1   Who needs privacy? Exploring the relations between need for privacy and personality

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12   Abstract

13   Privacy is defined as a voluntary withdrawal from society. While everyone needs some

14   degree of privacy, we currently know little about who needs how much. In this study, we

15   explored the relations between the need for privacy and personality. Personality was

16   operationalized using the HEXACO personality inventory. Need for privacy was measured

17   in relation to social, psychological, and physical privacy from other individuals (horizontal

18   privacy); need for privacy from government agencies and companies (vertical privacy); as

19   well as need for informational privacy, anonymity, and general privacy (both horizontal and

20   vertical privacy). A sample of 1,550 respondents representative of the U.S. in terms of age,

21   gender, and ethnicity was collected. The results showed several substantial relationships:

22   More extraverted and more agreeable people needed substantially less privacy. People less

23   fair and less altruistic needed more psychological privacy, social privacy, and anonymity,

24   lending some support to the 'nothing to hide-argument'. Emotionality and

25   conscientiousness showed varied relations with need for privacy. More conservative

26   respondents needed more privacy from the government.

27   *Keywords:* Privacy, need for privacy, personality, HEXACO

₂₈ Who needs privacy? Exploring the relations between need for privacy and personality

₂₉ Privacy is a major topic of public discourse and academic interest (Dienlin & Breuer,

₃₀ 2023). Yet despite its importance, to date we still know surprisingly little about the

₃₁ relation between privacy and personality (Masur, 2018, p. 155). What can we infer about a

₃₂ person if they desire more privacy? Are they more introverted, more risk-averse, or more

₃₃ traditional? Asking these questions seems relevant, not least because people who desire

₃₄ more privacy are often regarded with suspicion, having to justify why they want to be left

₃₅ alone. Consider the "nothing-to-hide" argument (Solove, 2007), which is that people who

₃₆ oppose state surveillance only do so because they have something to hide—because if you

₃₇ have nothing to hide, you would have nothing to fear. Is it true that people who desire

₃₈ more privacy are also more dishonest, greedy, or unfair? Or are people simply less

₃₉ extraverted, more diligent, or more prudent? With this paper, we seek to answer the

₄₀ following question: What can we learn about a person's personality if they say they desire

₄₁ more privacy?

Privacy and Personality

₄₃ Privacy captures a *withdrawal* from others or from society in general (Westin, 1967).

₄₄ This withdrawal happens *voluntarily*, and it is under a person's *control* (Westin, 1967).

₄₅ Privacy is also multi-dimensional. On the broadest level, we can differentiate the two

₄₆ dimensions of horizontal and vertical privacy (Masur, Teutsch, & Dienlin, 2018; Schwartz,

₄₇ 1968). Whereas horizontal privacy captures withdrawal from other people or peers, vertical

₄₈ privacy addresses withdrawal from superiors or institutions (e.g., government agencies or

₄₉ businesses). In her theoretical analysis, Burgoon (1982) argued that privacy has four more

₅₀ specific dimensions: informational, social, psychological, and physical privacy. Pedersen

₅₁ (1979) conducted an empirical factor analysis of 94 privacy-related items, finding six

₅₂ dimensions of privacy: reserve ("unwillingness to be with and talk with others, especially

₅₃ strangers," p. 1293); isolation ("desire to be alone and away from others," p. 1293), solitude

54 ("being alone by oneself and free from observation by others," p. 1293), intimacy with

55 friends ("being alone with friends," p. 1293), intimacy with family ("being alone with

56 members of one's own family," p. 1293), and anonymity ("wanting to go unnoticed in a

57 crowd and not wishing to be the center of group attention," p. 1293). Building on these

58 understandings of privacy, in this study we employ a multifaceted model of need for

59 privacy. We focus on *vertical* privacy with regard to people's felt need for withdrawal from

60 surveillance by a) the government and b) private companies; *horizontal* privacy in terms of

61 the perceived need for (c) psychological, (d) social and/or (e) physical withdrawal from

62 other people; and *general* privacy as captured by people's felt need for (f) informational

63 privacy, (g) anonymity, and (h) privacy in general. Although all of these dimensions were

64 defined and established in prior research, combining these dimensions into one single

65 comprehensive measure of privacy represents a novel approach.

66   Acknowledging that various understandings of personality exist, we operationalize

67 personality using the factors and facets of the HEXACO inventory of personality (Lee &

68 Ashton, 2018). HEXACO is a large and comprehensive operationalization of personality,

69 and thus is less likely to miss potentially relevant aspects than other operationalizations.

70 The HEXACO model stands in the tradition of the Big Five approach (John & Srivastava,

71 1999). It includes six factors (discussed below), which have four specific facets each. In

72 addition, the HEXACO model includes a sixth factor not present in the Big Five labeled

73 honesty-humility, plus a meta-facet called altruism, which seem particularly well-suited to

74 investigate the nothing-to-hide-argument.

75   In predicting the need for privacy, we will primarily focus on the facets, because it is

76 unlikely that the very specific need for privacy dimensions will relate closely to more

77 general personality factors (Bansal, Zahedi, & Gefen, 2010; Junglas, Johnson, &

78 Spitzmüller, 2008). And for reasons of scope, below we cannot discuss all four facets for all

79 six factors. Instead, we focus on those we consider most relevant. However, all will be

80 analyzed empirically.

Predicting the Need for Privacy

So far, only a few studies have analyzed the relation between personality and need for privacy empirically (Hosman, 1991; Pedersen, 1982, see below). Moreover, we are not aware of a viable theory specifically connecting privacy and personality. Due to the dearth of empirical studies and the lack of theory, in this study we hence adopt an exploratory perspective.

In order to understand how personality might relate to privacy, we can ask the following question: Why do people desire privacy? Privacy is important. But according to Trepte and Masur (2017), the need for privacy is only a secondary need—not an end in itself. Accordingly, privacy satisfies other more fundamental needs such as safety, sexuality, recovery, or contemplation. Westin (1967) similarly defined four ultimate purposes of privacy: (1) self-development (the integration of experiences into meaningful patterns), (2) autonomy (the desire to avoid being manipulated and dominated), (3) emotional release (the release of tension from social role demands), and (4) protected communication (the ability to foster intimate relationships). Privacy facilitates self-disclosure (Dienlin, 2014), and thereby social support, relationships, and intimacy (Omarzu, 2000). But privacy can also have negative aspects. It is possible to have too much privacy. Being cut-off from others can diminish flourishing, nurture deviant behavior, or introduce power asymmetries (Altman, 1975). And privacy can also help conceal wrongdoing or crime.

Privacy has strong evolutionary roots (Acquisti, Brandimarte, & Hancock, 2022). Confronted with a threat—for example, the prototypical tiger—people are inclined to withdraw. In the presences of opportunities—for example, the unexpected sharing of resources—people open up and approach one another. Transferred to privacy, we could imagine that if other people, the government, or companies are considered a threat, people are more likely to withdraw and to desire more privacy. Conversely, if something is considered a resource, people might open up, approach others, and desire less privacy (Altman, 1976). Privacy also affords the opportunity to hide less socially desirable aspects

of the self from others, which may bestow evolutionary advantages in terms of sexual selection or other social benefits and opportunities. Indeed, the need for privacy may have evolved precisely because it offers such advantages.

In what follows, we briefly present each HEXACO factor and how it might relate to need for privacy.

Honesty-Humility & Altriusm. Honesty-humility consists of the facets sincerity, fairness, greed avoidance, and modesty. The meta-facet altruism measures benevolence toward others and consists of items such as "It wouldn't bother me to harm someone I didn't like" (reversed).

