German population uses Facebook.

- Only 9% use Google+ and even less use SNSs such as Stayfriends (3%) or Wer kennt wen (1%). Even professional networks such as XING or LinkedIn are used by less than 5%.

As Facebook is used by most SNS users, we investigated in more detail in how much Facebook use differed by different socio-demographic variables.

- There were no significant gender differences. One third of all women and men use Facebook.

There was a negative relation between Facebook use and age, indicating that mostly people below 40 years of age are using Facebook. In particular, almost 90% of people under the age of 24 use Facebook.

3.5 Smartphone use

An important question is how mobile media change our perceptions and evaluations of privacy. Many smartphone applications and services are based on location data, which are tracked during smartphone use.

The number of smartphone users has increased

In 2010, only 17% of the German population owned a smartphone (Statista, 2016). Today, however, about half of the German population uses a smartphone. Male and female participants did not differ with regard to smartphone use. However, whereas more than 80% of the German population between the ages of 16 and 39 owns a smartphone, the number of smartphone users decreases with each generation.

Half of the German population uses a smartphone

% of the German population that uses a smartphone

Overall	48%
Women	47%
Men	49%
24 years and…	87%
25 to 39 years	81%
40 to 54 years	66%
55 to 69 years	40%
70 years and older	17%
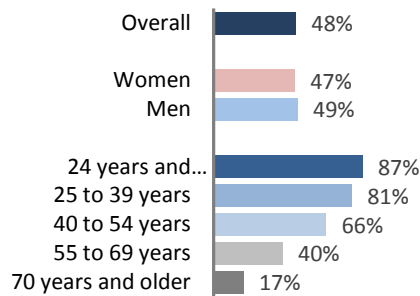
Basis: Whole sample (*N* = 3,278)

Abb. 05   The number of smartphone use increased

3.6 Frequency of app use

Next, we wanted to know which types of applications smartphone users regularly engage with. We asked users to indicate how often they use certain applications. Answer options ranged from 1 = *never* to 4 = *daily*. The following key observations were

Two thirds of all smartphone users in Germany use Instant-Messaging-Apps

Left: Among the users of the application, the % who use the app with the following frequency
Right: % of smartphone users that uses the respective smartphone application

Application	Less than weekly	Weekly	Daily	Share of smartphone
Instant-Messenger Apps	7%	22%	71%	72%
Music Apps	50%	28%	22%	50%
Gaming Apps	43%	27%	30%	44%
Social Network Sites Apps	24%	24%	52%	42%
Photo-Community Apps	71%	12%	18%	16%
Tracking-Apps	45%	45%	9%	15%

■ Less than weekly ■ Weekly ■ Daily ■ Share of smartphone

Abb. 06   Frequency of app use
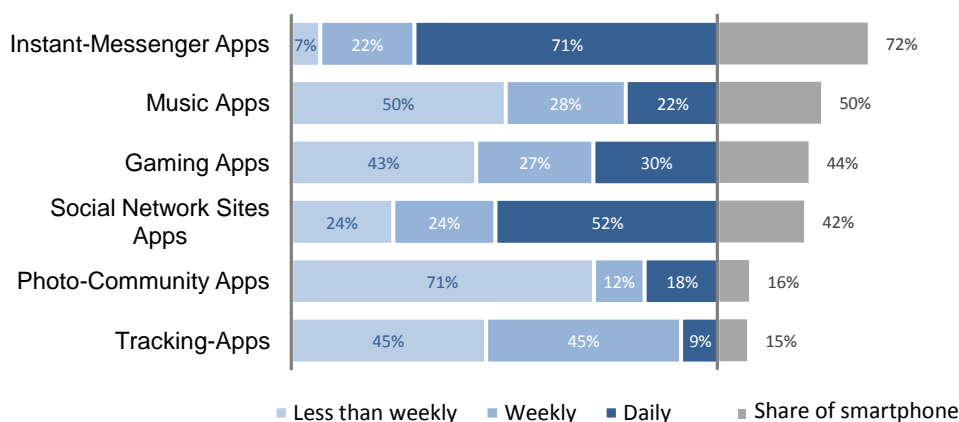
Basis: Left: Users of the respective applications
Right: All smartphone users (*n* = 1,676)

found:

- 72% of all smartphone users in the German population use IM services (e.g., WhatsApp, Threema, Snapchat…); 71% of them use IM services on a daily basis.

- Half of the smartphone users listen to music over their smartphone. However, only 22% of them do so on a daily basis. 50% of them use their phone as a music player less than weekly.

- 44% of all smartphone users play games on their smartphones. 57% of them engage in gaming at least once a week.

- SNS apps (e.g., Facebook, Google+…) are used by 42% of all smartphone users in Germany. 76% of them use these apps at least once a week, among them 52% who use SNS apps once to several times a day.

- Photography and tracking apps are used by only less than one fifth of the population.

3.7 Instant messenger use

As IM belongs to the most popular applications, we wanted to know which services users prefer.

Seven out of ten IM users indicated that they primarily use WhatsApp. Only one third of the participants said that they use another service more often. Consequently, 14% use Skype most frequently for instant messages, 5% use the Facebook-Messenger and only 8% use other apps such as Threema, iMessage, or Viber.

It is interesting that only 0.1% indicated that they use SnapChat. This is surprising as SnapChat has lately gained more and more active users. However, one has to bear in mind that our sample consisted of German citizens 16 years of age and older. Snapchat may be used primarily by younger adolescents who might not be part of the sample.

72% of smartphone users use WhatsApp most frequently

% of smartphone users who mostly use the respective instant-messenger app

WhatsApp	72,1%
Skype	14,2%
Facebook-Messenger	5,4%
Threema	1,7%
iMessage	1,7%
Viber	0,4%
Snapchat	0,1%
Others	4,4%
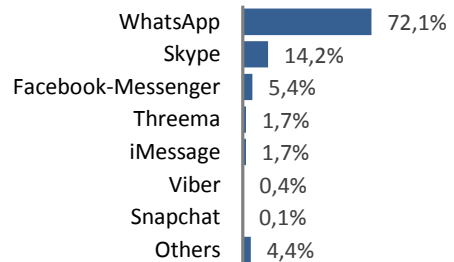
Basis: All IM users (*N* = 1,380)

Abb. 07 Instant messenger use

4
Communication in mediated and non-mediated contexts

Previous research on privacy and self-disclosure has often focused on one particular com-munication context. In recent years, psychologists and communication scholars have investigated people's attitudes and behaviors with regard to online privacy (for an overview, see: Acquisti, Brandimarte, & Loewenstein, 2015). However, communication is not limited to the boundaries of the specific medium in which it takes place. A conversation that began offline may continue in computer-mediated environments such as SNSs or IM services and vice versa. However, face-to-face (F2F) communication has often been viewed as the "gold standard" with which all other types of communication are compared (Nardi & Whitaker, 2002; Sundar, 2008). This view evolved primarily as scholars investigated potential negative outcomes of computer-mediated communication (CMC). By contrast, we asked about the specific characteristics of different communication channels and settings.

The first setting can be described as the typical F2F situation. In this situation, people are next to each other and communicate in a non-mediated environment in dyads (two people) or small groups. The second channel refers to communication via SNSs. Many people use the tools provided by these sites (e.g., status updates, comments) to communicate with other people. The third channel refers to IM use. Communication nowadays is no longer restricted to a specific time or space as people constantly communicate with each other via specific applications on their mobile phones. IM services (e.g., WhatsApp, Facebook Messenger, Threema, Snapchat…) offer the opportunity to exchange messages, pictures, or even voicemails from anywhere at any time. See Table 1 for the exact description of the channels and vignettes.

Channel	Examples of wording in the questionnaire (VIGNETTE)
Face-to-face (F2F)	…in personal conversations (i.e., when I talk to people face-to-face) …
Social network sites (SNS)	…in status updates or comments on social network sites (e.g., Facebook) …
Instant Messaging (IM)	…in conversations via instant messengers (e.g., WhatsApp or Facebook Messenger) …

Tab. 1: Channel description

Measuring communication frequency

In order to understand people's communication behavior and to assess the subsequent effects of this communication, we wanted to know how often people communicate with other people in these three channels. To assess people's communication frequency, we posed the following questions:

> *How often do you communicate with the following persons in [VIGNETTE]?*
> - *Partner*
> - *Family*
> - *Close friends*
> - *Colleagues*
> - *Acquaintances*

The answer options were 1 = *Never*, 2 = *Less than weekly*, 3 = *Weekly*, and 4 = *Daily*.

Measuring the social support received in the respective settings

Second, we asked participants how often they had received social support from friends within the last three months in these three settings. In the literature, social support has been conceptualized as a three-dimensional construct. Accordingly, social support can be informational, instrumental, or emotional. To measure the social support that people have received, we adapted and extended the UCLA Social Support Inventory (Schwarzer, 1991). Each dimension was measured with four items.

The first dimension of informational social support was measured with the following items:

> *In [VIGNETTE], how often did friends…*
> - *give you advice?*
> - *transmit information?*
> - *give you good tips?*
> - *point you to something?*

Instrumental social support was measured with the following items:

> *In [VIGNETTE], how often did friends…*
> - *support you with actions?*
> - *supply you with something?*
> - *handle something for you?*
> - *take you somewhere?*

Emotional support was measured as follows:

> *In [VIGNETTE], how often did friends…*
> - *encourage you?*
> - *boost your self-esteem?*
> - *listen to you attentively?*
> - *show sympathy?*

All items were measured on a 5-point scale ranging from 1 = *Never* to 5 = *Very often*. For the following analyses, we computed mean indices for each dimension. In a second step, we also asked how satisfied participants were with the social support they received in each dimension. The answer options ranged from 1 = *Very dissatisfied* to 7 = *Very satisfied*.

Measuring the willingness to self-disclose in different communication settings

Self-disclosure can generally be defined as the "process of making the self known to other persons" (Jourard & Lasakow, 1958). However, most scholars have conceptualized self-disclosure more specifically as the verbal communication of personal information to other persons (Chelune, 1979; Cozby, 1973; Jourard, 1971). For this research report, we adopted the latter definition and used the Self-Disclosure-Index by Miller, Berg, and Archer (1983) to measure people's general willingness to self-disclose to different people in different communication channels. The scale consisted of ten items that referred to intimate things and topics (e.g., my deepest feelings, my personal habits, my relationships with other people…). In the original study by Miller et al. (1983), respondents were asked to indicate how willing they were to discuss these things with a specific target person. In this survey, we used five vignettes instead of a specific target person. Table 2 presents an overview of the five different vignettes that we used. Answer options ranged from 1 = *discuss not at all* to 5 = *discuss fully and completely*. For the analyses, we computed mean indices for each communication situation.

