Who Needs Privacy?

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Abstract

In this study we analyzes how personality relates to peoples' need for privacy. For example, we analyze if the so-called "nothing-to-hide" argument is correct: Do people who lack integrity really desire more privacy? Moreover, we also analyze the relation between need for privacy and sociability, anxiety, risk aversion, and traditionality. Using an online questionnaire with $N = 261$ mostly student respondents, we found that it is possible to predict a considerable part of peoples' need for privacy on the basis of their personalities. For example, we indeed found that repondents who reported less integrity than others also desired more anonymity. Moreover, more traditional and more anxious respondents desired more privacy from the government, while more risk averse and less sociable respondents desired more privacy from other people.

Keywords: Privacy, personality, anonymity, integrity, SEM

Who Needs Privacy?

In his novel *The Circle*, Eggers (2013) describes a dystopian society in which people are gradually forfeiting their privacy. One after another becomes "transparent": Carrying a small camera around the neck, people begin to broadcast their daily lives to the Internet. In the novel, this eventually causes a societal upheaval: "The pressure on those who hadn't gone transparent went from polite to oppressive. The question, from pundits and constituents, was obvious and loud: If you aren't transparent, what are you hiding?" (Eggers, 2013, p. 129).

With this study, we want to answer the following question. Why do people desire privacy? To date there is only little research on why people desire privacy and how the need for privacy can be predicted by aspects of personality. Why do some people not care whether government agencies such as the NSA are collecting their data (Greenwald, n.d.), and why do others protest vehemently in order to protect their privacy?

We think that finding an answer to this question is important: Given that government agencies are collecting large amounts of data hoping to reduce criminality and terrorism, and given that government agencies are collecting this data preemptively and without concrete suspicions, it seems relevant to find out whether this practice of mass surveillance can be justified based on the nothing-to-hide argument. As a result, the main question of this paper is: Do people who desire more privacy really have more to hide and, more generally, what are personality facets that determine peoples' overall need for privacy?

The Need for Privacy

Privacy captures the extent of voluntary withdrawal from others (Westin, 1967). Several models suggest that privacy is a multi-dimensional concept: For example, in a theory-driven treatise Burgoon (1982) argued that privacy has four dimensions: informational, social, psychological, and physical privacy. Pedersen (1979), by contrast, did an empirical factor analysis (initially starting with 94 items) and suggested that privacy exists on six dimensions: reserve, isolation, solitude, intimacy with friends, intimacy with

family, and anonymity. In addition, Schwartz (1968) differentiated between horizontal and vertical privacy: Whereas horizontal privacy captures withdrawal from peers, vertical privacy refers to withdrawal from superiors or institutions (e.g., government agencies).

Next to being multi-dimensional, privacy is also contingent (Dienlin, 2014): One can, for example, distinguish between the objective privacy context, the subsequent subjective perception of privacy, the psychological need for privacy (which is both a situational and dispositional need), and the resulting privacy behavior (as represented by self-disclosure). For the purpose of this study, we combine the aforementioned theories and focus on (a) vertical privacy with regard to the need for withdrawal from government surveillance, (b) horizontal privacy in terms of the need for withdrawal from peers, friends, or acquaintances, and (c) both horizontal and vertical privacy as captured by the general need for anonymity.

Integrity. Which specific aspects of personality help predict need for privacy? The so-called nothing-to-hide argument states that "If you have nothing to hide, you have nothing to fear." At its core, the nothing-to-hide argument implies that an important predictor of why people desire privacy is their *lack of integrity*. This becomes especially apparent when we consider the definition of Solove's (2007) nothing-to-hide argument (notably, Solove is a strong critic of the nothing-to-hide argument):

> "The NSA surveillance, data mining, or other government information gathering programs will result in the disclosure of particular pieces of information to a few government officials, or perhaps only to government computers. This very limited disclosure of the particular information involved is not likely to be threatening to the privacy of law-abiding citizens. Only those who are engaged in illegal activities have a reason to hide this information." (Solove, 2007, p. 753)

This definition helps illustrate the link between lack of integrity and need for privacy: People who have "engaged in illegal activities" can be considered, by definition, to lack integrity (Paunonen, 2002), which is why they have a reason "to hide this information" (or, in other words, to desire more privacy). In terms of a scientific definition of integrity there is

no real consensus, however most scholars agree that integrity "incorporates a tendency to comply with social norms, avoid deviant behavior, and embrace a sense of justice, truthfulness, and fairness" (Connelly, Lilienfeld, & Schmeelk, 2006, p. 82).

Several theoretical arguments exist why lack of integrity might correlate with need for privacy. In general, any self-disclosure is a potential risk because others might disagree, disapprove, or misuse the information in other contexts (Petronio, 2010). Privacy regulation theory showed that if self-disclosures are too risky, people raise their desired level of privacy, intensify their boundary regulation, and employ more mechanisms to seclude and protect themselves (Altman, 1976). In traditional contexts, this could range from moderate behaviors like closing doors, to extreme behaviors such as physically tossing someone out of the room (Altman, 1976). In modern contexts, protecting one's privacy can mean to avoid photographs or to deliberately shun public places that have surveillance cameras. People who have actually committed something bad, treacherous, or illegal become even more vulnerable and face a significant risk of self-disclosure, because others will surely disapprove of these activities (Petronio, 2010). Hence, the foregoing arguments illuminate an indirect link between integrity and need for privacy: By definition, people who participate in negative activities are considered to lack integrity (Paunonen, 2002). People who have engaged in negative activities have, by definition, more to hide, and disclosures concerning those activities pose a high risk. Because of this increased risk, people will arguably desire more privacy, as a means to mitigate their felt risk (Altman, 1976). In this way, the current research extends Altman's privacy regulation theory (1976) by suggesting that lack of integrity is an important yet unexamined factor that could increase peoples' desired level of privacy.