According to the nothing-to-hide argument, a person desiring more privacy might be less honest, sincere, fair, or benevolent. People who commit crimes likely face greater risk from some types of self-disclosure because government agencies and people would enforce sanctions if their activities were revealed (Petronio, 2010). In those cases, the government and other people may be perceived as a threat. As a consequence, people with lower honesty and sincerity might desire more privacy as a means to mitigate their felt risk (Altman, 1976).

Empirical studies have linked privacy to increased cheating behaviors (Corcoran & Rotter, 1987; Covey, Saladin, & Killen, 1989). Covey et al. (1989) asked students to solve an impossible maze. In the surveillance condition, the experimenter stood in front of the students and closely monitored their behavior. In the privacy condition, the experimenter could not see the students. Results showed greater cheating among students in the privacy condition, suggesting that in situations with more privacy people are less honest. In a longitudinal sample with 457 respondents in Germany (Trepte, Dienlin, & Reinecke, 2013), people who felt they needed more privacy were also less authentic (and therefore, arguably, also less honest and sincere) on their online social network profiles ($r = -.48$). People who needed more privacy were also less authentic in their personal relationships ($r = -.28$).

We do not mean to suggest that it is only dishonest people who feel a need for

135 privacy. Everyone, including law-abiding citizens, have legitimate reasons to hide specific

136 aspects of their lives (Solove, 2007). A recent study confirmed this notion, finding that

137 people who explicitly endorsed the statement that they would have nothing to hide still

138 engaged in several privacy protective behaviors (Colnago, Cranor, & Acquisti, 2023). Our

139 argument is rather that people lower on the honesty HEXACO factor may feel a greater

140 need for privacy. Considering all the evidence, it seems more plausible to us that lack of

141 honesty may indeed relate to an increased need for privacy, and perhaps especially when it

142 comes to privacy from authorities such as government agencies.

143 **Emotionality.**   Emotionality is captured by the facets of fearfulness, anxiety,

144 dependence, and sentimentality. People who are anxious may be more likely to view social

145 interactions as risky or threatening (especially with strangers or weak ties, Granovetter,

146 1973). Anxious people might hence desire more privacy. People who are more concerned

147 about their privacy (in other words, more anxious about privacy) are more likely to

148 self-withdraw online, for example by deleting posts or untagging themselves from linked

149 content to minimize risk (Dienlin & Metzger, 2016). On the other hand, the opposite may

150 also be true: People who are more anxious in general may desire less privacy from others

151 (especially their strong ties), as a means to cope better with their daily challenges or to

152 seek social approval to either verify or dispel their social anxiety.

153 People who are more anxious might also desire less privacy from government

154 surveillance. Despite the fact that only 18% of all Americans trust their government "to do

155 what is right," almost everyone agrees that "it's the government's job to keep the country

156 safe" (Pew Research Center, 2015, 2017). More anxious people might hence consider the

157 government a resource rather than a threat. They might more likely consent to government

158 surveillance, given that such surveillance could prevent crime or terrorism. On the other

159 hand, it could also be that more anxious people desire more privacy from government

160 agencies, at least on a personal level. For example, while they might favor government

161 surveillance of *others*, this does not necessarily include *themselves*. Especially if the

162 government is perceived as a threat, as often expressed by members of minority groups,

163 then anxiety might lead one to actually desire more personal privacy.

164   **Extraversion.**   Comprising the facets social self-esteem, social boldness, sociability,

165 and liveliness, extraversion is arguably the factor that should correspond most closely to

166 need for privacy. Conceptually, social privacy and sociability are closely related. More

167 sociable people are likely more inclined to think of other people as a resource, and thus

168 they should desire less horizontal privacy and less anonymity (e.g., Buss, 2001). Given that

169 privacy is a voluntary withdrawal from society (Westin, 1967), people who are less sociable,

170 more reserved, or more shy should have a greater need for privacy from others.

171   This assumption is supported by several empirical studies. People who scored higher

172 on the personality meta-factor plasticity, which is a composite of the two personality

173 factors extraversion and openness, were found to desire less privacy (Morton, 2013). People

174 who described themselves as introverted thinkers were more likely to prefer social isolation

175 (Pedersen, 1982). Introverted people were more likely to feel their privacy was invaded

176 when they were asked to answer very personal questions (Stone, 1986). Pedersen (1982)

177 reported that the need for privacy related to general self-esteem (but not social self-esteem),

178 which in turn is a defining part of extraversion (Lee & Ashton, 2018). Specifically, he found

179 respondents who held a lower general self-esteem were more reserved ($r = .29$), and needed

180 more anonymity ($r = .21$) and solitude ($r = .24$). Finally, Larson and Bell (1988) and

181 Hosman (1991) suggested that people who are more shy also need more privacy.

182   As a result, we expect that people who are more extraverted also need less social

183 privacy and less privacy in general. Regarding the other dimensions of privacy, such as

184 privacy from governments or from companies, we do not expect specific effects.

185   **Agreeableness.**   Agreeableness has the four facets of forgiveness, gentleness,

186 flexibility, and patience. It is not entirely clear whether or how agreeableness might relate

187 to the need for privacy, although people who are more agreeable are also moderately less

188 concerned about their privacy (Junglas et al., 2008). Thus, because need for privacy and

privacy concern are closely related, more agreeable people might desire less privacy. To explain, more agreeable people might hold more generous attitudes toward others and are less suspicious that others have malicious motives, and consequently perceive less risk from interacting with others.

Conscientiousness.   Conscientiousness consists of the facets organization, diligence, perfectionism, and prudence. Arguably, all facets are about being in control, about reducing relevant risks and future costs. Because control is a central part of privacy (Westin, 1967), people who avoid risks, who deliberate, and who plan ahead carefully might prefer to have more privacy because it affords them greater control. Especially if others are considered a threat, being risk averse might increase the desire for more horizontal privacy. Similarly, if government agencies or private companies are considered a threat, risk averse people might have a stronger desire for vertical privacy. In either case, the most cautious strategy to minimize risks of information disclosure would be to keep as much information as possible private. Empirical studies have found that people with a stronger control motive require slightly more seclusion ($r = .12$) and anonymity ($r = .15$) (Hosman, 1991). People who considered their privacy at risk are less likely to disclose information online (e.g., Bol et al., 2018). Moreover, conscientious people are more concerned about their privacy (Junglas et al., 2008).

Openness to experience.   Openness to experiences comprises the facets aesthetic appreciation, inquisitiveness, creativeness, and unconventionality. Openness to experience is also considered a measure of intellect and education. In one study it was found that more educated people have more knowledge about how to protect their privacy (Park, 2013), which could be the result of an increased need for privacy. Similarly, openness to experience is positively related to privacy concern (Junglas et al., 2008).

On the other hand, openness is conceptually the opposite of privacy. People more open to new experiences might not prioritize privacy. Many digital practices such as social media, online shopping, or online dating offer exciting benefits and new experiences, but

216 pose a risk to privacy. People who are more open to new experiences might focus on the

217 benefits rather than the potential risks. Hence, either a positive or negative relationship

218 between need for privacy and openness is possible.

219   **Sociodemographic variables.**   The need for privacy should also be related to

220 sociodemographic aspects, such as sex, age, education, and income. For example, a study

221 of 3,072 people from Germany found that women desired more informational and physical

222 privacy than men, whereas men desired more psychological privacy (Frener, Dombrowski,

223 & Trepte, 2023). In a nationally representative study of the U.S. and Japan, people who

224 were older and who had higher income reported more privacy concern. More educated

225 people possess more privacy knowledge (Park, 2013), and as a consequence they might

226 desire more privacy. Ethnicity might also correspond to the need for privacy, perhaps

227 because members of minority groups desire more privacy from the government, although

228 not necessarily from other people. Some minority groups (e.g., Black or Native Americans)

229 often report lower levels of trust in white government representatives (Koch, 2019), which

230 might increase the desire of privacy from government agencies. Last, we will examine

231 whether one's political position is related to the need for privacy. We could imagine that

232 more right-leaning people desire more privacy from the government, but not necessarily

233 from other people. People who are more conservative tend to trust the government slightly

234 less (Cook & Gronke, 2005), which might be associated with an increased need for privacy.