Communication situation	Wording in the questionnaire (VIGNETTE)
F2F conversation with a good friend	Please imagine that you are in a personal conversation with a good friend, relative, or another trusted person. There is no other person present. You are communicating face-to-face.
F2F conversation with a group of people	Please imagine that you are communicating with a group of people including trusted as well as less trusted persons (e.g., colleagues, schoolmates, neighbors…). The group is conversing face-to-face.
Communication via status updates or comments on SNSs	Please imagine you are writing a status update or a comment on a social network site (e.g., Facebook).
IM conversation with a good friend	Please imagine that you are in a personal conversation with a good friend, relative, or another trusted person via an instant-messaging service (e.g., WhatsApp).
IM conversation with a group of people	Please imagine that you are communicating with a group of people including trusted as well as less trusted persons (e.g., colleagues, schoolmates, neighbors…) via an instant-messaging service (e.g., WhatsApp…)

Tab. 2: Communications situations

4.1 Face-to-face communication

4.1.1 Frequency of communication

F2F communication refers to social interactions that are carried out without a mediating technology (e.g., phone, computer, or smartphone). The first question asked how often people communicate with different people such as their partner, family, colleagues, friends, and acquaintances. The results generally indicated that people engage in F2F communication with these people whom they naturally see or work with every day. Further:

- For participants who are in a relationship, 91% engage in F2F communication with their partner on a daily basis. Another 7% engage in F2F communication with their partner weekly.

- Almost 80% of the German population engage in F2F communication with their colleagues at least on a weekly basis. Over half of the population engages in work-related F2F communication every day.

- Whereas 41% engage in F2F communication with their families on a daily basis, another 40% communicate with them F2F at least once a week.

- People generally engage less in F2F communication with close friends and acquaintances. Less than one fifth of the German population communicates F2F with their friends on a daily basis. However, almost eight out of ten Germans have F2F communications with their close friends at least once a week.

**Face-to-face communication frequency increases with interpersonal closeness
or job relationships**

% who communicate face-to-face with the following frequency

■ Never ■ Less than weekly ■ Weekly ■ Daily

Partner (n = 2,307)	7%	91%	
Colleagues (n = 2,308)	19%	21%	57%
Family (n = 3,135)	18%	40%	41%
Close friends (n = 3,061)	22%	61%	16%
Acquaintances (n = 3,131)	45%	43%	12%

**Abb. 08 Frequency of face-to-
face communication**
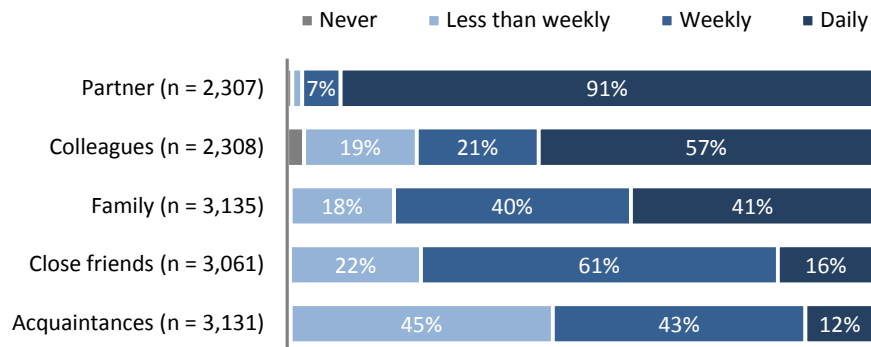
Basis: Respective subsamples who have the respective communication partner in their life

4.1.2   Willingness to self-disclose

Self-disclosure is a theoretically connected to privacy (Dienlin, 2014; Dienlin & Trepte,
2015; Masur & Scharkow, 2016; Petronio, 2002). To better understand people's self-
disclosure as a form of privacy management in the different communication channels,
we asked them to indicate how willing they would be to disclose different kinds of
information in each respective channel. We observed the following findings with re-
gard to self-disclosure in F2F conversations with a good friend or with a group of peo-
ple:

- First, the willingness to disclose personal information to a good friend in a F2F
  conversation was quite high. On average, the participants were rather willing to
  discuss topics such as personal feelings or problems with a close friend.

- By contrast, the average willingness to disclose the same topics in a F2F conver-
  sation with a group of people that included some less-trusted people was lower.
  The mean values indicated a tendency to tend to avoid discussing these topics in
  such a situation.

- People under the age of 40 were slightly more willing to disclose these topics in
  larger group conversations than older people.

- There were no significant gender differences with regard to the willingness to
  disclose personal information.

People disclose more in a F2F conversation with a good friend than with a group of people

Probability of self-disclosure from 1 = I would not talk about that to 5 = I would discuss everything
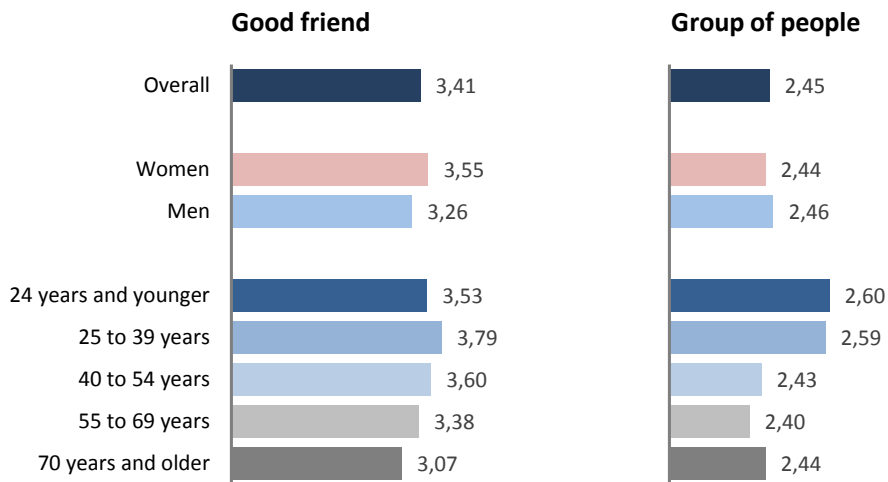
Good friend

Overall	3,41
Women	3,55
Men	3,26
24 years and younger	3,53
25 to 39 years	3,79
40 to 54 years	3,60
55 to 69 years	3,38
70 years and older	3,07

Group of people

Overall	2,45
Women	2,44
Men	2,46
24 years and younger	2,60
25 to 39 years	2,59
40 to 54 years	2,43
55 to 69 years	2,40
70 years and older	2,44

Basis: Whole sample (*N* = 3,278)

Abb. 09 Willingness to disclose within a face-to-face communication

In face-to-face communications with friends, people mostly receive emotional and informational support

	Overall	Women	Men
Informational	2,97	3,09	2,84
Instrumental	2,23	2,29	2,15
Emotional	2,99	3,23	2,73
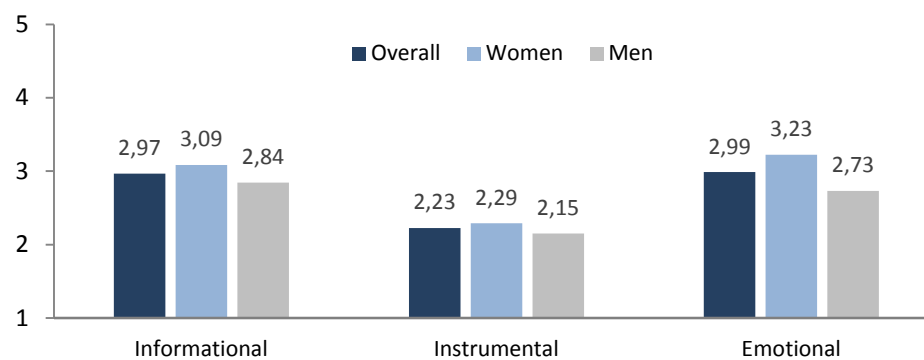
Basis: Whole sample (*N* = 3,278)

Abb. 10 Social support within face-to-face communication

4.1.3 Social support and satisfaction with social support

Social support refers to "the manner in which individuals benefit from each other based on their encounters, interactions, empathy, or mutual understanding" (Trepte & Scharkow, 2016, p. 304). However, in order to receive social support, people need to disclose their need for it. Accordingly, it can be argued that people balance their privacy and social

support needs. We wanted to know how often participants had received social support from friends in F2F communication during the last three months.

- In general, people reported only sometimes receiving social support through F2F conversations. Instrumental support was only rarely received.

- Focusing on the differences between women and men, women reported receiving slightly more social support than men.

Abb. 11 Satisfaction with social support in face-to-face communication

- Furthermore, people were generally very satisfied with the support they received through F2F conversations.

People are satisfied with the support they receive in F2F conversations

Level of satisfaction with social support (1 = very dissatisfied at all to 7 = very satisfied)

Emotional	5,0
Instrumental	5,0
Informational	4,9

Basis: Whole sample (*N* = 3,278)

4.2 Social network site communication

4.2.1 Frequency of communication

Next, we wanted to know how often participants tend to communicate with their partner, colleagues, family, close friends, and acquaintances via status updates or comments on SNSs.

- 61% of Germans never communicate with their partner on SNSs. Even 20% said that they communicate on SNSs with their partner less than weekly. Only 8% of them communicate with their partner via SNSs daily.

- The majority of Germans communicate with their colleagues via SNSs less than weekly (43%) or never (40%).

- The majority (39%) communicate on SNSs with their close friends as well as with their family less than weekly. Even 35% of participants said that they never communicate with their family members via SNSs.

- 59% of Germans use SNSs to communicate with their acquaintances less than weekly.