A few studies can be found that imply a relation between privacy and integrity. For example, several studies found that surveillance reduces cheating behaviors (Corcoran & Rotter, 1987, Covey.1989). Covey, Saladin, and Killen (1989) asked students to solve an impossible maze. In the high surveillance condition, the experimenter stood in front of the

students and closely monitored their behavior. In the low surveillance condition, the experimenter stood behind the students, did not monitor their behavior, and visual dividers were used to block the experimenter's view of the students. Results showed that students were more likely to cheat in the low surveillance condition, suggesting that in situations of surveillance (i.e., less privacy), people show fewer cheating behaviors (i.e., more integrity). Similarly, people are more likely to prevent others from stealing when security cameras are visible (van Bommel, van Prooijen, Elffers, & van Lange, 2014), which is also a sign of higher integrity. Next, in a longitudinal sample with 457 respondents in Germany (Trepte, Dienlin, & Reinecke, 2013), people who reported needing more privacy were less satisfied with their lives (r = -.47), had more (r = .41) and less positive affect (r = -.39). More importantly however, people who felt they needed more privacy were also less authentic on their SNSs profiles (r = -.48) and less authentic in their personal relationships (r = -.28; Trepte et al., 2013). For example, people who agreed to items like "I do not talk about personal issues unless my conversation partner brings them up first" were more likely to report that their online profiles did not truly represent their personality. Given the argument that authenticity is a subset of integrity (Sheldon, 2004), we reason that the concept of integrity might relate to the desired level of privacy. Finally, Pedersen (1982) showed that three dimensions of need for privacy related to self-esteem: In his study with $N = 70$ undergraduate students, respondents who held a lower self-esteem were more reserved (r = .29), needed more anonymity (r = .21) and preferred solitude (r = .24). Granted, self-esteem and integrity are generally distinct concepts; however, Pedersen's specific operationalization of self-esteem integrated several aspects of integrity (e.g., by using items such as "moral, nice, fair, unselfish, good, honest, reputable, sane" to measure self-esteem). Thus, our overarching hypothesis is that people who lack integrity have a greater need for privacy.

In accordance with the reasoning mentioned above, we suggest that people with less integrity feel a greater need for privacy. Specifically, we argue that integrity may relate to the need for privacy from (a) government surveillance, as governments have the legitimate

power to prosecute illegal activities. Next, we hypothesize that integrity relates to the desire privacy for (b) anonymity. Anonymity makes it more difficult for both legal and social agents to identify and address potential wrongdoers, which is why people with less integrity will prefer situations in which they are anonymous. Finally, lack of integrity likely also relates to an increased need for privacy from (c) other people, as most other people will disapprove of immoral or illegal activities, and might reveal those activities to authorities.

Hypothesis 1: People who feel lower in self-perceived integrity desire more privacy from government surveillance (H1a), more anonymity (H1b), and more privacy from other people (H1c).

Sociability. Critics of the nothing-to-hide argument hold that people who desire privacy should not automatically be confronted with suspicion, and that privacy has several purposes that are not related to criminal behavior (Marlinspike, n.d.). Westin (1967), for example, defined four primary purposes of privacy: (1) self-development (i.e., the integration of experiences into meaningful patterns), (2) autonomy (i.e., the desire to avoid being manipulated and dominated), (3) emotional release (i.e., the release of tension from social role demands), and (4) protected communication (i.e., the ability to foster intimate relationships). These are all important social factors for which people desire privacy. Hence, the argument is that people who desire privacy can have several legitimate reasons for doing so; reasons which are essential for psychosocial wellbeing and which relate to different factors of personality. Below, we thus explore other (neutral) aspects of personality that potentially predict need for privacy. In order to be more precise, we follow the advice by Paunonen and Ashton (2001) and, instead of using generic personality factors as predictors, refer to specific personality facets.

First, we argue that people who are more reserved, who feel less comfortable in social situations, generally desire more anonymity and more interpersonal privacy. Given that privacy is, by definition, a voluntary withdrawal from society (Westin, 1967), we expect that people who are more reserved or more shy desire more privacy from others. Several empirical

studies support this hypothesis: Extroverted people desire less privacy (Morton, 2013), people who describe themselves as introverted thinkers are more likely to prefer social isolation (Pedersen, 1982), and introverted people are more likely to report invasions of privacy (Stone, 1986). Finally, we did not find convincing theoretical and empirical arguments for why sociability should relate to an increased need for privacy from government surveillance, which is why we did not include a hypothesis on this relation.

Hypothesis 2: People who are more sociable desire less anonymity (H2a) and less privacy from other people (H2b).