235 We will also explore whether a person's romantic relationship status corresponds to their

236 expressed need for privacy.

237   **Overview of expectations.**   The arguments discussed above lead to a number of

238 expectations for our data which we delineate below, in order from most to least confidence

239 in terms of identifying significant effects. First, we strongly assume that more extraverted

240 people will desire less privacy, especially less social privacy. We also expect that people

241 who are less honest will express greater need for privacy. We further assume that more

242 conscientious people will desire more privacy and that more agreeable people may desire

less privacy. Yet it is largely unclear how privacy needs relate to openness to experience

and emotionality. In terms of the sociodemographic variables, we expect females likely

need more informational and physical privacy, while males will likely report needing more

psychological privacy. Older, more highly educated, and affluent people are also expected

to need more privacy, and we anticipate that people who are ethnic minorities or are

politically conservative will express greater need for privacy from the government than

from other people.

Method

This section describes how we determined the sample size, data exclusions, the

analyses, and all measures in the study. The study was conducted as an online

questionnaire, programmed with Qualtrics. The survey can be found in the online

supplementary material.

Prestudy

This study builds on a prior project in which we analyzed the same research question

(Dienlin & Metzger, 2019). This study was already submitted to Collabra but rejected.

The main reasons were that the sample was too small, that not one coherent personality

inventory was used, that most privacy measures were designed ad-hoc, and that the

inferences were too ambitious. We hence decided to treat our prior project as a pilot study

and to address the criticism by conducting a new study. In this new study, we redeveloped

our study design, collected a larger sample, implemented the HEXACO inventory together

with established need for privacy measures, and overall adopted a more exploratory

perspective. Being our central construct of interest, we also developed a small number of

new items to have a more comprehensive measure of need for privacy.

Sample

Participants were collected from the professional online survey panel Prolific. The sample was representative of the US in terms of age, gender, and ethnicity. The study received IRB approval from the University of Vienna (#20210805_067). Participation took on average 16 minutes. We paid participants $2.00 for participation, which equals an hourly wage of $8.00.

To determine sample size, we ran a priori power analyses using the R package *simsem* (Pornprasertmanit, Miller, Schoemann, & Jorgensen, 2021). We based our power analysis on a smallest effect size of interest (SESOI; see below). We only considered effects at least as great as $r = .10$ as sufficiently relevant to support an effect's existence (Cohen, 1992). To estimate power, we simulated data. We set the correlation between two exemplary latent factors of personality and privacy variable to be $\Psi = .10$ (the SESOI). We furthermore set the latent factor loadings to be $\lambda = .85$. Adopting an exploratory perspective, and not wanting to miss actually existing effects, we considered both alpha and beta errors to be equally relevant, resulting in balanced/identical alpha and beta errors (Rouder, Morey, Verhagen, Province, & Wagenmakers, 2016). Because balanced alpha and beta errors of 5% were outside of our budget, we opted for balanced alpha and beta errors of 10%. A power analysis with an alpha and beta error of 10% and an effect size of $r = .10$ revealed that we required a sample size of $N = 1501$. To account for potential attrition (see below), we over-sampled by five percent, leading to a planned sample size of $N = 1576$. In the end, 1569 respondents finished our study, of which we could use 1550, which slightly exceeds our required sample size.

Exclusions and Imputation

We individually checked answers for response patterns such as straight-lining or missing of inverted items. We planned to conservatively remove participants with clear response patterns. Nine participants were excluded because they showed clear patterns,

such as straight-lining. We automatically excluded participants who missed the two

attention checks we implemented. Overall, 30 participants were filtered out automatically

by Prolific, not counting toward our quota. Participants who missed one attention check

were checked individually regarding response patterns. No clear patterns emerged. We

planned to remove participants below the minimum participation age of 18 years. As no

minors took part in our study we did not exclude any participant for this reason. We

planned to remove respondents with unrealistically fast responses (three standard

deviations below the median response time). The median response time was 14 minutes

and the standard deviation 11 minutes. Hence, three SDs below median was -19 minutes,

hence not informative. Instead, we decided to remove respondents who took less than five

minutes answering the questionnaire, which we considered unreasonably fast. We removed

ten participants for this reason.

We planned to impute missing responses using multiple imputation with predictive

mean matching (ten data-sets, five iterations, using variables that correlate at least with r

$= .10$). However, as there were only 27 answers missing in total (0.01 percent), we decided

not to impute any data. The final sample size was $N = 1550$.

Analyses

The factorial validity of the measures and the relations were tested using structural

equation modeling. If Mardia's test showed that the assumption of multivariate normality

was violated, we used the more robust Satorra-Bentler scaled and mean-adjusted test

statistic (MLM) as estimator (or, in the few cases of missing data MLR plus FIML

estimation). We tested each scale in a confirmatory factor analysis. To assess model fit, we

used more liberal fit criteria to avoid over-fitting (CFI $> .90$, TLI $> .90$, RMSEA $< .10$,

SRMR $< .10$) (Kline, 2016). In cases of misfit, we conservatively altered models using an a

priori defined analysis pipeline (see online supplementary material). As a "reality check,"

we tested items for potential ceiling and floor effects. If means were below 1.5 or above 6.5,

318 we preregistered to exclude these items. However, as no item was outside these thresholds,

319 no items were excluded.

320   We wanted to find out *who* needs privacy, and not so much *what causes* the need for

321 privacy. Hence, to answer our research question, in a joint model combining all variables

322 (including sociodemographic variables) we analyzed the variables' bivariate relations. To

323 predict the need for privacy, we first used the six personality factors. Afterward, we

324 predicted privacy using the more specific facets. To get a first idea of the variables'

325 potential causal relations (Grosz, Rohrer, & Thoemmes, 2020), we also planned to run

326 latent structural regression models. However, because model fit was not acceptable, in

327 exploratory analyses we investigated the potential effects in a multiple regression using the

328 mean values of the observed scores.

329   We used two measures as inference criteria: statistical significance and effect size.

330 Regarding statistical significance, we used an alpha value of 10%. Regarding effect size, we

331 defined a SESOI of $r = .10$, and thereby a null-region ranging from -.10 to .10. As

332 proposed by Dienes (2014), we considered effects to be meaningful if the confidence interval

333 fell outside of the null region (e.g., .15 to .25 or -.15 to -.25). We considered effects

334 irrelevant if the confidence interval fell completely within the null region (e.g., .02 to .08).

335 And we suspended judgement if the confidence intervals partially included the null region

336 (e.g., .05 to .15).

337   Fully latent SEMs seldom work instantly, often requiring modifications to achieve

338 satisfactory model fit. Although we explicated our analysis pipeline, there still remained

339 several researcher degrees of freedom. We planned to use fully latent SEM because we

340 consider it superior to regular analyses such as correlation or regression using manifest

341 variables (Kline, 2016). However, when all measures were analyzed together in one single

342 SEM model fit was subpar. We hence decided to report the more conservative correlations

343 of average scores. In the online supplementary material, we also share the results of

344 alternative analyses, such as fully latent SEMs.

Measures

All items were answered on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).[1] A list of all items that we were used are reported in the online supplementary material. The personality and privacy items were presented in random order, and the sociodemographic questions were asked at the end. In the online supplementary material we also report all item statistics and their distribution plots.