SNSs are used to stay in contact with acquaintances, friends, and family

% who communicate on SNSs with the following frequency
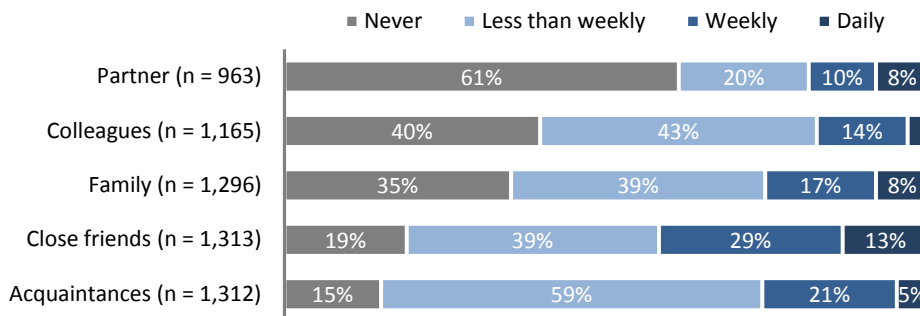
■ Never ■ Less than weekly ■ Weekly ■ Daily

Partner (n = 963): 61% | 20% | 10% | 8%
Colleagues (n = 1,165): 40% | 43% | 14% |
Family (n = 1,296): 35% | 39% | 17% | 8%
Close friends (n = 1,313): 19% | 39% | 29% | 13%
Acquaintances (n = 1,312): 15% | 59% | 21% | 5%

Basis: Respective subsamples who have the respective communication partner

Abb. 12   Frequency of social network site communication

4.2.2   Willingness to self-disclose

In recent years, societal and scientific debates have often focused on the question of how much people reveal on SNSs. The general perception seems to be that people share large amounts of personal information. With the next set of questions, we wanted to investigate people's willingness to self-disclose in public communication channels on SNSs. These include status updates and comments underneath these updates or pictures. We specifically focused on this kind of public communication because the information that is disclosed is visible to a person's entire Facebook network.

People do not disclose much while posting or writing comments on SNSs on the Internet

Self-disclosure from 1 = I would say nothing to 5 = I would say everything

Status updates and comments

Overall: 1,78
Women: 1,71
Men: 1,85
24 years and younger: 1,97
25 to 39 years: 1,95
40 to 54 years: 1,72
55 to 69 years: 1,67
70 years and older: 1,72
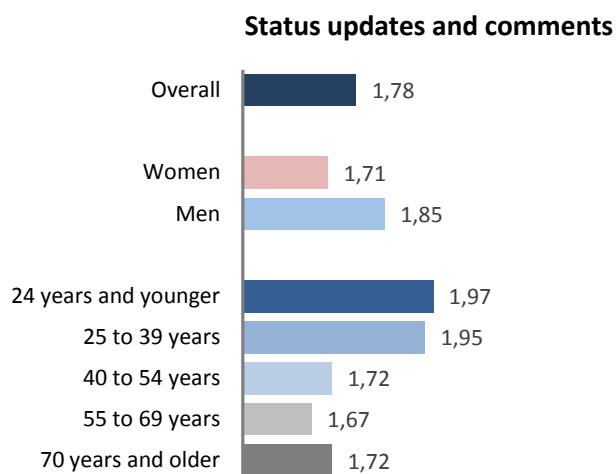
Basis: Whole sample (*N* = 1,573)

Abb. 13   Willingness to self-disclose on social network site communication

▪ Overall, people are not willing to discuss various sensitive topics in status updates or comments on SNSs.

- With regard to gender differences, we found that men are a little bit more willing to disclose private information than women.
- We further found that age was a significant predictor: Users younger than 39 are more likely to talk about private information in status updates than older people.

4.2.3 Social support and satisfaction with social support

Recent studies have investigated the extent to which people receive social support through social media (Ellison & Vitak, 2015; Trepte, Dienlin, & Reinecke, 2014; Utz, 2014). The findings suggest that SNSs offer people the opportunity to receive social support easily as users are able to reach large networks and thereby activate their social capital. We thus asked participants how often they had received social support within the last three months through SNS conversations. As you can see from the bar chart, there was no significant difference between women and men in the receipt of social support via SNSs. The gender averages were close to the overall averages, which were consistently low.

People are rather satisfied with the support they get in SNS conversations

Value of how satisfied people are with the support they receive from SNS conversations with friends from 1 = not satisfied at all to 7 = very satisfied
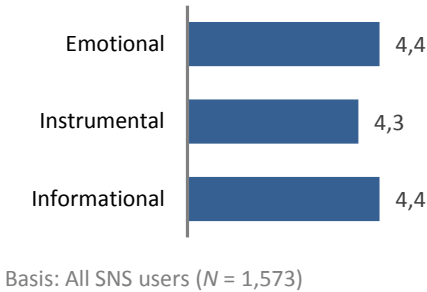
Emotional	4,4
Instrumental	4,3
Informational	4,4

Basis: All SNS users (*N* = 1,573)

Abb. 14 Social support within social network site communication

In SNS conversations with friends, people mostly receive informational and emotional support

Basis: All SNS users (*N* = 1,573)
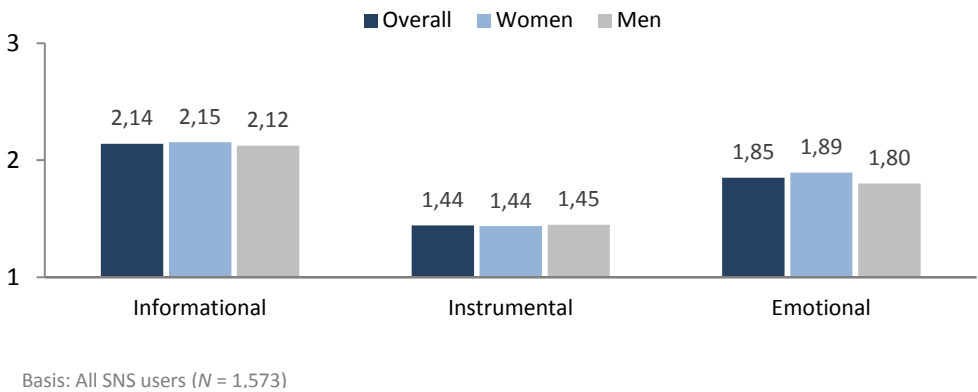
Abb. 15 Satisfaction with social support within social network site communication

- Overall, SNS users had not received a considerable amount of social support in the last three months. On average, they indicated rarely receiving social support in all three dimensions.

- Nonetheless, SNS users mostly receive informational and emotional support through conversations on SNSs with their friends. On the other hand, SNS users almost never receive instrumental support through SNSs.

- Germans are generally quite satisfied with the support they get via SNSs.

4.3 Instant messaging communication

4.3.1 Frequency of communication

Last, we wanted to know how often participants communicate with their partner, colleagues, family, close friends, and acquaintances via IM.

- Overall, the frequency patterns showed that people use IM services to communicate with almost all people in their lives. Two thirds of all IM users communicate with at least some of the listed persons at least monthly.

- IM is particularly popular for communicating with partners, close friends, and family members. More than half of the IM users communicate with their partner at least weekly, including 40% who communicate with their partner daily.

- Almost everybody (90%) uses IM to communicate with their friends. 68% do so on a weekly or daily basis.

- Although more than two thirds of the IM users communicate with colleagues and acquaintances via IM, only around 10% do so on a daily basis.

Nearly half of IM users communicate with their partner via IM daily, whereas one third never communicates with their partner

% who communicate via IM with the following frequency
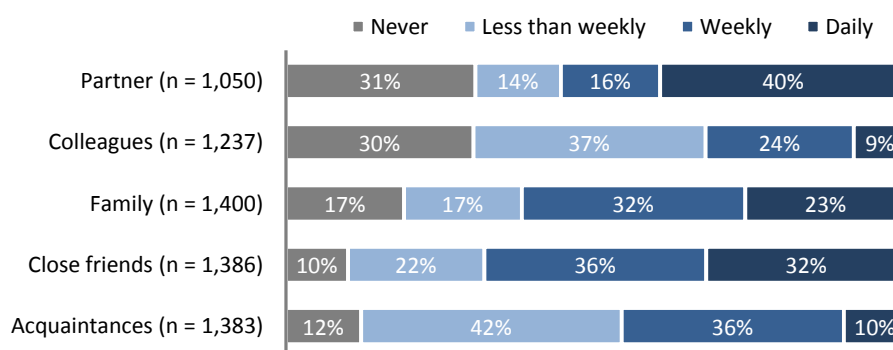
Abb. 16 Frequency of instant messaging communication

Basis: Respective subsamples who have the respective communication partner

4.3.2 Willingness to self-disclose

To find out how much people are willing to disclose in IM conversations, we again asked participants to indicate how willing they were to disclose information with respect to a number of different topics.

People disclose more personal information in an IM conversation with a good friend than with a group of people

Average willingness to self-disclosure (1 = wouldn't discuss at all to 5 = would discuss totally)

	Good Friend	Group of people
Overall	2,48	1,88
Women	2,49	1,84
Men	2,47	1,93
24 years and…	3,37	2,37
25 to 39 years	3,06	2,14
40 to 54 years	2,41	1,82
55 to 69 years	2,03	1,68
70 years and older	1,88	1,66
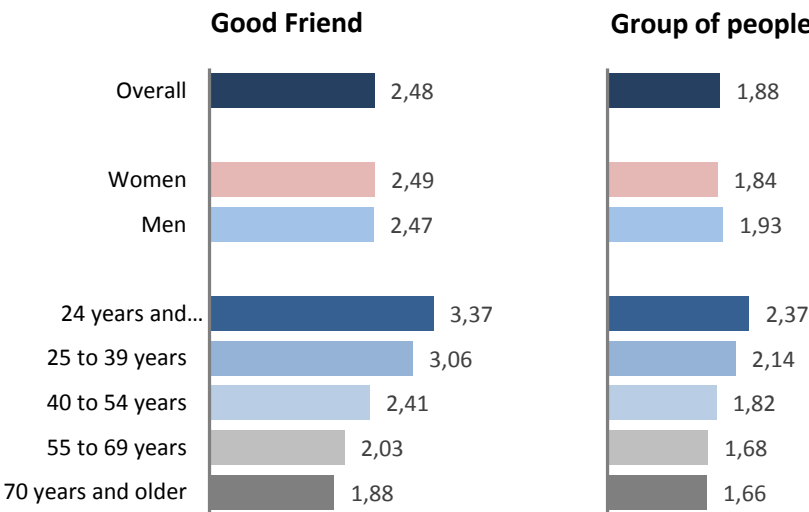
Abb. 17 Willingness to self-disclose within instant messaging communication

Basis: All IM users (*N* = 1,522)

- First, people are ambivalent about their willingness to disclose personal information to a good friend in an IM conversation. On average, the means were slightly below the middle of the scale. Thus, participants were rather not willing to discuss topics such as personal feelings or problems with a close friend.

- However, younger people under the age of 39 were slightly above the middle of the scale, indicating that they were rather willing to discuss these topics via IM.

- By contrast, the average willingness to disclose the same topics to a group of people via IM, including less trusted people, was significantly lower. The mean values indicated a tendency to avoid discussing these topics in such a situation.

- In this case, age was not as strong of a predictor. Younger people were not significantly more likely to discuss sensitive information in IM group conversations.