Anxiety. Of course, there are also reasons why people might desire less privacy. Government agencies often curtail privacy with the aim to prevent crime: For example, the NSA's surveillance programs are often considered a direct response to the 9 / 11 terrorists attacks (Greenwald, n.d.). It seems plausible that people who are more afraid of terrorist attacks are also more likely to consent to these surveillance programs, given that these programs promise to reduce the likelihood of future attacks. One can then argue that people who are afraid of terrorist attacks are also more afraid of threats overall, which is why we suggest that people who are, in general, more anxious desire less privacy from government surveillance and less anonymity. We did not include a hypothesis on the potential relation between anxiety and need for interpersonal privacy. On the one hand, one could argue that people who are more anxious are more reserved, given that social interactions can pose significant risks (especially with strangers or weak ties; Granovetter, 1973). At the same time, one could suggest that especially those people who are more anxious desire less privacy from others (and especially their strong ties), in order to cope better with their daily challenges. At the end, given that we measure interpersonal privacy on a general level (and do not distinguish between need for privacy from (a) weak ties and (b) strong ties), it seems plausible that both effects could cancel each other out.

Hypothesis 3: People who are more anxious desire less privacy from government surveillance (H3a) and more anonymity (H3b).

Risk aversion. Disclosing personal information always poses a certain risk, given that others can misuse self-disclosed personal information in different contexts, which can lead to severe consequences (Altman, 1976). Not everyone will feel intimidated by this hypothetical threat—except those who have a general tendency to avoid taking unnecessary risks. The most cautious strategy to minimize risks of personal self-disclosures would be, arguably, to keep as much information as possible private. Hence, we suggest that people who are, in general, more risk averse have a good reason to desire more privacy in all three aforementioned contexts.

Hypothesis 4: People who are more risk averse desire more privacy from government surveillance (H4a), more anonymity (H4b), and more privacy from other people (H4c).

Traditionality. The personal computer and the Internet have rendered the world increasingly digitized: Social interactions, purchases, and medical treatments nowadays all produce digital traces, which can be combined into accurate latent user profiles. Given the features of digital information (i.e., information is persistent, searchable, reproducible, and scalable; boyd, 2008), this allows for unprecedented ways and degrees of surveillance. Mark Zuckerberg famously observed that privacy is no longer a "social norm," rather that people share personal information (Johnson, n.d.). Hence, in order to be part of contemporary life (e.g., by using SNSs), it seems necessary to give up some privacy. However, arguably not everyone is willing to pay that price, and especially people who are more conservative might prefer to stick to their usual routines and decide against giving up their privacy. This is supported by empirical research: Older people, who are generally less open and more traditional (Donnellan & Lucas, 2008), are more concerned about their privacy than younger people (Fife & Orjuel, 2012). Taken together, we suggest that people who are more traditional also desire more privacy in all three aforementioned contexts.

Hypothesis 5: People who are more traditional desire more privacy from government surveillance (H5a), more anonymity (H5b), and more privacy from other people (H5c).

Sociodemographic variables. (Dear Miriam, I would like to add a short paragraph on how sociodemographics relate to privacy. Relevant studies I can think of are Park (2015), Tifferet (2019), Weinberger, Zhitomirsky-Geffet, and Bouhnik (2017), Trepte et al. (2013). I haven't yet managed to write it, maybe you have time?)

Methods

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study.

Open science

The following information can be found in the online supplementary material (OSM): the data, the study material, the syntax, unabridged results, additional analyses, and a reproducible version of the manuscript. Next to the variables reported here, we also collected additional ones, which can be found in the OSM. We invite everyone to for example rerun our analyses or to investigate novel research questions. It is also possible to suggest changes and/or corrections to the manuscript. The OSM can be found here: https://github.com/tdienlin/need_for_privacy/.

Data analyses

All hypotheses were tested with a two-tailed significance level of 5%. Regarding effect sizes, we classified regression coefficients with values exceeding $\beta = .10$ as small effects, $\beta = .30$ as medium effects, and $\beta = .50$ as large effects. In that vein, our smallest effect size of interest (SESOI; Lakens, Scheel, & Isager, 2018) was $\beta = .10$. Effects below the SESOI are considered too small to be theoretically relevant.

We removed participants with peculiar response patterns (e.g., straight-linining, missing of inverted items). As criterion, we used the Guttman value, which allows to identify respondents with peculiar response patterns (Meijer, Niessen, & Tendeiro, 2016). We individually inspected respondents whose reponses were most extreme (5% quantile). Indeed,

these reponses showed either obvious response patterns, which is why these 5% were excluded from the analyses. Next, we excluded one participant who provided an illogical age (i.e., 9 years). We also excluded all respondents who anwered less than 50% of all questions. The remaining missing responses were imputed using predictive mean matching. No respondents needed to be exluded due to "speeding" (i.e., < 5 minutes answer time).

The factorial validity of the measures and the hypotheses were tested with structural equation modeling (SEM). Mardia's test showed that the assumption of multivariate normality was violated, $p(\text{skewness}) < .001$, $p(\text{kurtosis}) < .001$. As a result, we used the more robust Satorra-Bentler scaled and mean-adjusted test statistic (MLM) as estimator. Fit was assessed using the conventional measures and criteria as proposed by Kline (2016).

First, by running confirmatory factor analyses we tested the factorial validity of the variables we collected. In a first step, we ran exploratory factor analyses to assess the underlying factor structure. If more than one factor was found, we ran exploratory factor analyses looking for a bifactor model solution. Bifactor models implement one factor that explains the variance in all items (the so-called general factor or g-factor). Next, at least two more additional factors are implemented that explain the variance in a subset of the items. The general factor and the specific factors are orthogonal. Bifactor models are nested within hierachical models and are in general more liberal than hierachical models. For more information on bifactor models, see Kline (2016). If the bifactor model did not show sufficient factorial validity, we proceeded by deleting items with low loadings on the general factor and/or the specific factors. If no bifactor solution could be found, using a subset of the items we then aimed to extract a single factor with sufficient factorial validity.

