

MANUSCRIPT TO REVIEW

1 **Socially desirable responding within the context of privacy-related research: A** 2 **personality perspective**

3

4 Karl van der Schyff¹, Stephen Flowerday¹, Karen Renaud^{1,2,3,4}5 ¹Rhodes University, South Africa, ²University of Strathclyde, UK, ³University of South
6 Africa, South Africa, ⁴Abertay University, UK

7

8 **Background:** Socially desirable responding within the context of self-reported surveys is a
9 well-known and persistent problem that plagues quantitative studies. Such forms of responding
10 are particularly problematic within the context of personality-based studies that investigate
11 privacy-related decision-making. In such instances, certain respondents may feel pressured to
12 provide socially desirable responses, which reduces the overall quality of the collected data.

13 **Objectives:** The objective of our study was to evaluate the extent to which the Big Five
14 personality traits (*openness, conscientiousness, extraversion, agreeableness, and neuroticism*)
15 elicit socially desirable responses within the context of privacy-related decision-making.

16 **Method:** To evaluate our hypotheses, we empirically situate our study within the context of
17 respondents' intended use of Facebook privacy settings. To this end, we analyzed 576 survey
18 responses using partial least squares structural equation modelling (PLS-SEM).

19 **Results:** We found that some personality traits were indeed significantly related to socially
20 desirable responding – albeit not always as expected. For example, we found highly agreeable
21 individuals to be unlikely to provide socially desirable responses: choosing honest responses.
22 *Neuroticism*, on the other hand, had the opposite effect.

23 **Conclusion:** Based on our results, we conclude that neurotic individuals seem predisposed
24 towards responding in a socially desirable manner within the context of privacy-related
25 surveys. We therefore advise researchers within the field of privacy-based personality studies
26 to take care when analysing their results.

27

28 **Keywords:** PLS-SEM; privacy settings; Facebook; social desirability; path modelling

29 **Introduction**

30

31 Social networking sites (SNSs) have become an integral part of daily life, mainly because they
32 facilitate and fulfil (at least to some extent) individuals' needs to belong. They actively
33 encourage their users to share personal information. While SNSs assist geographically
34 separated individuals to stay in touch, there are also significant privacy concerns related to
35 indiscriminate sharing. Such indiscriminate sharing may unwittingly sacrifice online privacy.
36 Given that Facebook is one of the most popular SNSs, we used it as our empirical case. We
37 argue this to an appropriate choice given the recent high profile privacy scandals, which have
38 revealed the true breadth and depth of Facebook's collection and use of personal information
39 (Brown, 2020). Over- or unwise- sharing exacerbates privacy loss, something that has the
40 potential to be harmful. For example, Househ (2011) writes about the negative and unintended
41 consequences of sharing health data on Facebook, while Taraszow et al. (2010) highlight the
42 harm that can ensue from teenagers sharing personal information.

43

44 Researchers often use self-reported survey responses to study important social media
45 issues, such as those outlined above. There is, however, some unease about the reliability of
46 such self-reported survey responses within the context of privacy research (Af Wählberg &
47 Dorn, 2015). One reason for such unease is the tendency for certain individuals to provide
48 socially desirable responses. Although such responses may be related to the privacy paradox,
49 we do not centre our argument thereon. This is especially so because the existence of the
50 privacy paradox is both supported (Dienlin & Trepte, 2015) and questioned (Solove, 2021).
51 Instead, this study focuses on the impact of Big Five personality traits on a tendency to provide
52 socially-desirable responses within the context of self-stated privacy-related survey responses.
53 Our results can inform future privacy-related research by highlighting the personality traits that
54 could lead to socially-desirable responses being given to surveys. This could help researchers
55 (and organisations) that make use of self-reported surveys to improve the quality of their data
56 and conclusions drawn on the basis of analysis of the data. This is especially pertinent within
57 context of personality-based privacy decision-making.

58

59 The paper is structured as follows: after providing a brief background, several
60 hypotheses are developed, followed by an outline of our methodological approach, analysis
61 and results. This is followed by a brief discussion of our results and an outline of the limitations
62 of this study and areas for future research.

63

64 **Hypothesis development**

65

66 Many researchers use self-reported surveys to explore privacy-related decision-making. The
67 veracity of the findings relies on respondents being honest and frank in their responses. One
68 aspect that can confound such research is that survey respondents might provide socially
69 desirable rather than honest responses (Milne, Rohm & Bahl, 2004). Therefore, if we are to use
70 surveys in personality-based privacy research, we need to take account of such forms of
71 socially desirable responding. In this paper, we consider the Big Five personality traits'
72 influence on privacy-related decision-making and empirically situate our study within the
73 context of Facebook privacy. Specifically, respondent's intention to use their Facebook privacy
74 settings. Often referred to using the acronym OCEAN, the Big Five personality traits this study
75 will explore includes: *openness*, *conscientiousness*, *extraversion*, *agreeableness* and
76 *neuroticism* (Costa Jr & McCrae, 1992).