4.3.3 Social support and satisfaction with social support

Finally, we wanted to know how often participants received social support from friends via IM conversations.

- Through IM conversations with friends, people mostly receive informational support. They sometimes also receive emotional support.

- Women receive slightly more informational, instrumental, and emotional support through IM conversations than men.

- In line with findings from other channels, people were quite satisfied with the support they have gotten.

People are rather satisfied with the support they get from IM conversations

Value of how satisfied people are with the support they received from IM conversations with friends from 1 = not satisfied at all to 7 = very satisfied
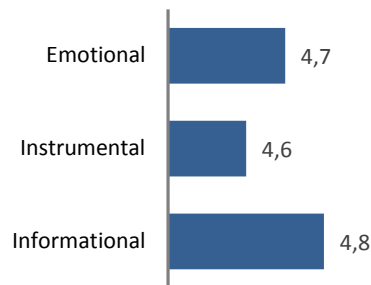
Support	Value
Emotional	4,7
Instrumental	4,6
Informational	4,8

Basis: All IM users (*N* = 1.522)

Abb. 18 Social support within instant messaging communication

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In IM conversations with friends, people mostly receive informational and emotional support

Frequency of receiving social support through IM conversations (1 = Never to 5 = Very often)

Legend: Overall, Women, Men

	Overall	Women	Men
Informational	2,56	2,67	2,43
Instrumental	1,77	1,82	1,72
Emotional	2,25	2,45	2,02
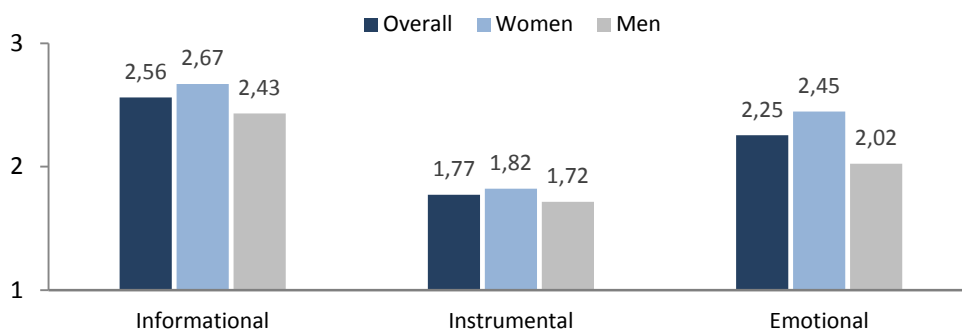
Basis: All IM users (*N* = 1,522)

Abb. 19 Satisfaction with social support within instant messaging communication

5
Privacy measures

5.1   Need for privacy

In the following, we more closely investigated how the German population views privacy in online and offline environments. We specifically analyzed their need for privacy, attitudes concerning the overall value of privacy, and general concerns related to privacy issues both on the Internet and in offline settings. We further investigated how many privacy violations people had experienced in the last three months before this survey was conducted. Finally, we assessed their online privacy literacy with a 10-item knowledge test.

Need for privacy

The need for privacy can be understood as an individual's need to selectively control the access of others to the self with the aim of achieving a desired level of physical or psychological privacy in the form a certain degree of solitude, intimacy, anonymity, or reserve (Trepte & Masur, 2017). It must be understood as a secondary need as it refers to the temporary desire for a condition in which the satisfaction of more fundamental needs (Altman, 1975; Trepte & Masur, 2017; Westin, 1967) becomes possible.

To explore participants' need for privacy, we developed a scale that was based on Burgoon's (1982) four dimensions. The need for *informational privacy* refers to the desire to have control over the amount, content, and recipients of information released about the self (Example item: "I don't want my personal data to be publicly available"). The need for *social privacy* refers to the need to have control over social relationships, interactions, and encounters (Example item: "I like to know who I am going to meet during the day"). Psychological privacy is the desire to control affective and cognitive input and outputs. High psychological privacy refers to a tendency to conceal rather than reveal. A need for this type of privacy thus means the desire to avoid self-disclosing to other persons (Example item: "It's hard for me to talk about myself"). Finally, physical needs for privacy refer to the desire to control physical and spatial intrusions and the mere presence of others (Example item: "I don't like to stand in a crowd"). Answer options for all items ranged from 1 = *totally disagree* to 5 = *totally agree*.

Germans generally do not want information about themselves to be publicly available

Germans have a high need for informational privacy. This indicates that people care about their personal data and want to determine for themselves who is able to access such data.

- 82% of the German population do not want their personal data to be publicly accessible.
- 67% would prefer to remain unrecognizable.

On average, German citizens have a moderate need for social and physical privacy

Germans tend to agree more than disagree with statements that refer to the need to control how much social interaction and physical contact they have. A considerable part of the population wants to have control over choosing the people they will interact with and have contact with in their daily lives.

- 40% of the German population, for example, do not like it if people unexpectedly join personal conversations.

- 35% like to know beforehand who they are going to meet during the day.

- 63% do not like it if strangers come too close physically.

- 60% also do not like to be in crowded places.

Germans generally have lower needs for a psychological barrier around themselves

The analyses suggest that Germans are rather open and do not mind talking about personal things with other people. However, some Germans do not like to share private information with other people (17%) and find it difficult to talk about themselves (23%).

Germans have a high need for informational privacy but a lower need for psychological privacy

Average agreement with statements in each dimension (1 = Totally disagree to 5 = Totally agree)
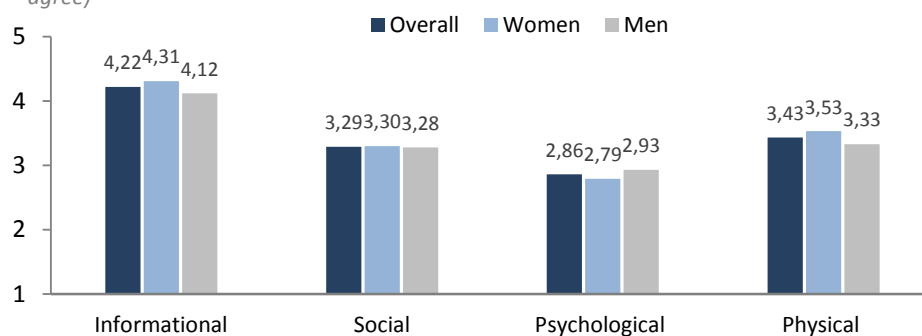
Basis: Whole sample (*N* = 3,278)

Abb. 20   Need for privacy

5.2   Privacy concerns

In the last decade, privacy concerns emerged as a central concept for studying people's behavior in online environments. Many scholars found that people are quite concerned about their online privacy but do not act accordingly (Gross & Acquisti, 2005; Nosko, Wood, & Molema, 2010; Stutzman & Kramer-Duffield, 2010; Taddei & Contena, 2013; Tufekci, 2008). In a large-scale survey study that began in 2010 by the European Commission (2011), the German population was quite concerned about their privacy. In particular, Germans reported being concerned about the recording of their online behavior (p. 68).

In light of this, we wanted to investigate how concerned German citizens are today. We measured both offline and online privacy concerns. On the basis of previous research (Buchanan, Paine, Joinson, & Reips, 2007), we developed nine items for assessing people's online privacy concerns with regard to the data collection practices of institutions and website providers, information misuse by other users, and general fraud due to skimming. We further developed six items for assessing people's privacy concerns in offline environments. The participants indicated their concerns on a 5-point scale ranging from 1 = *not at all concerned* to 5 = *very concerned*. In the following, we present separate analyses of concerns with regard to several issues and then present a comparison of online and offline concerns.

5.2.1 Concerns about data collection practices on the Internet

German Internet users are generally concerned about the data collection and data analysis practices of website providers and institutions such as intelligence agencies. Internet users are worried about not knowing what these practices are or what these third parties do with users' personal data.

All in all, more than half of the population are concerned about the data collection practices of website providers (57%) and institutions (56%). Slightly fewer people are concerned about telecommunication providers tracking their location data (44%). However, two thirds (74%) are worried about not knowing what these practices are.

Germans are generally very concerned about the data collection practices of institutions and website providers

% of participants who are concerned and very concerned

How concerned are you...

■ Concerned ■ Very concerned

… about having no idea what organizations or website providers do with your data?	29%	45%
… about website providers recording your surfing behavior?	29%	28%
… about institutions or intelligence agencies collecting and analyzing data that you disclose on the Internet?	24%	32%
… about telecommunication providers seeing and collecting you geographical location via the GPS sensor of your mobile phone?	21%	23%

Abb. 21 Privacy concerns about data collection practices

Basis: All Internet users (*N* = 2,482)

There were only small gender differences as men voiced being generally slightly more concerned than women. With regard to age differences, we observed only small differences:

▪ All age groups voiced being most concerned about not having knowledge about data collection processes and the least concerned about location tracking on their mobile phones.

▪ Generally, older people were slightly more concerned than younger people. However, the relation was not linear. Younger people under age 24 were

generally more concerned than the next generation, which included people between 25 and 39 years of age.

▪ It is interesting that young people were among the most concerned with regard to location tracking through GPS sensors in their smartphones.

Older people reported being generally more concerned about data collection practices

Average concern across age groups (1 = Not at all concerned to 5 = Very concerned)

	No insight	Recording surfing	Data collection	Location tracking
24 years and younger	3,90	3,35	3,51	3,22
25 to 39 years	3,83	3,27	3,23	2,95
40 to 54 years	3,99	3,47	3,48	3,09
55 to 69 years	4,23	3,80	3,79	3,28
70 years and older	4,20	3,78	3,74	3,18

■ 24 years and younger ■ 25 to 39 years ■ 40 to 54 years
■ 55 to 69 years ■ 70 years and older
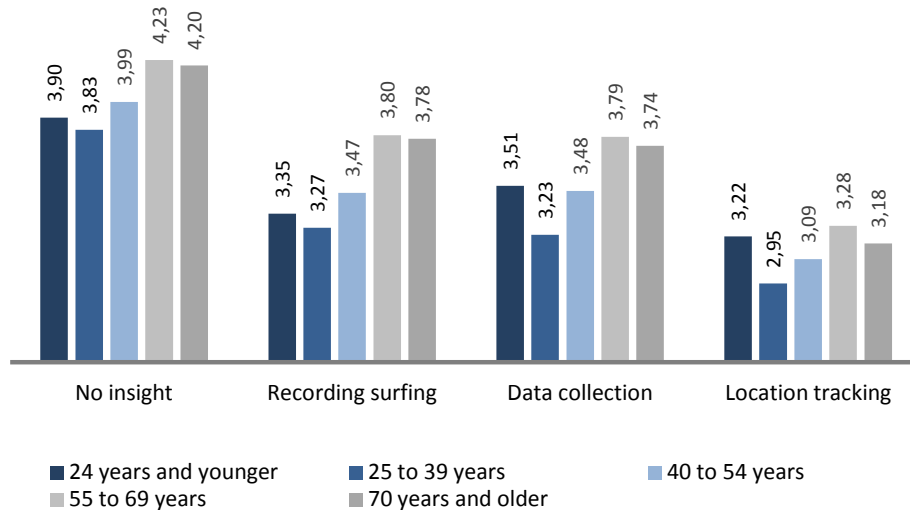
Abb. 22 Privacy concerns about data collection practices per age group

5.2.2 Concerns about privacy violations by other users

Germans are likewise quite concerned about unintended audiences on the Internet. They are worried that information about them might fall into the hands of unknown people. Over half of Internet users are concerned or very concerned that unknown people might obtain information about them due to their online activities (62%). However, fewer people are concerned about unknown people reading the message they send via the Internet (46%).