To test our hypotheses, we regressed the dependent variable need for privacy unto the predictor variables. To increase parsimonity, the predictor variables were not modelled as latent factors. Instead, using the model predicted values of the CFAs we computed factor score for each respondent. If the CFAs showed a single-factor solution, we used the model predicted values for this latent factor; if the CFAs produced a bifactor solution, we used the

model predicted values for the general latent factor.

The criterion, need for privacy, was measured as latent construct. In general, combining the information of several items into a general latent construct helps reduce and combine information, which allows for more robust and precise inferences. At the same time, there are several degrees of freedom regarding how to exactly specify general latent constructs. In light of our not having preregistered the analyses, in order to provide the complete picture we hence also report how the independent variables predicted each item measuring need for privacy individually (see Figure 3).

We used R (Version 3.5.1; R Core Team, 2018) and the R-packages *ggplot2* (Version 3.1.0; Wickham, 2016), *lavaan* (Version 0.6.3; Rosseel, 2012), *papaja* (Version 0.1.0.9842; Aust & Barth, 2018), *semPlot* (Version 1.1; Epskamp & Simon Stuber, 2017), and *tidyverse* (Version 1.2.1; Wickham, 2017) for all our analyses.

Procedure and participants

Participants were students from a university in the western U.S. who received course credit for taking part in the study. The initial sample consisted of $N = 296$ respondents. After the removing of the defective data, the final sample consisted of $N = 261$ respondents. The age ranged from 18 to 56 years ($M = 20$ years), with 27% of the respondents being male. The median participation time was 5.22min.

The study was run in 2015. At the time we were not yet aware of the importance to run a-priori power analyses to determine sample size. It was our aim to collect a large number of participants (i.e., $N = 300$). The final sample size allowed to find effects with a size of $\beta = 0.22$ in 95% of all cases. We had a power to detect small effects (i.e., $\beta = .10$) in 36% of all cases.

Measures

In what follows we present how we operationalized our constructs. First, it was possible to model all variables with at least acceptable fit. Note that all items were answered

Table 1

Psychometrics of Variables Used.

	m	sd	chisq	df	pvalue	cfi	tli	rmsea	srmr	omega	alpha	ave
Privacy need	4.17	1.61	107.36	62.00	< .001	.95	.93	.05	.05	.84	.89	.47
Integrity	4.56	1.81	50.81	23.00	< .001	.95	.92	.07	.05	.79	.82	.40
Sociability	4.67	1.48	12.77	3.00	.005	.97	.85	.11	.04	.78	.83	.51
Anxiety	4.40	1.50	29.60	16.00	.020	.97	.94	.06	.04	.80	.83	.44
Risk aversion	4.34	1.51	33.13	16.00	.007	.95	.91	.06	.05	.74	.80	.42
Traditionality	3.89	1.57	13.73	5.00	.017	.95	.91	.08	.04	.73	.73	.35

Note. All items were measured on 7-point scales with Likert response options. Alpha = Cronbach's alpha (internal consistency); omega = Raykov's omega (composite reliability); ave = average variance extracted.

on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). For an overview of the items' psychometrics, factorial validity, and reliability, see Table 1. The data, all items (including deleted ones), results of CFAs, item statistics, and distribution plots can be found in the OSM.

Need for privacy. As main variable of interest, we collected several items to measure the need for privacy. First, we collected 4 items capturing the need for *informational privacy* using the scale by Trepte and Masur (2017). One example items was "I prefer it when other people do not know much about me."

Second, we measured the need for privacy on a *societal* level using 9 self-designed items. The first subdimension was *government surveillance*, which represents the extent to which people want the government to abstain from collecting information about their personal life. One example item is "I feel the need to protect my privacy from government agencies." The second dimension was *anonymity*, which measures the extent to which people feel the need to avoid identification ("I prefer not to carry my ID with me all the time to preserve my privacy").

Third, we measured the need for privacy on a *interpersonal* level using 9 self-designed items. The first subdimension measured the need for privacy from other people in *online contexts*. One example items was "I don't feel the need to be able to communicate about very personal things with others online". The second subdimension measured the need for privacy from other people in *offline contexts*. One example item was "I don't feel the need to tell my friends all my secrets".

Exploratory and confirmatory factor analyses finally revealed a well-fitting bifactor model, which consisted of one general factor measuring a general need for privacy and three specific ones measuring the need for privacy from the government, the need for privacy from other people, and the need for anonymity. For a list of all items, see Table 2. For an overview of the items' loadings in the final bifactor model, see Figure 1.