Need for privacy.   Although there exist several operationalizations of need for privacy (Buss, 2001; Frener et al., 2023; Marshall, 1974; Pedersen, 1979), we are not aware of one encompassing, comprehensive, and up-to-date scale. Hence, we used both existing scales and self-developed items, some of which were tested in our pilot study. Ad-hoc scales were validated using the following procedure: We (a) collected qualitative feedback from three privacy experts;[2] (b) followed the procedure implemented by Patalay, Hayes, and Wolpert (2018) to test (and adapt) the items using four established readability indices (i.e., Flesch–Kincaid reading grade, Gunning Fog Index, Coleman Liau Index, and the Dale–Chall Readability Formula); (c) like Frener et al. (2023), assessed convergent validity by collecting single-item measures of privacy concern and privacy behavior, for which we expect to find small to moderate correlations; and (d) analyzed all items in confirmatory factor analyses as outlined above.

Overall, we collected 32 items measuring need for privacy, with eight subdimensions that all consisted of four items each. Three subdimensions captured horizontal privacy—namely *psychological*, *social*, and *physical* privacy from other individuals. Psychological and physical privacy were adopted from Frener et al. (2023). Because Frener et al. (2023) could not successfully operationalize the dimension of social privacy, building on Burgoon (1982) we self-designed a new social privacy dimension, which in the prestudy

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[1] Note that the HEXACO inventory normally uses 5-point scales. Because we were not interested in comparing absolute values across studies, we used 7-point scales to have a uniform answer format.

[2] The three experts who provided feedback were Moritz Büchi (University of Zurich), Regine Frener (University of Hohenheim), and Philipp Masur (VU Amsterdam).

369 showed satisfactory fit. Two subdimensions measured vertical privacy. The first

370 subdimension was *government surveillance*, which represents the extent to which people

371 want the government to abstain from collecting information about them. The scale was

372 pretested and showed good factorial validity. The second subdimension was need for

373 privacy from *companies*, which we measured using four new self-designed items. Finally,

374 three subdimensions captured general privacy. The first subdimension was *informational*

375 privacy, with items adopted from Frener et al. (2023). The second subdimension was

376 *anonymity*, which captured the extent to which people feel the need to avoid identification

377 in general. The scale was pretested and showed good factorial validity; one new item was

378 designed for this study. Third, we also collected a new self-developed measure of *general*

379 need for privacy.

380 **Personality.**   Personality was measured using the HEXACO personality inventory.

381 The inventory consists of six factors with four facets each, including the additional meta

382 scale of "altruism."

Results

384 We first tested the factorial validity of all measures. When analyzed individually,

385 most measures showed satisfactory model fit, not requiring any changes. Some measures

386 showed satisfactory model fit after small adaptions, such as allowing items to covary. In

387 terms of reliability, most measures showed satisfactory results. However, some measures

388 such as altruism, unconventionality, or anonymity showed insufficient reliability. Instead of

389 strongly adapting measures, we decided to maintain the initial factor structure and did not

390 delete any items and we did not introduce substantial changes to the factors. For an

391 overview of all measures, their descriptives and factorial validity, see Table 1. Although

392 individually most of the measures showed good fit, when analyzed together fit decreased

393 substantially, below acceptable levels. As a result, we conservatively decided to analyze our

394 data using the variables' observed mean scores.

Table 1

Factorial validity of all measures.

Variable	M	SD	REL	CFI	TLI	SRMS	RMSEA
Personality							
Honesty humility	4.96	0.96	0.89	0.94	0.93	0.06	0.06
Sincerity	4.74	1.36	0.75	1.00	0.99	0.01	0.05
Fairness	5.27	1.57	0.87	0.99	0.98	0.02	0.07
Greed avoidance	4.36	1.42	0.74	1.00	1.00	0.00	0.00
Modesty	5.46	1.14	0.75	0.99	0.96	0.02	0.07
Altruism	5.45	1.00	0.54	1.00	1.01	0.00	0.00
Emotionality	4.50	0.90	0.89	0.89	0.87	0.06	0.07
Fearfulness	4.61	1.24	0.70	1.00	1.01	0.00	0.00
Anxiety	4.78	1.37	0.80	0.99	0.98	0.02	0.06
Dependence	3.84	1.19	0.80	0.99	0.96	0.02	0.07
Sentimentality	4.79	1.16	0.79	1.00	0.99	0.01	0.03
Extraversion	4.20	1.07	0.92	0.91	0.89	0.06	0.08
Social self-esteem	5.04	1.27	0.76	0.99	0.93	0.01	0.10
Social boldness	3.58	1.34	0.72	1.00	0.98	0.01	0.06
Sociability	3.77	1.38	0.81	1.00	0.99	0.02	0.05
Liveliness	4.40	1.30	0.86	0.99	0.92	0.03	0.12
Agreeableness	4.21	0.92	0.90	0.92	0.90	0.05	0.06
Forgiveness	3.39	1.26	0.84	0.99	0.98	0.02	0.07
Gentleness	4.61	1.13	0.74	0.99	0.96	0.02	0.07
Flexibility	4.26	1.10	0.65	0.99	0.96	0.02	0.05
Patience	4.60	1.21	0.83	1.00	1.00	0.01	0.00
Conscientiousness	5.15	0.86	0.88	0.91	0.88	0.06	0.06
Organization	5.23	1.25	0.79	0.98	0.93	0.03	0.09
Diligence	5.17	1.13	0.70	1.00	0.99	0.01	0.03
Perfectionism	5.13	0.95	0.54	1.00	0.97	0.01	0.04
Prudence	5.07	1.07	0.73	0.97	0.91	0.04	0.10
Openness	4.79	0.97	0.89	0.92	0.91	0.04	0.05
Aesth. appreciation	4.90	1.30	0.70	0.99	0.98	0.02	0.04
Inquisitiveness	4.94	1.31	0.74	0.98	0.93	0.03	0.09
Creativeness	4.72	1.32	0.79	1.00	0.99	0.01	0.04
Unconventionality	4.58	1.07	0.53	1.00	0.98	0.01	0.03
Need for Privacy							
Psychological	4.29	1.16	0.73	1.00	0.99	0.01	0.04
Social	4.31	1.29	0.73	1.00	1.00	0.00	0.00
Physical	5.06	1.19	0.77	1.00	0.99	0.01	0.03
Government	4.58	1.33	0.85	0.98	0.93	0.02	0.10
Companies	4.49	1.09	0.72	0.98	0.95	0.02	0.07
Informational	5.47	1.01	0.72	0.99	0.96	0.01	0.06
Anonymity	3.29	1.08	0.48	0.99	0.93	0.01	0.07
General	5.20	1.09	0.82	1.00	1.00	0.01	0.03

Note. REL: Reliability measured via McDonald's Omega; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation

395   The need for privacy measures showed good convergent validity. If respondents

396 reported higher needs for privacy they were also more concerned about their privacy, with

397 coefficients ranging from $r = .21$ to $r = .73$. The only exception was the relation between

398 privacy concerns and the need for social privacy, which was very small ($r = .09$). If

399 respondents reported higher needs for privacy they also engaged in more privacy behaviors,

400 with coefficients ranging from $r = .20$ to $r = .71$ The only exception was the relation

401 between privacy behavior and the need for social privacy, which was virtually nonexistent

402 ($r = .01$), and the need for physical privacy, which was very small ($r = .09$). See online

403 supplementary material for all results.

404   People who reported being less honest and humble needed more anonymity ($r = -.17$,

405 90% CI -.21, -.13). Looking at facets, more anonymity was needed by people who reported

406 being less fair ($r = -.18$, 90% CI -.22, -.14), less modest ($r = -.16$, 90% CI -.20, -.12), and

407 less altruistic ($r = -.25$, 90% CI -.29, -.21). People who reported being less fair needed

408 more psychological ($r = -.17$, 90% CI -.21, -.13), social ($r = -.23$, 90% CI -.27, -.19), and

409 physical privacy ($r = -.17$, 90% CI -.22, -.13). Similarly, people who reported being less

410 altruistic also needed substantially more psychological ($r = -.28$, 90% CI -.32, -.24), social

411 ($r = -.28$, 90% CI -.32, -.24), and physical privacy ($r = -.14$, 90% CI -.18, -.10). However,

412 less sincere people needed less privacy from companies ($r = .16$, 90% CI .12, .20) and less

413 privacy in general ($r = .15$, 90% CI .11, .19). Effects were small to medium in size.