Germans are concerned that unintended people might obtain information about them from the Internet

% of participants who are concerned and very concerned

How concerned are you...

■ Concerned ■ Very concerned

	Concerned	Very concerned
… about unknown people getting information about you due to your online activities?	33%	29%
… about unknown people reading a message that you send someone else?	26%	20%
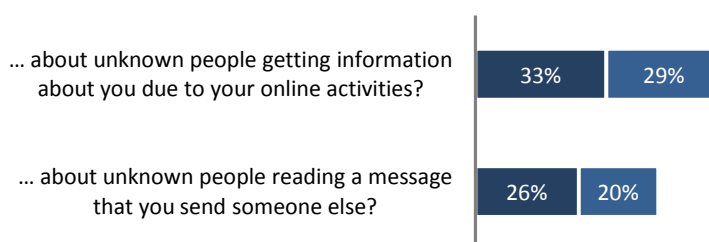
Basis: All Internet users (*N* = 2,482)

Abb. 23 Concerns about privacy violations by other users

We did not find any gender differences for either statement. However, there was a significant effect of age:

- The older the participants, the more concerned they were about other people getting information about them via the Internet.

- The same pattern was identified for the concern that unintended people might read a message that was sent via the Internet. However, younger people were again more concerned than the generation afterwards.

Older people are more concernend about social privacy violations

Average concern across age groups
(1 = Not at all concerned to 5 = Very concerned)

Abb. 24 Concerns about privacy violations by other users per age group
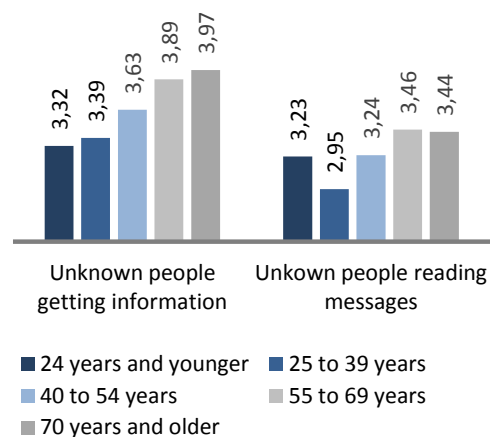
5.2.3   Concerns about criminality and information theft on the Internet

The next set of items refers to concerns about identity and information theft. For example, many people worry that their financial information (e.g., banking numbers) will get stolen on the Internet and consequently do not use online shopping or online banking.

The findings show that many people are indeed concerned about these issues. For example, 67% of the German population are worried that their credit card number might be stolen if they shop online. People are furthermore concerned that people or organizations are not who they claim to be on the Internet. One third of the German population, for example, is very concerned that other people could set up fake profiles with their identity.

Germans are generally quite concerned about identity and information theft on the Internet

% of participants who are concerned and very concerned

How concerned are you...

■ Concerned   ■ Very concerned

… about someone stealing your credit card number while buying things online? 26% 41%

… about online organisation not being who they claim they are? 35% 31%
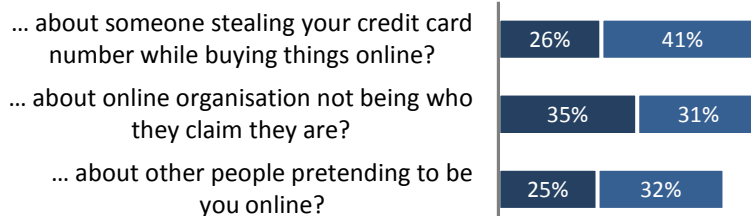
… about other people pretending to be you online? 25% 32%

Abb. 25 Concerns about criminality and information theft on the Internet

Basis: All Internet users (*N* = 2,482)

In line with the previously reported findings, there were no significant gender differ-ences. However, we again found that older people were more concerned about online criminality in the form of skimming, identity faking, and identity theft.

It is mainly older people who are concerned about identity theft on the Internet
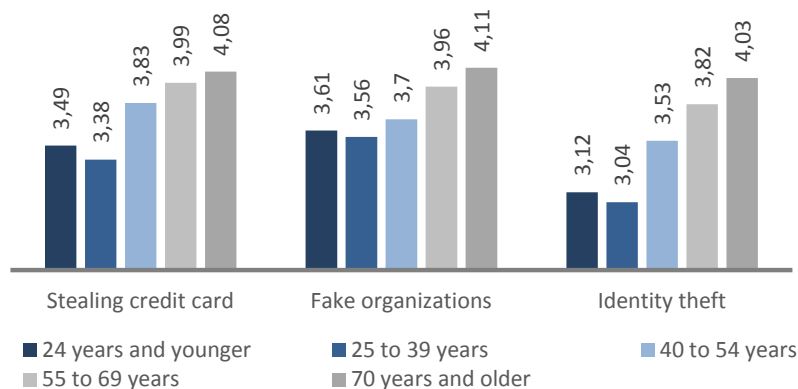
Abb. 26 Concerns about criminality and information theft on the Internet per age group

5.2.4 Concerns about surveillance in offline environments

In contrast to the previously presented online privacy concerns, we investigated peo-ple's privacy concerns with regard to surveillance and privacy violations in offline envi-ronments. The first set of items refers to surveillance in offline environments.

It is interesting that people are most concerned about their telephone conversations being intercepted. However, more than half of the population (56%) are not very con-cerned about this issue. Roughly a quarter are concerned or very concerned about pub-lic surveillance through CCTV, and almost 40% are concerned about their home priva-cy being violated because their house is identifiable on Google Street View.

Privacy concerns with regard to offline surveillance are not as pronounced; however, a large part of the German population is concerned about the surveillance of phone calls

% of participants who are concerned and very concerned

How concerned are you...
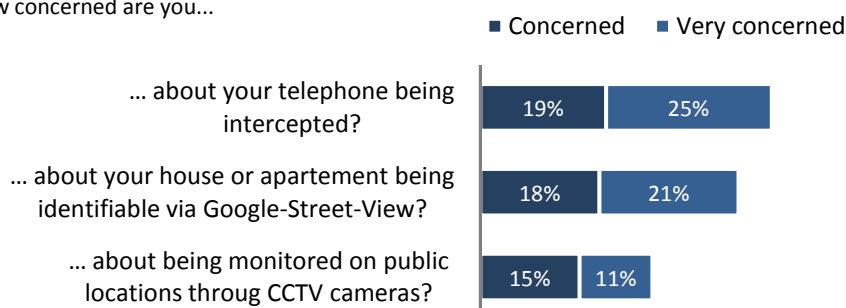
Basis: Whole sample (*N =3,278*)

Abb. 27 Concerns about surveillance in offline envi-ronments

Older people are concerned about phone conversation interception and Google Street View, but people are generally less concerned about CCTV surveillance

Average concern across age groups (1 = Not at all concerned to 5 = Very concerned)
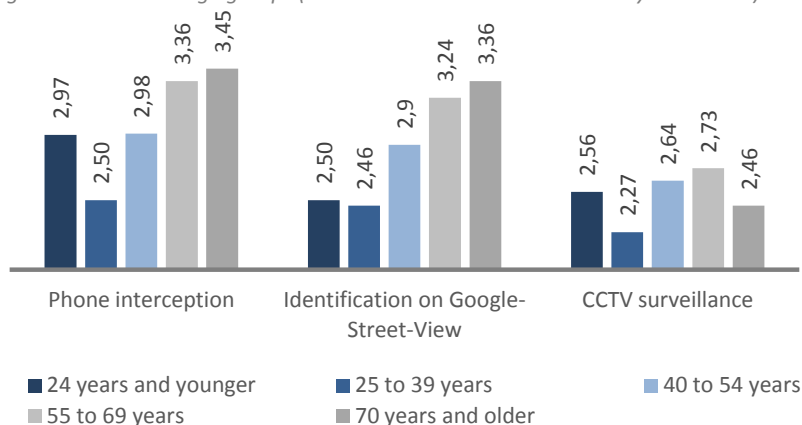
Abb. 28 Concerns about surveillance in offline environments per age group

Women were slightly more concerned that their house or apartment might be identifiable on Google Street View. Men, on the other hand, were more concerned about phonecall interception. With regard to age differences, the following observations were made:

- Only Germans older than 40 were concerned about phonecall interception and identification on Google Street View. Younger generations, on average, were below the middle of the scale, indicating less concern.

- Participants younger than 40, in particular, showed almost no privacy concerns with regard to Google Street View.

- People's privacy concerns did not involve CCTV surveillance very much. Only Germans between the ages of 55 and 69 were slightly above the middle of the scale, indicating some concern.

5.2.5 Concerns about data collection offline

We further wanted to know how much people are also concerned about companies' data collection practices that are not carried out on the Internet. For example, department stores collect information about their customers via pay-back cards or buying records.

The findings suggest that around 40% of the German population are concerned about privacy issues regarding data collection via banking procedures or pay-back cards.

Older people are more concernend about data collection

Average concern across age groups (1 = Not at all concerned to 5 = Very concerned)
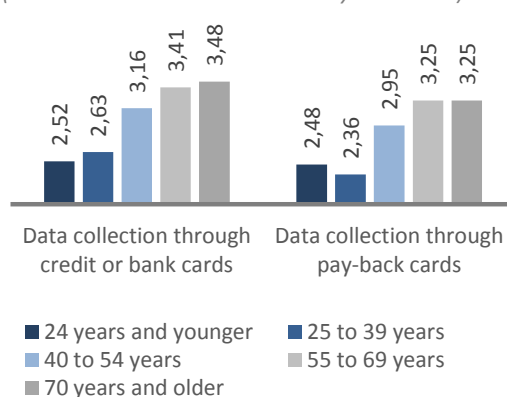

Abb. 29 Concerns about data collection offline per age group

A large part of the German population is concerned about data collection by department stores and shops

% of participants who are concerned and very concerned

How concerned are you...