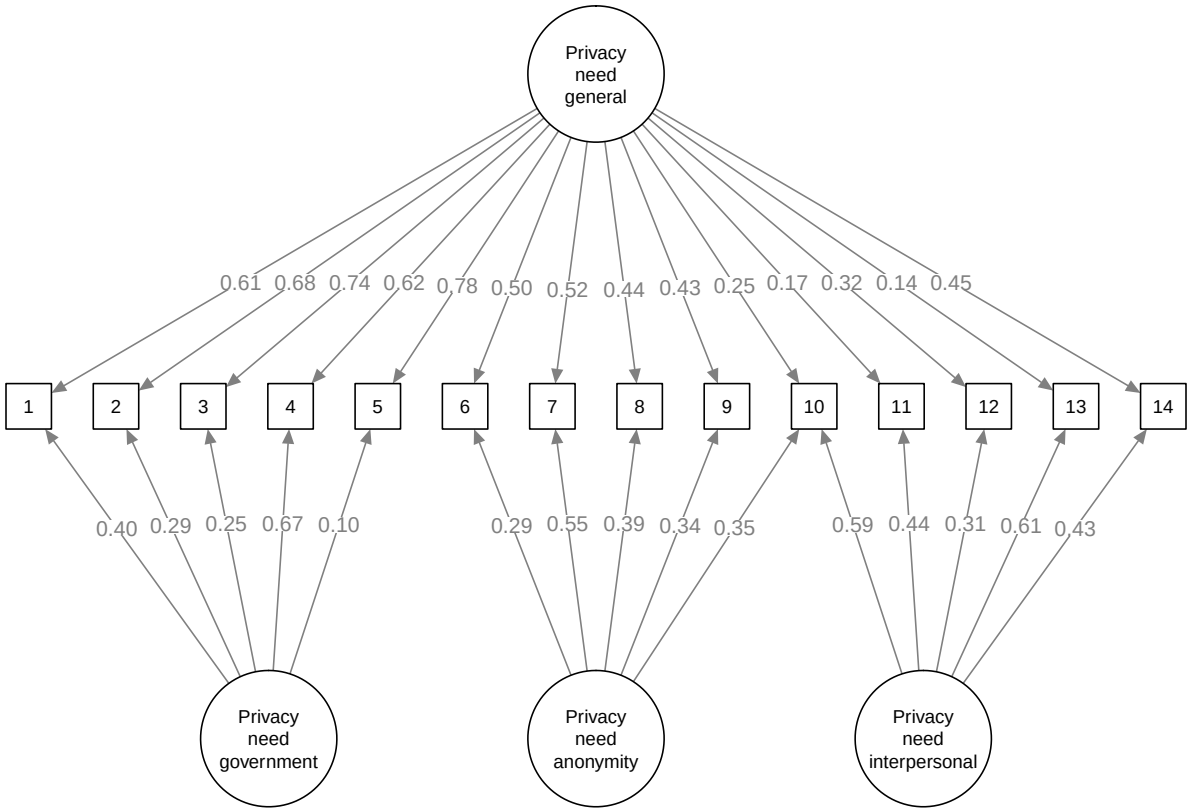

Figure 1. Overview of the bifactor model for the need for privacy

Integrity. Integrity measures the extent to which people comply with culturally established norms and values. In order to measure lack of integrity, we used the subscale *integrity* of the Supernumerary Personality Inventory (Paunonen, 2002), which consists of 8 items. In addition, we self-designed another three items. An example item is "I don't think there's anything wrong with cheating a little on one's income tax forms." Analyses revealed that a bifactor model based on a subset of 9 items showed good fit to the data.

Sociability. Sociability captures whether people prefer to spend their time alone or in company. We measured sociability with the extraversion subscale *gregariousness* (John & Srivastava, 1999), which consists of 8 items. An example item is "I shy away from crowds of people." Analyses revealed that a bifactor model based on a subset of 6 items showed good fit to the data.

Anxiety. Anxiety measures whether people are afraid of negative external influences. We measured anxiety with the neuroticism subscale *anxiety* (John & Srivastava, 1999), which consists of 8 items. An example item is "I am easily frightened." Analyses revealed that a bifactor model using all 8 items showed good fit to the data.

Risk avoidance. Risk avoidance captures whether people abstain from taking risks. We measured risk avoidance with the conscientiousness subscale *deliberation* (John & Srivastava, 1999), which consists of 8 items. An example item is "I think twice before I answer a question." Analyses revealed that a bifactor model using all 8 items showed good fit to the data.

Traditionalism. Traditionalism measures whether people prefer to stick with their usual routines. We measured traditionalism with the (inverted) openness to experiences subscale *actions* (John & Srivastava, 1999), which consists of 8 items. An example item is "I'm pretty set in my ways." Analyses revealed that a model with a single factor based on a subset of 5 items showed good fit to the data.

Results

In what follows, we present the verbatim result. For the exact statistical results, see Table 3. For visualization of the results by means of confidence intervals, see Figure 2.