77

78 ***Openness***

79

80 Individuals high in openness (OPEN) are naturally inquisitive and intelligent and revel in new
81 experiences (Vishwanath, Xu & Ngoh, 2018). They are, however, often labelled as “anti-
82 establishment”. In other words, that which is trendy and new is embraced whereas established
83 practices are questioned. General characteristics aside, most studies have found either weak,
84 non-significant or negative correlations between openness and social desirability. For example,
85 Stöber (2001) found openness to be uncorrelated with social desirability during the
86 development of the SDS-17 scale – specifically from a validity perspective. Evidence suggests
87 that open individuals are also inclined to overcome those inhibitions that prevent them from
88 acting as expected (i.e. to exhibit their best behaviour). This is particularly important given that
89 Uziel (2010) also reports nonsignificant results between openness and impression management
90 when evaluating the relationship of the latter concept with social desirability. Similar results
91 are reported by Crant and Bateman (2000), who found no significant correlation between
92 openness to experience (another name for openness) and social desirability. Tangentially, and
93 in an effort to discern answering style from undesirable answering, McCrae and Costa (1983)
94 found little evidence to suggest that openness would provide socially desirable answers. What
95 they did find was a significant negative relationship between openness and the tendency to lie
96 when completing self-report instruments. Similar significant (and negative) results are reported

97 by Flynn (2005) in a study about interracial attitudes, as well as by Egelman and Peer (2015).
98 Together, the aforementioned provide evidence to suggest that open individuals are, in the
99 least, not likely to provide socially desirable answers – albeit within a more psychometric
100 context. Of course, given our focus on social desirability within the context of Facebook-based
101 privacy behaviour, we are also compelled to provide personality-based evidence from a privacy
102 perspective.

103

104 Although relatively few studies have been conducted on the direct relationship between
105 openness and Facebook privacy (as well as social desirability), there are some that have
106 theorised the relationship of openness with privacy settings. For example, Van der Schyff,
107 Flowerday, & Lowry (2020) found openness to exhibit a significant positive relationship with
108 Facebook users' attitude towards privacy settings when using Facebook apps. A study on the
109 correlations between the Big Five personality traits and various privacy protective behaviours,
110 found openness to significantly predict specific privacy protection strategies. For example,
111 deleting a tag associated with a photo or video (Gerber, Gerber & Hernando, 2017). It has also
112 been demonstrated that openness is significantly related to privacy protective behaviour within
113 the context of people periodically reviewing their privacy settings (van der Schyff &
114 Flowerday, 2021). Given their inquisitive and intelligent nature (amongst other characteristics),
115 it is therefore likely that such individuals will make informed privacy decisions. We therefore
116 hypothesise that:

117

118 **H1a.** *Openness will exhibit a significant negative relationship with social desirability. In other*
119 *words, individuals who are high in openness are unlikely to provide socially desirable answers.*

120

121 **H1b.** *Openness will exhibit a significant positive relationship with intention to use privacy*
122 *settings.*

123

124

125

126 **Conscientiousness**

127

128 Unlike open individuals, those high in conscientiousness (CON) are conformist and adhere to
129 societal norms. Conscientious individuals are also cautious, organised and tend to be
130 competitive (Hao, Yang & Shi, 2019). Studies focused on the relationship between

131 conscientiousness and social desirability have found significant positive correlations when
132 completing psychometric evaluations (Ones & Viswesvaran, 1996). Stöber (2001) also found
133 significant overlap between conscientiousness and desirable responding, specifically when
134 evaluating the discriminant validity of the SDS-17 scale. Similar positive correlations with
135 related concepts such as impression management are reported by Uziel (2010) and Stöber et al.
136 (2010), indicating that highly conscientious individuals are wary as to the way their responses
137 may influence favourable impressions. Stöber et al. (2010) also found conscientiousness to be
138 positively correlated with self-deceptive enhancement (SDE) – a means to provide positively
139 biased responses to maintain positive self-esteem. It is therefore evident that highly
140 conscientious individuals may, in certain circumstances, provide socially desirable answers.