■ Concerned ■ Very concerned

... that the amount and location of your purchasing may be collected if you pay with your bank or credit card? | 21% | 22%

... about department stores or shops collecting your buying preferences and your consumer behavior via pay-back... | 20% | 20%
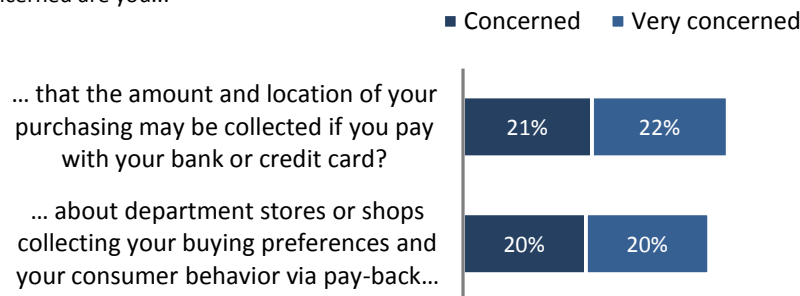
Basis: Whole sample (*N* = 3,278)

Abb. 30 Concerns about data collection offline

Men were more concerned about data collection through pay-back cards. In line with the previous results, age accounted for small differences in concerns:

- Only people older than 54 were significantly concerned about data collection through bank or pay-back cards.

5.2.6 Comparison between online and offline concerns

Finally, we investigated whether people are more concerned about online or offline privacy. The figure below shows differences in overall concerns (mean indices). Online privacy concerns were generally more pronounced. We further found that men were slightly more concerned than women. However, this difference was not significant. Age, on the other hand, was a significant predictor. With regard to both online and offline concerns, younger people were significantly less concerned than people older than 40.

Germans are generally more concerned about their online privacy

Concern about offline and online privacy (1 = Not at all concernd to 5 = Very concerned)

Offline

Overall	3,18
Women	3,16
Men	3,20
24 years and younger	2,88
25 to 39 years	2,78
40 to 54 years	3,09
55 to 69 years	3,33
70 years and older	3,31

Online

Overall	3,66
Women	3,65
Men	3,68
24 years and younger	3,42
25 to 39 years	3,32
40 to 54 years	3,58
55 to 69 years	3,82
70 years and older	3,85

Abb. 31 Comparison between online and offline concerns
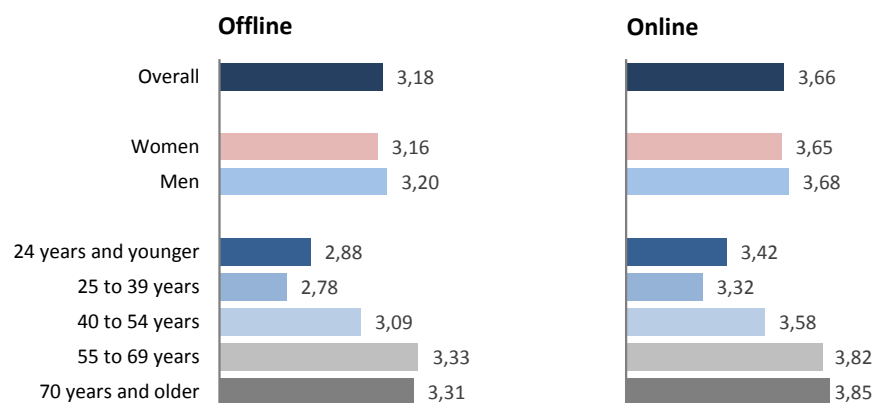
Left: Whole sample (*N* = 3,278); Right: Internet users (N = 2,482)

5.3 Attitudes toward privacy and data protection

Next, we investigated general attitudes toward privacy, data protection, and disclosure of personal information in the German population. More specifically, we wanted to know how much value people ascribe to privacy, under which circumstances they consider privacy to be important, and whether security issues might counterbalance the value of privacy. We further analyzed people's attitudes toward the increasing necessity to disclose personal information on the Internet. Hence, we wanted to know whether people perceive the increasing necessity to disclose personal information in order to use certain goods or services as good or bad and the extent to which this is correlated with the incremental value of privacy.
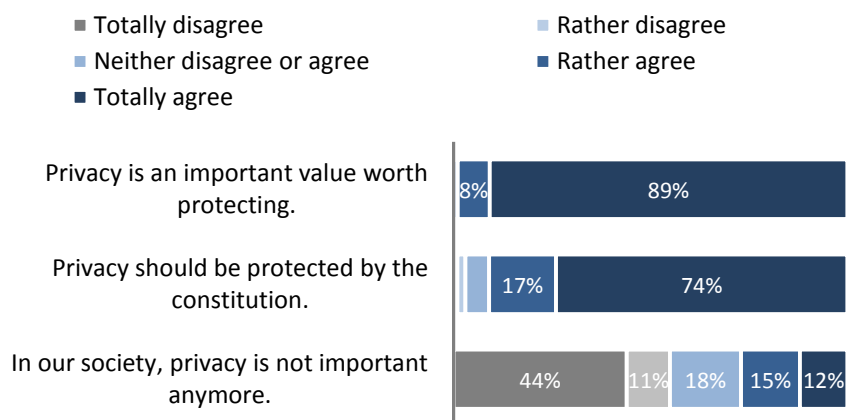
Precisely, we presented participants with several statements regarding the value of privacy to society, the value of privacy to individuals, the value of privacy in light of security and criminality, and the disclosure of personally identifying information. Statements with regard to the latest dimension where derived from the Special Eurobarometer 359 (European Commission, 2011, p. 22). All other items were self-developed. Participants indicated their agreement with these statements on a scale ranging from 1 = *totally disagree* to 5 = *totally agree.*

5.3.1 The value of privacy to society

The first three items refer to the general value of privacy for our society. Almost all participants reported that privacy is an important value that is worth protecting. The high agreement with the first statement shows that the German population clearly values privacy. This is also evident in the strong agreement with the second statement: 74% of the population thinks that privacy should be protected by the constitution. The valuation of privacy was stable across the whole population. There were no significant gender or age differences with regard to the level of agreement with the statements.

Despite this high valuation of privacy, a considerable share of the German population reported believing that our modern society is leading to an erosion of privacy: 27% agreed that privacy today is not important anymore. With regard to the third item, men agreed a little bit more than women.

Germans consider privacy to be valuable, but at the same time, almost half of the population thinks that it is becoming less and less important in our society

- ■ Totally disagree
- ■ Rather disagree
- ■ Neither disagree or agree
- ■ Rather agree
- ■ Totally agree

Privacy is an important value worth protecting.	8%	89%
Privacy should be protected by the constitution.	17%	74%
In our society, privacy is not important anymore.	44% 11% 18% 15% 12%	

Basis: Whole sample (*N* = 3,278)

**Abb. 32 The societal value of privacy**

5.3.2 The value of privacy for the individual

The next two statements refer to two commonly expressed views on privacy after the Snowden revelations. The first statement "Everyone should have the opportunity to determine for themselves which aspects of their personal information are publicly available" alludes to the concept of individual self-determination. Privacy entails control over personal information. With this item, we thus wanted to know the extent to which people want to have control over their personal information.

The second statement refers to the commonly expressed "nothing-to-hide" argument. Agreement with the item "Someone who has nothing to hide does not have to worry about his or her privacy" thus suggests a form of indifference toward data collection and the erosion of privacy on the Internet.

The German population wants to have control over personal information and only partly agrees with the "nothing-to-hide" argument

% who agree or disagree with the following statements

■ Totally disagree   ■ Rather disagree   ■ Neither disagree or agree
■ Rather agree   ■ Totally agree

Everyone should have the opportunity to determine for themselves which personal information is publicly available.
13% | 81%

Someone who has nothing to hide does not have to worry about his or her privacy.
48% | 15% | 14% | 9% | 13%
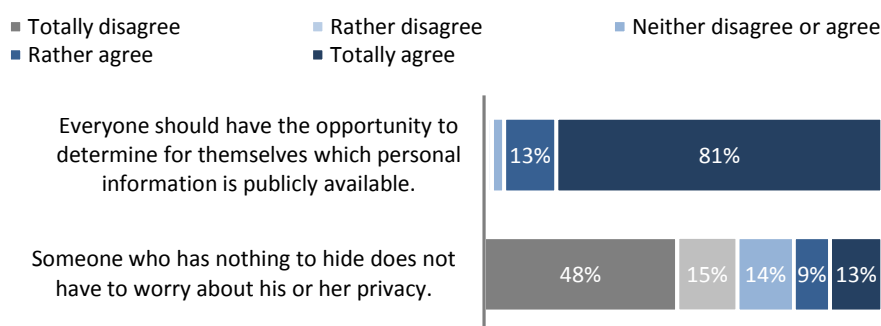
Basis: Whole sample (*N* = 3,278)

Abb. 33   The individual value of privacy

The findings show that German citizens view self-determination is an important value. Nine out of ten Germans think that they should be able to determine for themselves which aspects of their personal information can be accessed by the greater public.

By contrast, most participants disagree with the nothing-to-hide argument. More than half of the population does not believe that someone who has "nothing-to-hide" does not need privacy.

In sum, we observed that individual self-determination is valued highly. Our findings further did not support the general impression that many people do not care about their privacy because they think they have "nothing to hide."

5.3.3 The value of privacy in light of security issues and criminality

The next three items were designed to measure the value of privacy in light of the need for security. We wanted to know the extent to which people are willing to abandon their privacy in order have security and to prevent criminal activities.

The findings show that under some circumstances, an invasion of individual privacy may be acceptable. However, public opinion on privacy and security issues is rather ambivalent. For example, 32% of the German population think that it is acceptable to invade the privacy of individuals who are suspected of criminal activities. On the other
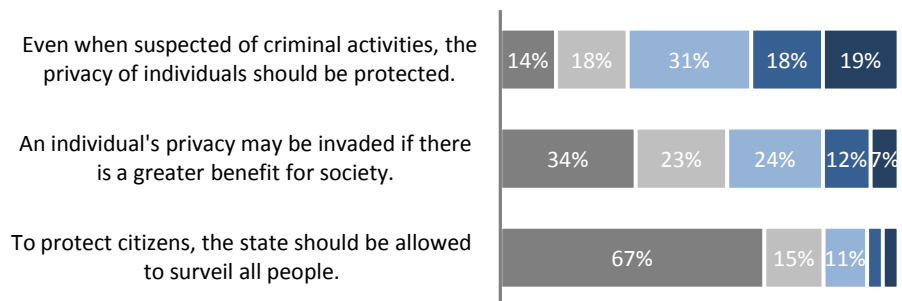
hand, another third is opposed to this idea. Another third is indecisive about how to solve this problem.