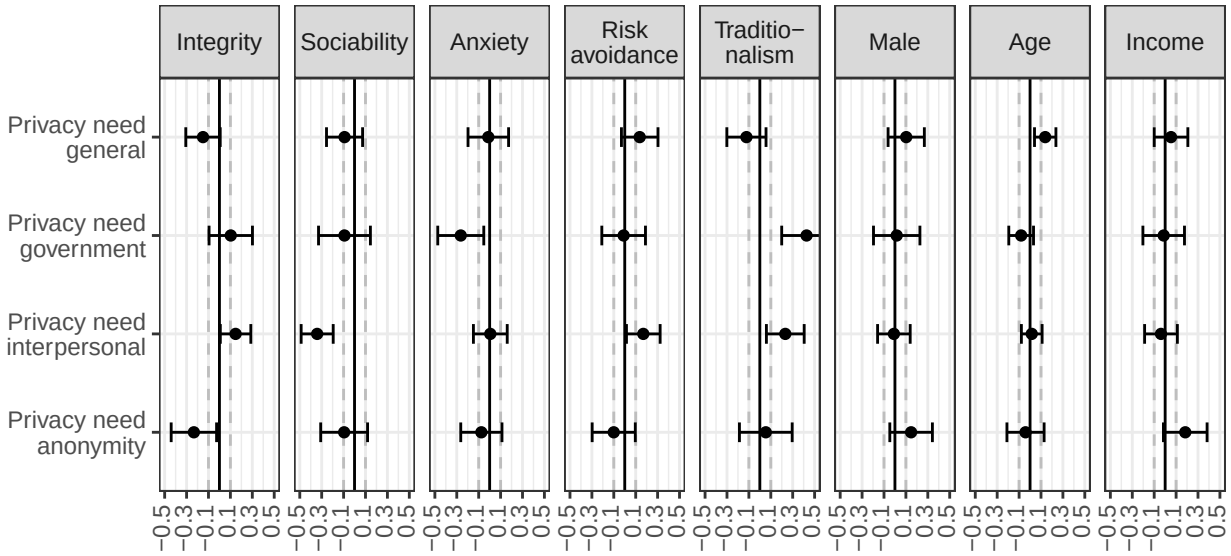

Figure 2. Overview of results. Shows the 95% confidence intervals of standardized coefficients.

To begin with, we found that the final model we estimated to test our hypotheses fit the data moderately well, $\chi^2(142) = 233.64$, $p < .001$, cfi = .92, rmsea = .05, 90% CI [.04, .06], srmr = .05. Our first hypothesis stated that people reporting more integrity than others would need less privacy. Indeed, the results showed that respondents who reported more integrity than others desired moderately less anonymity. The relation with general privacy showed the same relation; however, it was marginally not significant. Interestingly, respondents who reported more integrity desired *more* privacy from other people. No significant relation with the need for privacy from the government was found.

Respondents who reported being more sociable than other desired less privacy from other people. The effect was of a considerable size. No other significant relations were found.

Next, we found that respondents who indicated being more anxious than others also desired less privacy from the government. The effect size was moderate to considerable. No other significnat relations were found.

Respondents who reported being more risk avoidant than others desired moderately more privacy from other people. No further significant effects were found.

Next, respondents who indicated being more traditional than others also desired more privacy from the government. The effect was substantial. More traditional respondents also desired moderately more privacy from other people. No significant relations with the overall level of privacy and the need for anonymity were found.

Finally, regarding sociodemographic variables, we found that respondents who were older also desired more privacy. The effect was small.

In sum, the predictors could explained 8.82% of the variance in the general need for privacy, 23.06% of the variance in the need for privacy from the government, 29.71% of the variance in the need for privacy from other people, and 15.52% of the variance in the need for anonymity.

As stated above, we also calculated the relation between the predictor variables and the individual privacy need items. Several significant relations were found. For a visualization, see Figure 3.

Discussion

This study analyzed how the need for privacy can be predicted by means of personality. In a study with 261 students from a large US university, we measured the need for privacy with 22 items. Fifteen items formed a well-fitting bifactor model, with one factor measuring the general desire for privacy, and three specific factors measuring the need for privacy from the government, the need for privacy from other people, and the need for anonymity. The factor solution we found is in line with privacy theory, which subsumes a vertical level (here, privacy from the government) and a horizontal level (here, privacy from other people). The third dimension, need for anonymity, can be argued to exist on the diagonal, as one can be anonymous both from the government and from other people.

The results showed that the need for privacy can be predicted considerably well by