414   Several relations between emotionality and need for privacy were found. More

415 emotional people needed less psychological privacy ($r = -.20$, 90% CI -.24, -.16), less privacy

416 from the government ($r = -.14$, 90% CI -.18, -.10), less anonymity ($r = -.15$, 90% CI -.19,

417 -.11)—but also needed more physical privacy ($r = .20$, 90% CI .16, .24). More anxious

418 respondents needed substantially more social ($r = .33$, 90% CI .29, .36) and physical

419 privacy ($r = .38$, 90% CI .34, .41). Similarly, more fearful respondents needed more social

420 ($r = .14$, 90% CI .10, .18) and physical privacy ($r = .27$, 90% CI .23, .30). More dependent

421 participants generally needed less privacy, including less psychological ($r = -.47$, 90% CI

422 -.51, -.44) and social privacy (r = -.29, 90% CI -.32, -.25), less privacy from the government

423 (r = -.15, 90% CI -.19, -.11), and less informational (r = -.18, 90% CI -.22, -.14) and

424 general privacy (r = -.16, 90% CI -.20, -.12). A similar picture for more sentimental

425 participants emerged, who needed less psychological (r = -.27, 90% CI -.31, -.23) and social

426 privacy (r = -.18, 90% CI -.22, -.14) and less anonymity (r = -.18, 90% CI -.22, -.14).

427   More extraverted people reported they needed a lot less privacy. They wanted less

428 psychological privacy (r = -.46, 90% CI -.49, -.42), social privacy (r = -.77, 90% CI -.78,

429 -.75), and physical privacy (r = -.55, 90% CI -.58, -.53), less informational privacy (r =

430 -.22, 90% CI -.26, -.18) and less anonymity (r = -.19, 90% CI -.23, -.15). Effect sizes were

431 oftentimes large. All facets showed virtually the same relations, with small differences in

432 effect sizes.

433   More agreeable participants showed a similar pattern. They needed less psychological

434 (r = -.21, 90% CI -.25, -.17), social (r = -.37, 90% CI -.41, -.34), and physical privacy (r =

435 -.38, 90% CI -.41, -.34). The facets showed virtually the same pattern. Effect sizes were

436 substantial, but on the whole smaller than those for extraversion.

437   Although more conscientious respondents generally needed less privacy, the pattern

438 was varied. More conscientious respondents needed less psychological (r = -.15, 90% CI

439 -.19, -.11) and less social privacy (r = -.24, 90% CI -.28, -.20), as well as less anonymity (r

440 = -.17, 90% CI -.21, -.12). However, when asked about privacy in general more

441 conscientious people responded to need more (r = .17, 90% CI .13, .21). More

442 conscientious people also needed more privacy from companies (r = .14, 90% CI .10, .18).

443 Looking at facets of conscientiousness, more organized people needed less social privacy (r

444 = -.24, 90% CI -.28, -.20) and less anonymity (r = -.14, 90% CI -.18, -.10). More prudent

445 participants needed less anonymity (r = -.17, 90% CI -.21, -.13). More diligent people

446 needed less psychological (r = -.21, 90% CI -.25, -.17), social (r = -.32, 90% CI -.36, -.29),

447 and physical privacy (r = -.18, 90% CI -.22, -.14) as well as less anonymity (r = -.16, 90%

448 CI -.20, -.12)—but also more privacy from companies (r = .14, 90% CI .10, .18) At the

Table 2

Predicting the need for privacy dimensions using personality factors.

Personality factors	Need for privacy							
	Psych.	Social	Phys.	Gov.	Comp.	Inform.	Anonym.	General
Honesty humility	-0.11	-0.03	-0.05	0.00	0.13	0.10	-0.17	0.07
Emotionality	-0.20	0.02	0.20	-0.14	-0.08	0.02	-0.15	-0.03
Extraversion	-0.46	-0.77	-0.55	-0.08	0.01	-0.22	-0.19	-0.10
Agreeableness	-0.21	-0.37	-0.38	-0.03	0.02	-0.10	-0.13	-0.01
Conscientiousness	-0.15	-0.24	-0.09	0.01	0.14	0.13	-0.17	0.17
Openness	-0.11	-0.09	-0.12	0.10	0.15	0.05	0.03	0.15

same time, more perfectionist respondents reported needing more informational ($r = .20$, 90% CI .16, .24) privacy, privacy from companies ($r = .14$, 90% CI .10, .18), and more general privacy ($r = .26$, 90% CI .22, .30).

Whether or not respondents were open to new experiences was in most cases unrelated to how much privacy they needed. People more open to experiences needed more privacy from companies ($r = .15$, 90% CI .10, .19) and more privacy in general ($r = .15$, 90% CI .10, .19). Three facets showed relevant but still small relations. Respondents who reported being more creative needed less psychological ($r = -.15$, 90% CI -.19, -.11) and less social privacy ($r = -.16$, 90% CI -.20, -.12). More inquisitive respondents needed less physical privacy ($r = -.15$, 90% CI -.20, -.11) but more privacy from companies ($r = .14$, 90% CI .10, .18).

In Table 2, we report how the personality dimensions predicted need for privacy. In Table 3, we report how the personality facets predicted need for privacy.

Not many meaningful relations between sociodemographic variables and need for privacy were found. Older participants needed less social ($r = -.14$, 90% CI -.18, -.10) and less physical privacy ($r = -.16$, 90% CI -.20, -.12). Male participants needed more anonymity ($r = .14$, 90% CI .10, .18). Less social privacy was needed by people in a relationship ($r = -.19$, 90% CI -.23, -.15), with a college degree ($r = -.14$, 90% CI -.18,

Table 3

Predicting the need for privacy dimensions using personality facets.

Personality factors	Need for privacy							
	Psych.	Social	Phys.	Gov.	Comp.	Inform.	Anonym.	General
Honesty humility								
Sincerity	-0.01	0.00	-0.04	0.08	0.16	0.12	-0.06	0.15
Fairness	-0.17	-0.23	-0.17	-0.04	0.13	0.07	-0.18	0.12
Greed avoidance	-0.06	0.07	0.01	0.00	0.06	0.01	-0.07	-0.04
Modesty	-0.06	0.12	0.10	-0.03	0.00	0.10	-0.16	-0.06
Altruism	-0.28	-0.28	-0.14	-0.09	0.04	0.04	-0.25	0.02
Emotionality								
Fearfulness	0.02	0.14	0.27	-0.11	-0.06	0.10	-0.08	0.04
Anxiety	0.09	0.33	0.38	-0.05	-0.07	0.11	-0.05	0.01
Dependence	-0.47	-0.29	-0.09	-0.15	-0.10	-0.18	-0.13	-0.16
Sentimentality	-0.27	-0.18	-0.03	-0.10	0.01	0.02	-0.18	0.01
Extraversion								
Social self-esteem	-0.36	-0.54	-0.38	-0.08	0.00	-0.12	-0.22	-0.04
Social boldness	-0.36	-0.58	-0.44	-0.03	0.03	-0.19	-0.09	-0.08
Sociability	-0.40	-0.76	-0.55	-0.06	0.01	-0.24	-0.11	-0.13
Liveliness	-0.35	-0.59	-0.42	-0.08	-0.01	-0.16	-0.20	-0.08
Agreeableness								
Forgiveness	-0.19	-0.34	-0.38	-0.02	0.03	-0.14	-0.07	-0.05
Gentleness	-0.14	-0.25	-0.22	0.01	0.01	-0.04	-0.10	0.01
Flexibility	-0.23	-0.33	-0.32	-0.09	-0.01	-0.09	-0.17	0.00
Patience	-0.09	-0.24	-0.25	0.01	0.03	-0.04	-0.08	0.01
Conscientiousness								
Organization	-0.13	-0.24	-0.11	-0.02	0.08	0.06	-0.14	0.10
Diligence	-0.21	-0.32	-0.18	0.01	0.14	0.06	-0.16	0.13
Perfectionism	-0.01	-0.01	0.09	0.07	0.14	0.20	-0.03	0.26
Prudence	-0.09	-0.14	-0.06	-0.01	0.09	0.11	-0.17	0.08
Openness to experiences								
Aesth. appreciation	-0.06	-0.05	-0.07	0.06	0.13	0.07	-0.01	0.14
Inquisitiveness	-0.06	-0.11	-0.15	0.07	0.14	0.02	0.03	0.10
Creativeness	-0.15	-0.16	-0.12	0.07	0.10	0.03	0.01	0.12
Unconventionality	-0.05	0.07	0.00	0.10	0.07	0.05	0.07	0.10