The invasion of individual privacy for the greater benefit of society, on the other hand, is mostly not accepted by Germans. Fifty-seven percent think that a privacy violation is not appropriate even if it benefits society on the whole. Only 19% think otherwise. State surveillance for security reasons is mostly not accepted by the German population, as 82% disagree with the last statement.

Germans are generally ambivalent with regard to privacy in light of security issues; however, only a few people think that the state should be allowed to surveil people for security reasons

% who agree or disagree with the following statements

- Totally disagree
- Rather disagree
- Neither disagree or agree
- Rather agree
- Totally agree

Even when suspected of criminal activities, the privacy of individuals should be protected.	14%	18%	31%	18%	19%
An individual's privacy may be invaded if there is a greater benefit for society.	34%	23%	24%	12%	7%
To protect citizens, the state should be allowed to surveil all people.	67%	15%	11%		

Basis: Whole sample (*N* = 3,278)

Abb. 34 The value of privacy in light security issues and criminality

5.3.4   Perception of the necessity to disclose personal information

Despite the high value that is placed on privacy as supported by the findings presented above, we wanted to know how people view the increasing necessity to disclose personal information (e.g., when using online services such as SNSs, online shopping). We therefore used five items from the Special Eurobarometer 359 (European Commission, 2011, p. 22), which explicitly addresses the public's perception of issues regarding the disclosure of personal information.

In general, people believe that although the disclosure of personal information is increasing, they find it problematic and do not like this trend. For example, one third of the population thinks that there is simply no alternative to disclosing information if one wants to use certain products or services (34%) and that this type of disclosure is increasingly becoming a part of modern life (29%). On the other hand, two thirds have issues with disclosing personal information on the Internet (63%) and feel uneasy about disclosing information in return for free services (76%). Nonetheless, most people (88%) do not feel obliged to disclose personal information.

Although the disclosure of personal information is becoming more frequent, it remains a problematic issue for many Germans

% who agree or disagree with the following statements

■ Totally disagree ■ Rather disagree ■ Neither disagree or agree
■ Rather agree ■ Totally agree

There is no alternative to disclosing personal information if one wants to obtain products or services. | 24% | 15% | 27% | 21% | 13%

Disclosing personal information is an increasingly becoming a part of modern life. | 31% | 15% | 24% | 19% | 10%

Disclosing personal information is not a big issue for me. | 40% | 23% | 21% | 10% | 6%

I don't mind disclosing personal information in return for free services online. | 51% | 25% | 16% | 6%

I feel obliged to disclose personal information on the Internet. | 77% | 11% | 7%

Basis: Whole sample (*N* = 3,278)

Abb. 35   Perception of the necessity of disclosing personal information

5.4   Attitudes toward the disclosure of specific information

In addition to collecting general attitudes toward privacy and disclosure on the Internet, we wanted to know how people view the disclosure of specific types of information. We wanted to know more specifically if people perceive certain disclosures as useful. We presented participants with a list of items that were derived from the Eurobarometer study from 2010 (European Commission, 2011, pp. 39-45). The list included general personally identifying information such as name, address, e-mail, and phone number; information about people's jobs or education; financial and medical information; as well as photographs. Participants were prompted to indicate how useful they find the disclosure of such information on a 5-point scale ranging from 1 = *not at all useful* to 5 = *very useful*.

In general, Germans reported finding it rather useless to disclose personally identifying information on the Internet. As one would expect, the disclosure of basic information such as name, e-mail, address, and phone number was nonetheless perceived as more useful because this information is often required for registration or transaction processes (e.g., for most social media or online shopping platforms). Younger people reported finding it more useful to share information online than older people.

Apart from basic information such as name and contact information, Germans generally perceive information disclosure as not useful

Average usefulness of information disclosure (1 = Not very useful to 5 = Very useful)

Name	2,79
Last name	2,65
E-Mail	2,85

Basic information (e.g., required for registrations)

Place of residence	2,50
Street and house number	2,26
Phone number	2,20

Contact information (required for most shopping transactions)

Education	2,29
Profession	2,24

Professional information (required for professional networking)

Medical information	1,91
Financial information	1,67

Sensitive information (required for online shopping or health communication)

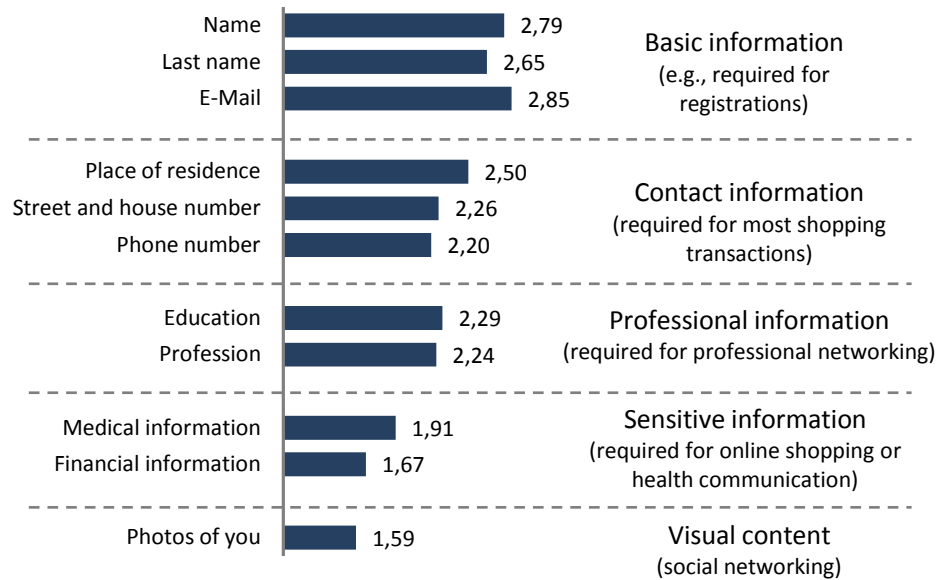|	
Photos of you	1,59

Visual content (social networking)

Abb. 36 Attitudes toward disclosure of specific information

- With regard to basic information, we found a linear relation between age and perceived usefulness: Young people were more likely to perceive information disclosure as useful than older people.

- Surprisingly, the perceived usefulness of disclosing contact information increased with age.

- The perceived usefulness of sharing sensitive information such as medical and financial information did not vary with age.

- Only a few Germans reported finding it useful to share photos of themselves online. The highest percentage could nonetheless be found among the youngest participants (7%).

	24 years and younger	25 to 39 years	40 to 54 years	55 to 69 years	70 years and older
Basic information					
Name	47%	36%	26%	25%	17%
Last name	27%	27%	23%	21%	16%
E-Mail	52%	37%	30%	28%	21%
Contact information					
Place of residence	11%	20%	16%	18%	15%
Address	5%	11%	11%	14%	13%
Phone number	4%	5%	9%	12%	14%
Professional information					
Education	28%	22%	9%	9%	13%
Profession	20%	19%	9%	9%	9%
Sensitive information					
Medical information	10%	11%	10%	10%	11%
Financial information	6%	11%	11%	8%	7%
Visual content					
Photos of you	7%	5%	1%	1%	1%

Note: Percentage who indicated either 4 = *rather useful* or 5 = *very useful*

Tab. 3: Attitude toward disclosure of personal information

5.5 Disclosure of personal information

Next, we investigated how often people actually disclose the listed pieces of information on the Internet. We thus presented participants with the same list and prompted them to indicate how often they share each piece of information on a scale ranging from 1 = *never* to 5 = *daily*.

In general, we found that Germans generally disclose personal information very rarely. Only basic information such as name and e-mail are shared more often by substantial parts of the population.

More specifically, we made the following observations:

- Only less than 10% have never shared their name or e-mail address online. Most people disclose this information once a month or even less. Only a small part shares this information on a daily basis (6-8%).

- Most people have disclosed their address or phone number before. However, about 44 to 49% do so less than once a month.

- About 40% of the German population has never shared information about their education or job online. Most people who do share this kind of information online do so less than once a month.

- Eight out of ten Germans do not share medical information online, and six out of ten do not share financial information online. From those who do share financial data online, most do so less than once a month.

- Surprisingly, about two thirds of the population do not share photos of themselves online and of those who do (37%), the majority shares photos less than once a month.

Most Germans have disclosed contact information before; however, they mostly disclose personal information less than monthly

% who disclose the respective information with the following frequency

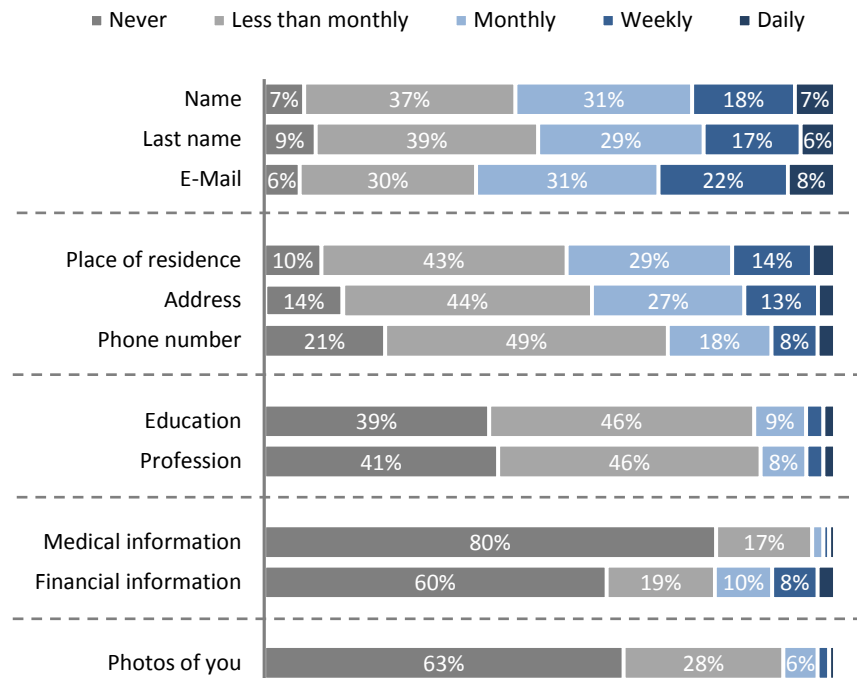■ Never   ■ Less than monthly   ■ Monthly   ■ Weekly   ■ Daily

Abb. 37   Attitudes toward disclosure of personal information

Basis: Internet users (n = 2,482)

When we looked at the percentages of people who had disclosed this information at least once before, some differences could be observed:

- First, we could see that there were not many differences with regard to basic and contact information. In each age group, about nine out of ten people had disclosed their names, e-mail, address, and phone number at least once.