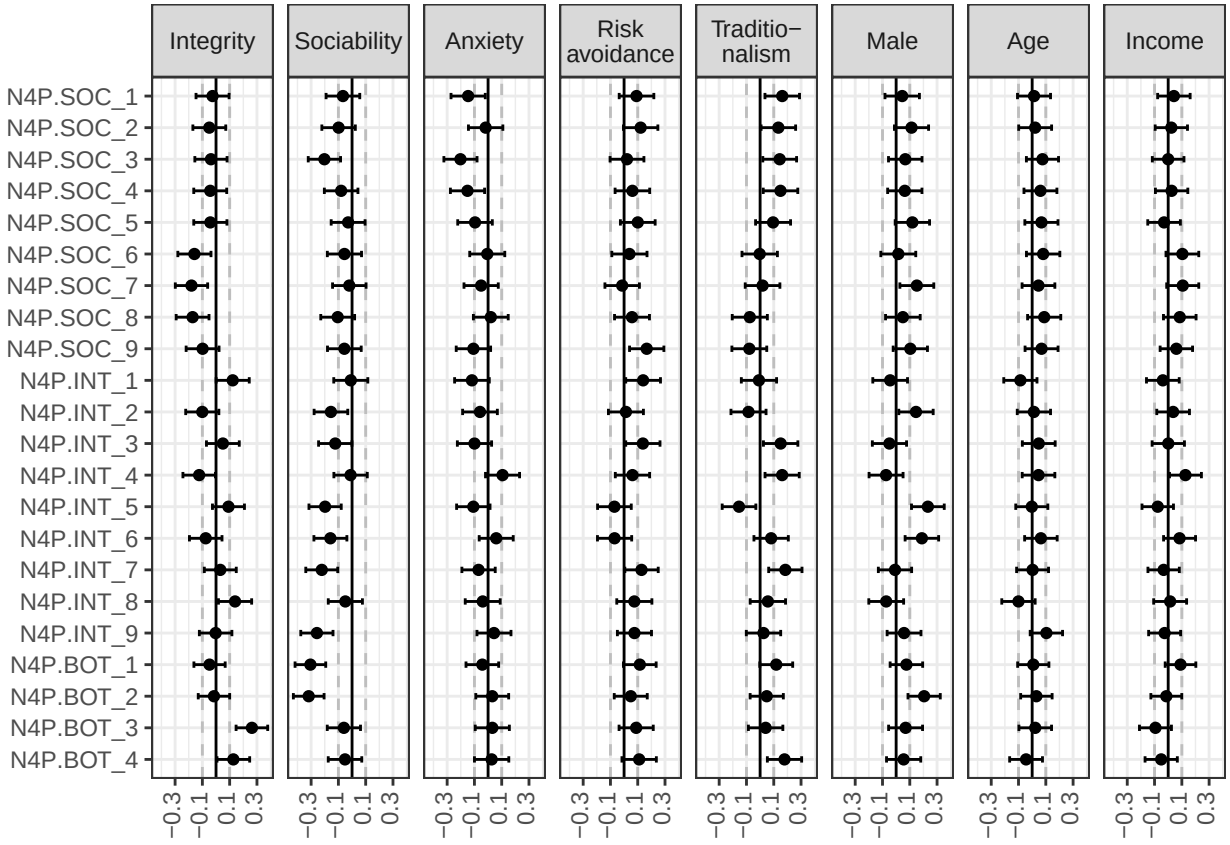

Figure 3. Overview of results. Shows the 95% confidence intervals of standardized coefficients.

means of personality. Specifically, integrity relates to several dimensions of need for privacy: People who reported being of lower integrity desired more anonymity and slightly less privacy from other people. Respondents who said, for example, that they would feel tempted to take things that do not belong to them were also more likely to avoid situations in which they were identifiable.

In conclusion, our results follow Altman (1976), who reasoned that if exposure of information is risky it is likely that people will use more mechanisms to strengthen their social boundaries and increase their desired level of privacy. This study thus aligns with Altman's privacy regulation theory by showing that, in several contexts, people with lower integrity had a higher level of desired privacy.

In addition, need for privacy was predicted also by other (neutral) personality facets:

People who were less sociable, more risk averse, and less anxious also desired more privacy. This implies that various personality-related aspects can predict need for privacy.

People who are more shy, more risk averse, or less anxious also desire more privacy. For example, people who are more anxious are more likely to accept government surveillance (arguably because they are less afraid of terrorist attacks). When looking at the bigger implications of the results, this shows the importance to make differentiated claims on why people desire privacy: Indeed, the results suggest that some people desire privacy because they might have something to hide. However, putting everyone who desires privacy under a general suspicion is wrong given that less sociable, risk averse, and less anxious people are also more likely to desire privacy.

As a side note, despite the fact that we mostly used well-established scales, confirmatory factor analyses (CFAs) showed that some of the original items had to be deleted in order to achieve adequate factorial validity. This resembles the finding by Hussey and Hughes (2018), who reported that several widely used scales in psychological research actually do not show high factorial validity. We would like to point out that by using bifactor models it is possible to at least partially alleviate the problem, as the bifactor models are less strict than the routinely used unidimensional or hierarchical models, which are more conservative.

Limitations and future perspective

Power analyses showed that future research should use samples above $N \approx 260$ in order to test hypotheses with the recommended power of at least .80 (Cohen (1992)).

In general, the question arises whether it is possible, or even socially desirable, to measure a person's integrity. On the one hand, integrity implies absolute criteria: Stealing is bad and forbidden, whereas helping is good and encouraged. On the other hand, integrity implies relative criteria: Whereas some cultures disapprove of lying whatever the context, others consider lying okay—for example "white lies" in order to save face or to avoid hurting

someone's feelings (Altman, 1977). Thus, ranking behaviors, opinions, and character traits with regard to integrity is a moral dilemma. As a result, throughout the entire study we have understood integrity as a transgression of social norms that is strong and that most societies would agree upon (for example, most societies would consider stealing as a sign of low integrity).

Next, the question arises whether it is possible to measure integrity based on self-reports. Interestingly, integrity tests using self-reports have been shown to work successfully, given that they can predict unwanted professional workplace behavior sufficiently (e.g., theft, drug and alcohol problems, or absenteeism; Ones, Viswesvaran, & Schmidt, 1993). In a meta-analysis with 665 correlation coefficients, integrity tests related to counterproductive behaviors with a coefficient of $r = .47$ (Ones et al., 1993). Nonetheless, future research would benefit from including behavioral manifestations of integrity, such as concrete cheating behaviors. If concrete cheating behaviors also increase desires for privacy, this would strengthen the underlying premise of the nothing-to-hide argument.

In that vein, we decided against including social desirability as a control variable, because even though social desirability can affect answers to sensitive questions (de Jong, Pieters, & Stremersch, 2012), it is arguably more likely to reflect a true personality trait than false answering behavior (de Vries, Zettler, & Hilbig, 2014).