Table 4

Predicting the need for privacy dimensions using sociodemographic variables.

| | Need for privacy | | | | | | | |
Sociodemographics	Psych.	Social	Phys.	Gov.	Comp.	Inform.	Anonym.	General
Age	-0.07	-0.14	-0.16	-0.01	0.03	0.02	-0.07	0.05
Male	0.10	-0.06	-0.11	0.13	0.08	-0.03	0.14	0.05
White	-0.09	-0.01	0.06	-0.02	-0.05	-0.09	-0.14	-0.12
Relationship	-0.09	-0.19	-0.09	-0.04	-0.04	-0.09	-0.10	-0.11
College	-0.04	-0.14	-0.13	-0.08	-0.03	-0.12	0.00	-0.07
Income	-0.06	-0.22	-0.18	-0.04	-0.01	-0.10	-0.04	-0.05
Conservatism	0.06	-0.11	-0.05	0.18	0.12	0.06	0.09	0.13

467   -.10), and with higher income ($r = $ -.22, 90% CI -.26, -.18). People with higher income also

468   reported needing less physical privacy ($r = $ -.18, 90% CI -.22, -.14). More politically

469   conservative respondents reported needing more privacy from the government ($r = $ .18,

470   90% CI .14, .22).

471   In Table 4, we report how sociodemographics predicted need for privacy. Figure 1

472   summarizes how all of the variables—dimensions, facets, and

473   sociodemographics—predicted the need for privacy.
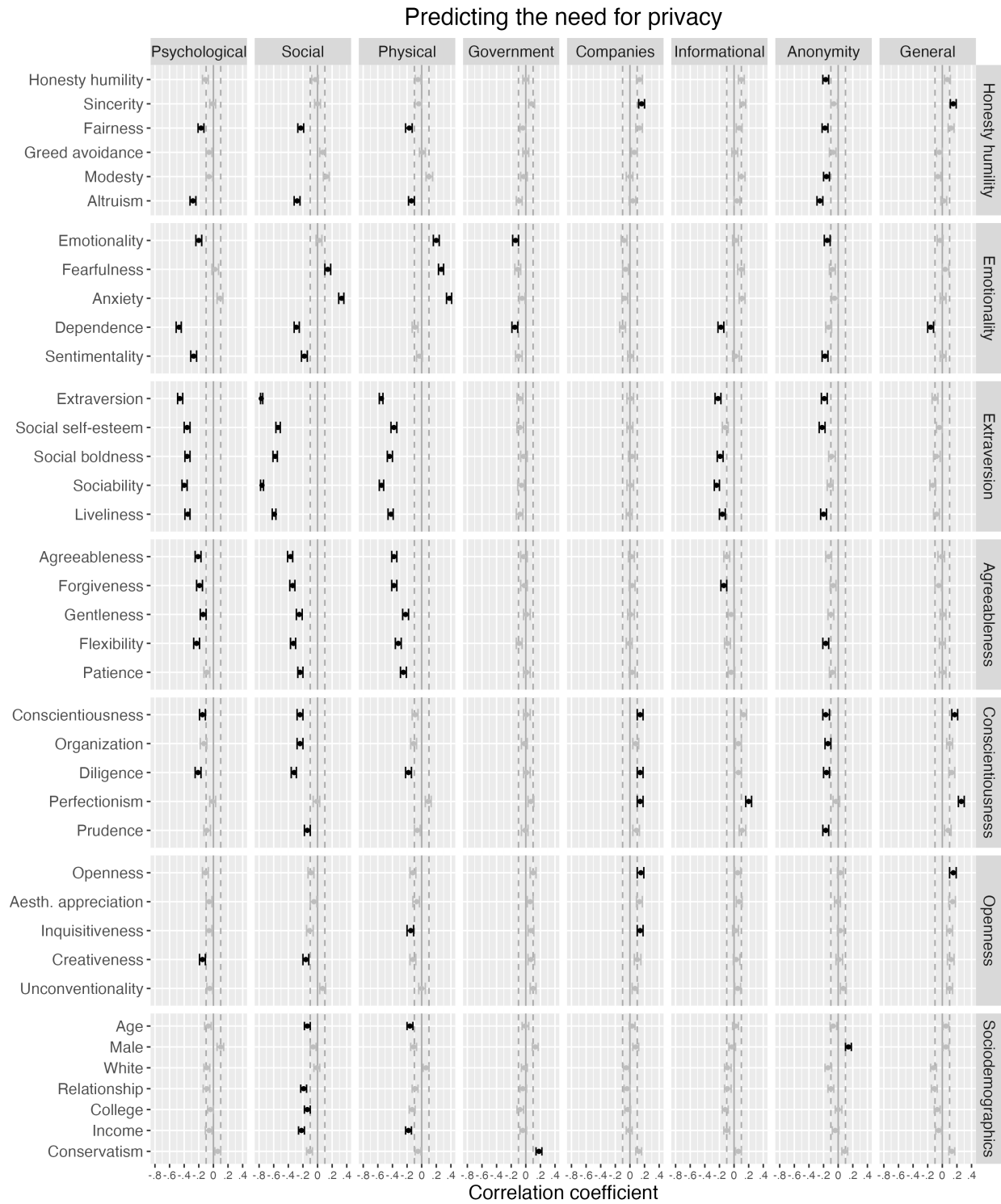
Figure 1. Results of bivariate correlations between personality and need for privacy. Bold: Effects that are statistically significant and larger than $r = .10$ / -.10.

474   In exploratory analyses we analyzed how personality facets might have potentially

475   caused need for privacy, using multiple regressions in which we controlled for all personality

476   dimensions and sociodemographic variables. We found that the need for psychological

477   privacy was explained by two variables: extraversion (β = -.55, 90% CI -.60, -.50) and

478   emotionality (β = -.28, 90% CI -.33, -.24). The need for social privacy was also potentially

479   affected by extraversion and emotionality. Being more extraverted substantially decreased

480   the need for psychological privacy (β = -.80, 90% CI -.83, -.77), as did being more

481   emotional (β = -.16, 90% CI -.19, -.12). Physical privacy was determined by again

482   extraversion, but also by agreeableness and conscientiousness. Being more extraverted

483   appeared to decrease the need for physical privacy (β = -.53, 90% CI -.58, -.49); being

484   more agreeable likewise decreased the need for physical privacy (β = -.17, 90% CI -.22,

485   -.12); however, being more conscientious increased the need for physical privacy (β = .17,

486   90% CI .12, .21). The need for privacy from the government was affected by the two

487   factors of openness and conservatism. Being more open to new experiences potentially

488   increased the need for privacy from the government (β = .17, 90% CI .12, .22), as did

489   being more politically conservative (β = .22, 90% CI .17, .27). The need for privacy from

490   companies was affected by the openness to new experiences only. Being more open to new

491   experiences potentially increased the need for privacy from companies (β = .17, 90% CI

492   .12, .22). Being extraverted and conscientious affected the need for informational privacy.