- With regard to professional information, more young people reported that they have shared this information before.

- The most apparent difference could be seen with regard to the sharing of photos: Whereas 78% of the people under 24 years of age reported that they have shared pictures of themselves before, this number steadily decreased with each generation.

	24 years and younger	25 to 39 years	40 to 54 years	55 to 69 years	70 years and older
Basic information					
Name	98%	97%	94%	91%	86%
Last name	94%	93%	93%	91%	87%
E-Mail	**94%**	**96%**	**95%**	**93%**	**91%**
Contact information					
Place of residence	84%	93%	92%	89%	86%
Address	75%	85%	90%	87%	84%
Phone number	60%	76%	81%	81%	82%
Professional information					
Education	76%	76%	56%	53%	55%
Profession	65%	77%	61%	57%	56%
Sensitive information					
Medical information	18%	20%	21%	18%	24%
Financial information	27%	48%	46%	36%	36%
Visual content					
Photos of you	78%	68%	36%	25%	21%

Note: Percentages who have shared the relevant information at least once before.

Tab. 4: Disclosure of personal information on the internet

5.6 Experiences with privacy violations on the Internet

Next, we investigated how often people reported negative experiences with privacy violations on the Internet. On the basis of previous research (Buchanan et al., 2007), we asked participants to indicate how often they had experienced one of the following things on the Internet.

In general, it became apparent that Internet users have generally had only a few negative experiences with regard to privacy violations. Companies requesting too much personal information—an experience that tends to occur very frequently during registration or transactions on the Internet—was the only experience that showed considerable variance across participants' answers. About 60% of German Internet users reported that they had experienced such a situation at least once. All other negative experiences hardly ever occurred at all. Notably, 11% reported that at least once, information about them was accessed by unintended audiences, and another 13% had experienced an unwanted posting of pictures of themselves by other users.

Young people report significantly more privacy violations than older generations

Average number of negative experiences

3,18	
1,50	
0,89	
0,38	
0,23	

Number of negative experiences

- 24 years and younger
- 25 to 39 years
- 40 to 54 years
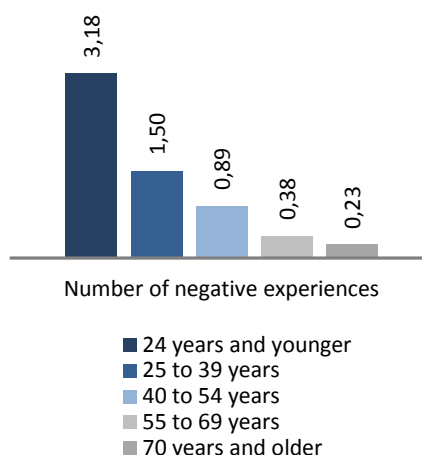- 55 to 69 years
- 70 years and older

Abb. 38 Negative experiences on the Internet per age group

With regard to gender effects, we found no significant differences between men and women. On average, both had only one negative experience online during the six months before the survey.

On the other hand, we found profound differences with regard to different age groups. People under the age of 24 reported ten times more negative experiences than people above 55 years who reported almost no negative experiences online.

	Never	Once	Twice	Three times	Four times or more
While shopping online or registering for an event, you were asked for too much personal information.	44%	24%	18%	9%	5%
On the Internet, someone else pretended to be you.	95%	3%	1%	0%	0%
Your credit card number or bank card number was misused.	96%	3%	1%	1%	0%
Someone (e.g., employer, family member) gained information about you over the Internet when it was not intended for him/her.	89%	8%	2%	1%	0%
Someone spread rumors about you via a social network site (e.g., Facebook) or an instant messenger (e.g., WhatsApp).	93%	5%	1%	0%	0%
Someone posted pictures of you on the Internet without your consent.	87%	9%	3%	1%	0%
Someone spread information about you on the Internet that you found embarrassing.	94%	5%	1%	0%	0%
Someone sent you hostile or aggressive messages or comments via an instant messenger (e.g., WhatsApp)	92%	5%	2%	1%	0%
Someone has posted hostile or aggressive message on your social network site profile.	95%	3%	1%	0%	0%

Tab. 5: Privacy violations

Note: Percentages who reported the respective number of negative experiences.
Basis: All Internet users (n = 2,482)

5.7　Online privacy literacy

Research has shown that Internet user are often not able to adequately protect their privacy. In recent debates about data protection and online privacy, privacy advocates and scholars alike have stressed the importance of online privacy literacy as a "principle to support, encourage, and empower users to undertake informed control of their digital identities" (Park, 2013, p. 217). It has consequently been said to be a precondition for informational self-determination.

We define online privacy literacy as declarative knowledge ("knowing what") and procedural knowledge ("knowing how") with respect to online privacy (Trepte et al., 2015). Declarative knowledge refers to knowledge about data collection and usage practices by online service providers and institutions, technical aspects of data protection, and data protection laws and directives. Procedural knowledge, by contrast, refers to knowledge about data protection strategies.

We used a short version of the online privacy literacy scale (Masur, Teutsch, & Trepte, 2016: More information and a long version of the scale can be found online: www.oplis.de). The scale was designed to measure online privacy literacy objectively. It thus consists of true-or-false statements and multiple-choice items. The level of online privacy literacy is hence assessed on the basis of the number of correct responses. Table 6 presents example items for each dimension.

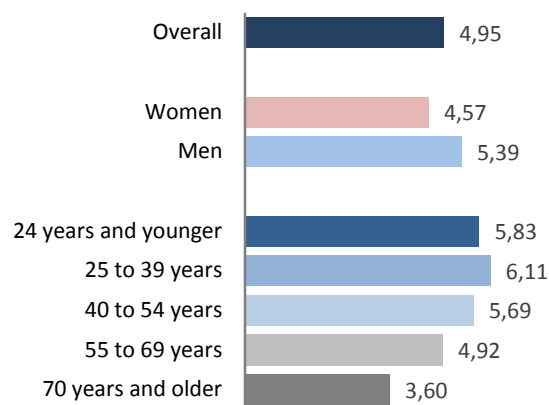| Dimension	Example Item
Knowledge about institutional practices of data collection	The National Security Agency (NSA) collects only data that are publicly available to everyone.
Knowledge about technical aspects of data protection	What does the term „browsing history" stand for? In the browsing history… A. ...the URLs of visited websites are stored. B. ...cookies from visited websites are stored. C. ...potentially infected websites are stored separately. D. ...different kinds of information about the user are stored, depending on the browser type.
Knowledge about data protection law and directives	According to German law, users of online applications that collect and process personal data have the right to inspect the information that is stored about them.
Knowledge about data protection strategies	To protect oneself against hacker attacks, it is useful to shut off the Wi-Fi if it is not used.

Tab. 6: Example items of the online privacy literacy scale (OPLIS)

The results showed that a considerable portion of the German population was not able to answer half of the questions. For example, about 24% did not know that the national security agency (NSA) collects more data than what is publicly available. Half of the population (55%) did not know that they, as users of online applications that collect and process personal data, have the right to inspect what information about them is stored. Germans are generally quite knowledgeable about technical aspects of data protection on the Internet; however, they are rather uncertain about data protection laws and data protection strategies. There were also considerable gender and age differences, which deserve closer inspection:

- On average, men's online privacy literacy was higher than women's. This may be explained by men's general tendency to be interested in technical things and topics related to the Internet.

- There was a linear relation between age and online privacy literacy: Younger people were considerably more knowledgeable than older generations. Particularly citizens older than 70 were below the average level of literacy in the population.

- There was a linear relation between participants' level of education and their online privacy literacy. Specifically, people with a university entrance certificate (Abitur) were more literate than the average participant.

Men and younger people are generally more literate when it comes to knowledge about online privacy and data protection

Number of correct responses out of 10 questions

Category	Value
Overall	4,95
Women	4,57
Men	5,39
24 years and younger	5,83
25 to 39 years	6,11
40 to 54 years	5,69
55 to 69 years	4,92
70 years and older	3,60

Abb. 39 Online privacy literacy

Basis: Whole sample (N = 3,278)

6
About this report

6.1   Information about the project

This report is part of a larger project "Privatheit im Wandel" (The evolution of privacy), which was funded by a grant from the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF). Using different methods such as qualitative interview studies, longitudinal studies, and experimental designs, the project seeks to analyze changes in privacy-related attitudes, knowledge, and behaviors over time.

6.2   Procedure and sample description

The present study was designed to be a five-wave longitudinal study over the course of three years (May 2014 to May 2017). During this period, a representative sample from the German population 16 years of age an older was surveyed five times.

To recruit participants, we sampled 14,714 people from a representative omnibus survey (ADM-Mastersample) between the 12th of May 2014 and the 9th of July 2014. More specifically, we used a random-last-two-digit procedure combined with a dual-frame approach (Gabler & Ayhan, 2007). Accordingly, 9% of this initial phone screening was conducted over the cellular phone network because not all Germans have access to a landline phone. After this initial screening, 5,424 respondents (36.9%) agreed to take part in the longitudinal study. However, 138 (2.5%) of these respondents did not provide their postal or e-mail address and hence had to be excluded. In order to increase participants' willingness to participate, the remaining 5,286 respondents were able to choose between an online survey or a paper-pencil survey. Only 196 (3.7%) participants chose to take the online version of the survey.

We then sent the participants either the paper-pencil questionnaire or an identical online survey including items that asked about media use, communication behaviors, gratification from media use, general psychological constructs, as well as different measures with regard to privacy and self-disclosure.

All in all, 3,278 participants completed the first wave. An overview of the socio-demographic structure of the sample can be found in Table 6. On average, the participants were 56 years of age (SD = 16.84 years), and 51.6% of them were female.

	n	%
Gender		
Male	1576	48.4
Female	1678	51.6
Age		
24 years and younger	163	5.0
25 to 39 years	404	12.4
40 to 54 years	759	23.3
55 to 69 years	1124	34.6
70 years and older	802	24.7

Tab. 7: Socio-demographics

7
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8
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