By focusing on *specific facets* of personality (e.g., fearfulness), we followed the recommendation by Paunonen and Ashton (2001) to not analyze *general factors* of personality (e.g., neuroticism). For future research, we suggest going one step further by analyzing predictors that are even more specified. For example, it seems possible that people who hold dissenting political beliefs could also have a higher need for privacy from the government. Similarly, it would be interesting to focus on different minority groups. For example, it seems plausible that people from a LGBT background might desire more privacy from government (because it is potentially repressive or unfriendly toward LGBTs). Finally, in this study we focused mostly on escapist motives for why people desire privacy (e.g.,

sociability, risk aversion). Interestingly, Leary, Herbst, and McCrary (2003) were able to show that when predicting engagement in solitary activities, it is less preferable to measure how strongly people want to escape society (avoidance oriented), but rather how much they seek solitude (approach oriented). Hence, future studies might want to include predictors that are more approach oriented (e.g., peoples' need for contemplation).

From a methodological perspective, future research should continue to improve the instruments we used, given that factorial validity of some scales was only moderate. Similarly, we recommend elaborating on the general understanding of integrity as a theoretical concept. To date, there is not one overarching concept of integrity that incorporates all the different aspects of integrity, yet it would be valuable to examine how other aspects of integrity (e.g., authenticity, trustworthiness, or consistency) relate to privacy desires.

Optimizing the variables' factorial validity might introduce problems of overfitting. In other words, although we might now have a sharper knife, we also use it less situations. First, we think that by using bifactor models we were able to retain a large number of items, rendering our results more robust. In addition, also when looking at the items individually one can see that the results are not dependent on inclusion of specific items.

Conclusion

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Table 2

Overview of the Items Measuring the Need for Privacy

Name	No.	Content
N4P.SOC_1	1	I need government agencies to respect my privacy, even if that hinders a greater societal cause.
N4P.SOC_2	2	I need the information that companies (e.g., Amazon, Facebook, or Google) have about me to stay private so that the government can never access it.
N4P.SOC_3	3	I don't want the government to gather information about me, even if that makes it more difficult for them to spend tax income efficiently.
N4P.SOC_4	4	I don't want government agencies to monitor my personal communication, even if doing so prevents future terrorist attacks.
N4P.SOC_5	–	I need to be able to surf online anonymously.
N4P.SOC_6	6	I need to be able to use a fake name on social network sites to preserve my privacy.
N4P.SOC_7	7	I feel the need to avoid places with video surveillance.
N4P.SOC_8	8	I prefer not to carry my ID with me all the time to preserve my privacy.
N4P.SOC_9	5	I feel the need to protect my privacy from government agencies.
N4P.INT_1	–	I feel the need to disclose personal information about me on social network sites.
N4P.INT_2	9	My need for privacy is so strong that it prevents me from using Facebook actively.
N4P.INT_3	–	I don't feel the need to be able to communicate about very personal things with others online.
N4P.INT_4	12	I need to know that my boss or future employers cannot find information about me online that they might disapprove of.
N4P.INT_5	–	I always need a person to talk about personal things.
N4P.INT_6	–	I don't need to know a lot of things about people I interact with, as that might cause problems.
N4P.INT_7	13	I don't feel the need to tell my friends all my secrets.
N4P.INT_8	–	I sometimes feel the need to share my personal point of view with someone I don't know that well.
N4P.INT_9	14	I feel the need to protect my privacy from other people.
N4P.BOT_1	10	I prefer it when other people do not know much about me.
N4P.BOT_2	–	When given the chance, I prefer being incognito.
N4P.BOT_3	11	I don't want personal information about me being publicly available.
N4P.BOT_4	–	Not everybody needs to know everything about me.

Table 3

Results of the main factorial model.

Predictor	b	ll	ul	beta	p
Privacy need general					
Integrity	-0.24	-0.48	0.01	-.15	.062
Sociability	-0.16	-0.44	0.13	-.09	.289
Anxiety	-0.01	-0.20	0.18	-.01	.897
Traditionalism	-0.12	-0.30	0.06	-.12	.190
Risk avoidance	0.77	-0.19	1.73	.14	.117
Male	0.18	-0.12	0.48	.10	.233
Age	0.04	0.01	0.07	.14	.006
Income	0.04	-0.08	0.17	.05	.495
Privcacy need government					
Integrity	0.16	-0.15	0.47	.10	.316
Sociability	-0.15	-0.55	0.24	-.09	.440
Anxiety	-0.27	-0.49	-0.04	-.26	.019
Traditionalism	0.42	0.14	0.69	.43	.003
Risk avoidance	-0.06	-1.16	1.04	-.01	.920
Male	0.03	-0.34	0.40	.02	.881
Age	-0.02	-0.06	0.01	-.08	.174
Income	-0.01	-0.16	0.14	-.01	.891
Privacy need interpersonal					
Integrity	0.24	0.01	0.48	.15	.039
Sociability	-0.62	-0.90	-0.34	-.34	$<$ .001
Anxiety	0.01	-0.16	0.17	.01	.938
Traditionalism	0.25	0.05	0.44	.23	.012
Risk avoidance	1.01	0.06	1.96	.17	.038
Male	-0.02	-0.30	0.26	-.01	.899
Age	$<$ 0.01	-0.03	0.04	.02	.764
Income	-0.03	-0.16	0.10	-.04	.621
Privacy need anonymity					
Integrity	-0.19	-0.38	0.01	-.23	.061
Sociability	-0.08	-0.28	0.12	-.10	.423
Anxiety	-0.04	-0.14	0.06	-.08	.448
Traditionalism	0.03	-0.09	0.15	.05	.654
Risk avoidance	-0.29	-0.89	0.31	-.10	.351
Male	0.13	-0.07	0.33	.15	.193
Age	-0.01	-0.04	0.02	-.04	.673
Income	0.07	-0.03	0.18	.18	.149