493   Whereas being more extraverted decreased the need for informational privacy (β = -.29,

494   90% CI -.35, -.24), being more conscientious increased the need for informational privacy

495   (β = .22, 90% CI .17, .27) in our data. The need for anonymity was meaningfully affected

496   only by extraversion. More extraverted people need less anonymity (β = -.20, 90% CI -.26,

497   -.15). Finally, the general need for privacy was affected by four variables. Being

498   extraverted again decreased the general need for privacy (β = -.22, 90% CI -.28, -.17).

499   However, the general need for privacy was increased by being more conscientious (β = .22,

500   90% CI .17, .27), more conservative (β = .18, 90% CI .13, .22), and more open to

501 experiences ($\beta = .19$, 90% CI .14, .23).

502   Figure 2 shows how privacy dimensions and sociodemographics potentially affected

503 the need for privacy.

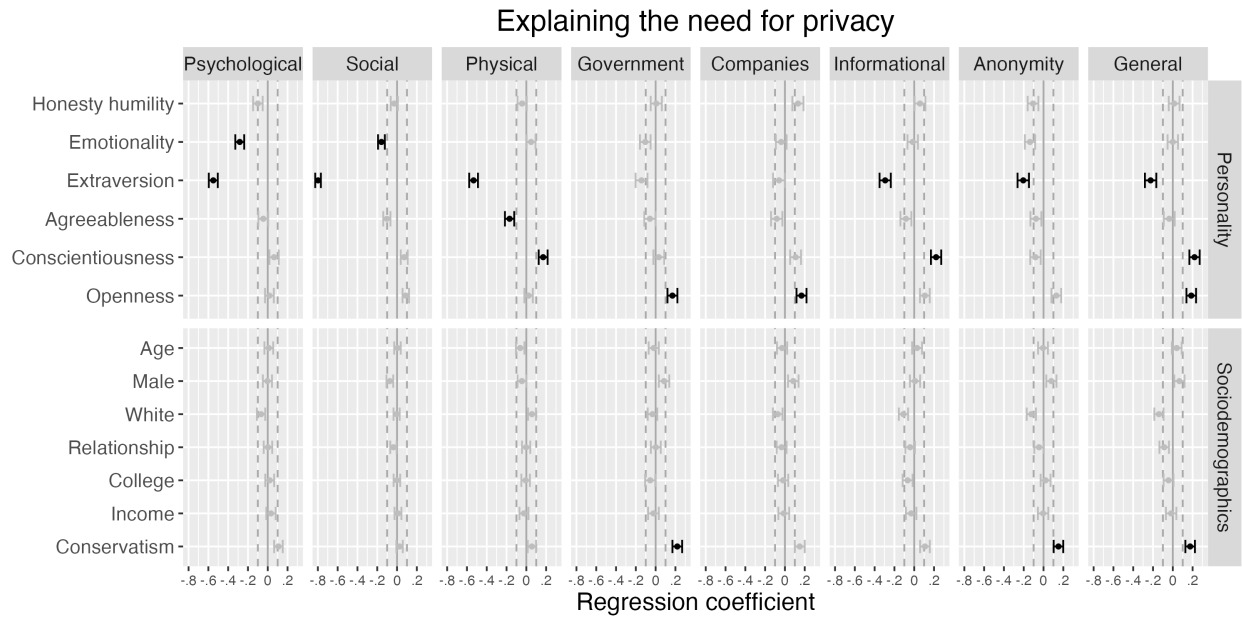*Figure 2*. Results of multiple regression. Bold: Effects that are statistically significant and larger than $\beta = .10$ / -.10.

Discussion

504

505   In this study we analyzed the relation between personality and need for privacy. The

506 data came from $N = 1550$ respondents from the US, representative in terms of age, gender,

507 and ethnicity. The results showed several meaningful relations between personality and

508 need for privacy that were statistically significant and not trivial in size (i.e., 90% CI $r \geq$

509 .10).

510   As expected, the need for privacy was most closely related to extraversion.

511 Participants who were more extraverted generally needed substantially less privacy. The

512 relation between extraversion and social privacy was particularly large, suggesting that

513 social privacy and extraversion overlap conceptually. In addition, almost all subscales of

extraversion showed similar patterns: People with greater social boldness, self-esteem, or liveliness all needed substantially less privacy from other people and less physical, psychological, and informational privacy. Extraverted people reach out to others, share their inner lives, are confident around others—which reflects in a reduced need for privacy.

The personality factor next closely related to need for privacy was agreeableness. More agreeable respondents needed less privacy in general. In particular, more agreeable respondents needed substantially less psychological, social, and physical privacy. Although this finding aligned with our prior expectation, we were surprised by the strength of the relations. Because more agreeable people have fewer conflicts with others and are more easy to get along with, they likely see others less as a threat, and hence have a reduced need for privacy. Like as was found for extraversion, no relevant relations with need for privacy from government and companies exist, suggesting that agreeableness and extraversion—personality traits mostly relevant in interpersonal contexts—might not extend to the need for privacy in these public domains.

In analyzing how the honesty humility factor relates to need for privacy, we investigated the nothing-to-hide argument. As expected, our results provided support for the nothing-to-hide argument, especially with regard to the need for anonymity. Respondents who needed more anonymity were less honest, less fair, less modest, and less altruistic. Respondents who were less fair and less altruistic also needed more psychological, social, and physical privacy. Less honest participants desired more anonymity and privacy from other people, be it psychologically, socially, or physically. These findings align with a recent study indicating that individuals with lower levels of honesty are more inclined to seek anonymity online, for example to engage in toxic communication (Nitschinsk, Tobin, Varley, & Vanman, 2023). However, honesty was unrelated to the need for privacy from government and companies or informational and general privacy. If anything, people who were more sincere actually desired more privacy from companies and more privacy in general. So although less honest people needed more privacy in several dimensions, this

541 pattern is not uni-dimensional but somewhat varied and nuanced.

542   Emotionality showed mixed relations with need for privacy, which confirmed our
543 ambivalent a priori expectations. More emotional people desired less psychological privacy,
544 less privacy from the government, and less anonymity. At the same time, they needed more
545 physical privacy. Whereas they may want tighter relational bonds to people close to them,
546 they appear to be warier of strangers entering their personal physical spaces. Fearful and
547 anxious people wanted more social and more physical privacy, while dependent and
548 sensitive people wanted less. It seems that more emotional people have a subtle and varied
549 approach to privacy depending on the nature of their emotionality. This is consistent with
550 research on discrete emotions which finds that certain negative emotions—fear and anxiety
551 in particular—evoke the aversive motivational system that facilitates avoidance behaviors,
552 whereas other emotions, possibly including dependence and social sensitivity, activate an
553 appetitive motivational system that facilitates approach behaviors (Phaf, Mohr, Rotteveel,
554 & Wicherts, 2014).

555   Contrary to our expectations, conscientiousness showed varied relations with need for
556 privacy. More conscientious people needed less psychological and social privacy and less
557 anonymity. Asked about privacy from companies and privacy in general, however, they
558 answered they needed more. More perfectionist people preferred both more informational
559 privacy, privacy from companies, and more privacy in general—perhaps to have more
560 options and leeway to adapt plans or hide imperfections. More diligent people needed less
561 privacy from other people, less psychological privacy, and less physical privacy. Speculating
562 about a potential explanation, we could imagine that similar to the nothing-to-hide
563 argument more diligent people might have less to be afraid of and so are more open to
564 public scrutiny.

565   Although openness might be the opposite of privacy semantically, empirically only a
566 handful of meaningful relations with need for privacy were found. And interestingly, the
567 main dimension showed that more open people actually wanted more privacy from

companies and more privacy in general. The facet creativity was meaningfully related to psychological and social privacy, such that more creative people needed less psychological and social privacy. It might be that more creative people generally think of others as resources, thriving from their inputs and exchanges. More inquisitive people needed less physical privacy from others. They, too, might see others as a resource, valuing closer exchanges with people unknown to them.

In addition, we looked at relations between need for privacy and various sociodemographic variables. Contrary to our expectations, older participants desired less privacy from others, both socially and physically. This was surprising, for example given that older people report increased online privacy concern (Kezer, Sevi, Cemalcilar, & Baruh, 2016). It is an open question as to whether this relation represents a developmental mechanism or a difference between cohorts. Research suggests that older people have fewer social interactions than younger people (Ortiz-Ospina, Giattino, & Roser, 2024), which could result in a lower need for social and physical privacy. But it could also be a difference between cohorts. Younger people nowadays have fewer in-person social contacts than before, often attributed to increases in time spent online (Twenge, Spitzberg, & Campbell, 2019). Hence, it could also be that younger generations prefer more solitude than the generations beforehand.

We expected that males would desire more psychological privacy but less social and physical privacy than females. Although in our data these relations were statistically significant, the effects sizes were too small to be considered meaningful. The only meaningful gender effect we found was with regard to anonymity. Males needed more anonymity than females. This finding is in line with the fact that women more readily view themselves as vulnerable and targets for victimization than do men (Lewyn, 1993).

People in relationships needed less social privacy. This makes sense as being in a relationship implies a minimum commitment of openness to others. Contrary to our expectations, respondents with a college degree and with greater income all reported lower

levels of need for social privacy. Having fewer educational and financial resources might result in greater social stigma, leading to an increased need for social privacy. More politically conservative respondents needed more privacy from the government—which we expected given the general political tendencies of conservatives to prefer fewer state regulations and interferences. Finally, no meaningful relations with ethnicity were found. For example, contrary to what we expected we did not find that minority groups desired more privacy from the government in our data.

The results above are based on correlations and analyzed the variables' relationships. To analyze the potential impact of personality on need for privacy, in exploratory analyses we also ran several multiple regression analyses. Here, we estimated the relations between each personality and need for privacy dimension while controlling for all other personality dimensions and sociodemographics. Results were comparable, in that extraversion turned out to be the major potential cause of need for privacy. However, there were also some differences. Most notably, results implied that being more conscientious increases the need for physical, informational, and general privacy. Similarly, being more open to new experiences might increase the need for privacy from the government, from companies, and for privacy in general. Finally, multiple regression results suggested that being conservative does not only increase the need for privacy from the government but also for privacy in general. All other sociodemographic variables ceased to be significant.

Looking at the results more broadly, we make five general observations. First, it makes sense to differentiate different levels of need for privacy. Many personality traits showed meaningful relations with some dimension, yet no or even opposite relations with others. To illustrate, whereas more conscientious people desired less psychological privacy and less privacy from other, when asked about privacy in general and privacy from companies they needed more. General need for privacy may rather represent a cognitive appraisal, whereas social or psychological privacy might be more experienced-based and psychological. In any case, our results argue for a more rather than less nuanced strategy

622 for measuring privacy attitudes.

623   Second, the need for privacy from companies and the government, both vertical forms

624 of privacy, showed only a couple of meaningful relations with personality. The most

625 notable relation was that conservative people needed substantially more privacy from the

626 government. Most relations between privacy needs and personality were found for forms of

627 horizontal privacy, suggesting that personality has more influence on the more social and

628 interpersonal aspects of privacy. So while the demographic variable of political ideology

629 more strongly affected vertical privacy needs, personality aspects appear to better explain

630 horizontal privacy needs.

631   Third, although we found support for the nothing-to-hide-argument, our results also

632 support the reasoning of the argument's critics. Although desiring more anonymity was

633 related to less honesty, fairness, and altruism, these relations were not particularly large.

634 Next, it is insufficient to assume that anonymity is needed only by people with reduced

635 honesty. Less emotional, less extraverted, and more conscientious people also needed more

636 anonymity. Finally, when analyzed together with the other predictors, honesty and

637 humility ceased to be a relevant predictor.

638   This leads to our fourth general observation. Our main interest was to determine the

639 personality factors predicting the need for privacy. What can we learn about a person

640 given their need for privacy? We first analyzed this question in correlation analyses.

641 However, when we further explored potential causal effects using multiple regression

642 analysis (Grosz et al., 2020), a somewhat different picture emerged. Several of the bivariate

643 relationships we initially observed disappeared. These results suggest that some of the

644 correlations we found might not be due to a direct causal process but could instead be

645 explained by shared variance with a third confounding factor. Additionally, some causal

646 effects that were not apparent in the correlation analyses became significant in the multiple

647 regressions. Specifically, conservatism became more relevant when we included additional

648 control variables, suggesting that an increase in conservatism leads to a greater desire for

649 anonymity and privacy in general.

650 Finally, our results have significant implications for privacy theory, suggesting new
651 avenues for further research. Given the close relationship between personality and privacy,
652 it is worthwhile to examine how personality traits interact with specific privacy models and
653 theories. For instance, personality could influence the privacy calculus model (Kezer,
654 Dienlin, & Baruh, 2022). Extraverted individuals, who tend to view others as resources,
655 might perceive greater benefits in sharing information online and therefore be more open in
656 their sharing behaviors. Conversely, anxious individuals, who are more likely to see others
657 as threats, might have heightened concerns about privacy, leading to a reduced willingness
658 to share information online.

Limitations

660 Not all personality and privacy measures showed good fit. Especially when analyzed
661 together, fit was not satisfactory. Likewise, some measures such as altruism,
662 unconventionality, or anonymity showed low reliability. The results of these variables thus
663 need to be interpreted more cautiously.

664 Instead of deleting items or changing the factor structure, to avoid over-fitting we
665 decided to maintain the measures' original factor structure. For this reason, instead of
666 reporting the results from latent structural equation modelling, we reported the results of
667 the correlations of the observed variables' means. Interested readers can find the results of
668 the latent analyses in our online supplementary material. The results are highly
669 comparable, with the major difference that effect sizes in the latent models tended to be
670 larger. The results reported here are hence more conservative and likely underestimate the
671 true effect sizes. This underscores the need for further optimizing measures of personality
672 and privacy.

673 In our exploratory analyses, we aimed to investigate the potential causal effects of
674 personality on the need for privacy by controlling for potential confounders, including other

675 personality dimensions and sociodemographic variables. However, it is important to note

676 that this is only a preliminary approach, as there are likely additional variables that could

677 further explain the relationships. Future research should explore the potential causal

678 relationships in a more systematic and comprehensive manner.

679   Our findings are specific to the U.S. context. Previous research indicates that

680 although privacy is a universal concept, attitudes and practices vary significantly across

681 different cultures and countries (Altman, 1977). It is possible that the relationship between

682 personality and the need for privacy manifests differently in various settings. We hope this

683 study will serve as a catalyst for future research in this area.

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847   Both authors declare no conflict of interests.

Supplementary Material

849   All the stimuli, presentation materials, analysis scripts, and a reproducible version of
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851   paper also has a companion website where all materials can be accessed
852   (https://tdienlin.github.io/Who_Needs_Privacy_RR).

Data Accessibility Statement

854   The data are shared as a scientific use file on AUSSDA (Dienlin & Metzger, 2024).