141

142 As characterised above, individuals high in conscientiousness are cautious when it
143 comes to engaging in privacy protective behaviour. This applies to both organisational contexts
144 and social media contexts. For example, Van der Schyff, Flowerday, & Lowry (2020) found
145 conscientiousness to be positively related to privacy attitudes, specifically within the context
146 of privacy settings when using Facebook apps. Similar results are reported by McCormac et al.
147 (2017), as well as Van der Schyff and Flowerday (2021), who found conscientiousness to be
148 positively related to information security awareness. The latter authors also found a significant
149 positive relationship between conscientiousness and the intended use of Facebook privacy
150 settings. Further research on the security influence of the Big Five personality traits also found
151 a significant positive relationship between conscientiousness and cybersecurity behaviour
152 (Shappie, Dawson & Debb, 2019). Given the evidence presented, we hypothesize that:

153

154 **H2a.** *Conscientiousness will exhibit a significant positive relationship with social desirability.*
155 *In other words, individuals who are high in conscientiousness are likely to provide socially*
156 *desirable answers.*

157

158 **H2b.** *Conscientiousness will exhibit a significant positive relationship with intention to use*
159 *privacy settings.*

160

161 ***Extraversion***

162

163 Individuals high in extraversion (EXT) are outgoing, sociable and assertive (Costa Jr &
164 McCrae, 1992). They are also more likely to engage in risky behaviour (Pentina, Zhang, Bata,

165 *et al.*, 2016). However, and despite their social nature, some research has found extraversion
166 not to be highly correlated with social desirability. For example, Ones et al. (1996), as well as
167 McCrae and Costa (1983), found low (almost negligible) correlations between extraversion
168 and social desirability. A similar (low) correlation between extraversion and social desirability
169 is reported by Crant (1995) – albeit in a study focused on job performance among real estate
170 agents. Tangentially, studies on impression management have also found either non-significant
171 or negative correlations with extraversion (Uziel, 2010). Note, in Uziel’s (2010) study,
172 impression management is viewed as the capacity to self-regulate impulsive (and arguably
173 irrational) behavior within social settings, in doing so gaining social approval within those
174 settings as a function of socially desirable responses.

175

176 Unlike conscientious individuals, those high in extraversion typically exhibit negative
177 attitudes towards the privacy of their personal information. Recent studies have found this to
178 be particularly prominent within the context of social media use. For example, Van der Schyff,
179 Flowerday, & Lowry (2020) found extraverted respondents to harbour negative attitudes
180 towards the use of Facebook privacy settings. The same applies to highly extraverted
181 individuals’ intention to periodically review their privacy settings (van der Schyff &
182 Flowerday, 2021). Related work – specifically that within the field of privacy concerns – has
183 also found extraversion to be either negatively related to privacy concerns (Pentina *et al.*, 2016)
184 or not significantly related at all (Osatuyi, 2015). We argue that highly extraverted individuals
185 are likely not to value the privacy of their personal information to the same extent as some of
186 the other traits. We therefore hypothesize that:

187

188 **H3a.** *Extraversion will exhibit a significant negative relationship with social desirability. In*
189 *other words, individuals who are high in extraversion are unlikely to provide socially desirable*
190 *answers.*

191

192 **H3b.** *Extraversion will exhibit a significant negative relationship with intention to use privacy*
193 *settings.*

194

195 ***Agreeableness***

196

197 Highly agreeable individuals are sensitive and trusting, and tend to be concerned about the
198 feelings and well-being of those around them (Costa Jr & McCrae, 1992). Crucially, highly

199 agreeable individuals tend to be honest, and some studies have found these individuals to
200 provide socially desirable answers (Stober, 2001). As with some of the other traits, studies
201 focused on the measurement of impression management (de Vries, Zettler & Hilbig, 2014) and
202 self-regulation (Stavrova & Kokkoris, 2019) have also found agreeableness (AGR) to correlate
203 with socially desirable answering. It is therefore likely that agreeable individuals will portray
204 more positive or socially acceptable behaviour when conversing with peers in groups where
205 they must regulate what is said. Additionally, and according to Bansal et al. (2016), agreeable
206 individuals are likely to avoid behaviour that deviates from that which is acceptable within a
207 certain context. Together with their socially compliant nature (Costa Jr & McCrae, 1992), this
208 may indicate that these individuals are likely to value the privacy of their personal information.
209 This may be exacerbated by their sensitivity to upsetting situations (Karim, Zamzuri & Nor,
210 2009) such as the potential loss of personal information in addition to social embarrassment,
211 especially if their personal information is used inappropriately. This also ties in with research
212 by Junglas and Spitzmuller (2006), who found that agreeable individuals harbour privacy
213 concerns – specifically within the context of location-based services. A similar result is
214 reported by Tang et al. (2020) – albeit within the context of app use. Given such concerns, a
215 positive privacy attitude is likely. In fact, recent research has found direct evidence of such
216 positive privacy attitudes. For example, Van der Schyff, Flowerday, & Lowry (2020) found
217 that highly agreeable individuals exhibited positive attitudes towards the use of Facebook
218 privacy settings, specifically within the context of Facebook apps. We therefore hypothesise
219 that:

220

221 **H4a.** *Agreeableness will exhibit a significant positive relationship with social desirability. In*
222 *other words, individuals who are high in agreeableness are likely to provide socially desirable*
223 *answers.*

224

225 **H4b.** *Agreeableness will exhibit a significant positive relationship with intention to use privacy*
226 *settings.*

227

228 ***Neuroticism***

229

230 The final trait in the OCEAN personality model is that of neuroticism (NEU). Highly neurotic
231 individuals are negative, suffer from impulsivity, are nervous, and tend to be preoccupied with
232 worrying (Costa Jr & McCrae, 1992). From a social desirability perspective, a number of

233 studies report a positive relationship between neuroticism and social desirability or socially
234 desirable answering (Thomsen, Mehlsen, Viidik, *et al.*, 2005). Similar results are reported by
235 both Heaven and Shochet (1995) as well as Jackson and Francis (1998) who found neuroticism
236 to be significantly related to the Lie Scale – albeit only for men.

237

238 Individuals high in neuroticism often experience more threats as well as heightened
239 levels of anxiety. These individuals also tend to be concerned about information privacy
240 (Junglas & Spitzmuller, 2006; van der Schyff *et al.*, 2020). Such concerns align with recent
241 evidence which suggests that neurotic individuals perceive the periodic review of Facebook
242 privacy settings positively (van der Schyff & Flowerday, 2021). As a result, we argue that
243 individuals high in neuroticism will value the privacy of their Facebook-based personal
244 information. This, in turn, may result in the increased use (and review) of their Facebook
245 privacy settings. Their anxious nature may further exacerbate not only the fear of losing control
246 of their personal information, but also the possibility of suffering security (and privacy)
247 violations as a result of not making adequate use of these settings. Based on the above, we
248 hypothesise that:

249

250 **H5a.** *Neuroticism will exhibit a significant positive relationship with social desirability. In*
251 *other words, individuals who are high in neuroticism are likely to provide socially desirable*
252 *answers.*

253

254 **H5b.** *Neuroticism will exhibit a significant positive relationship with intention to use privacy*
255 *settings.*

256

257 **Methodological approach**

258

259 After receiving ethical clearance from the primary author's institutional ethics committee (ref:
260 [information redacted to maintain the integrity of the review process]), primary data was
261 collected as part of a large cross-sectional survey.

262

263 ***Data collection and screening***

264

265 We collected 651 responses from citizens of the United States of America over the age of 18
266 who are active Facebook users. The qualifying criteria were used as part of an Amazon

267 Mechanical Turk (AMT) human intelligence task. To improve the quality of our questionnaire
268 responses, we applied several criteria, which are summarised as follows:

269

- 270 • *Response completeness.* We eliminated twelve incomplete responses.
- 271 • *Completion time.* Questionnaire responses had to have been completed in no less than
272 six minutes. This ensured that our resulting statistical analysis did not include responses
273 from respondents who were “speeding” (Zhang & Conrad, 2014). Fifty-eight responses
274 which were completed in less than six minutes were eliminated.
- 275 • *Attention trap correctness.* Our survey included two attention trap questions, both of
276 which had to have been correctly answered for the response to be included in our
277 analysis. Only five incorrectly-answered both attention trap questions led to responses
278 being eliminated.

279

280 After applying the aforementioned criteria, 576 ($n = 576$) valid responses remained and were
281 subsequently used in the development of the structural model. See Table 1 for a complete
282 outline as to the distribution of the sample demographics.

283

Table 1. Distribution of the sample demographics

| Variable | Frequency | Percentage (%) |
|---------------------------------|------------------|-----------------------|
| Gender | | |
| Male | 280 | 48.6 |
| Female | 296 | 51.4 |
| Age | | |
| 18–24 | 43 | 7.5 |
| 25–34 | 240 | 41.7 |
| 35–44 | 154 | 26.7 |
| 45–54 | 79 | 13.7 |
| 55–64 | 46 | 8.0 |
| 65–74 | 14 | 2.4 |
| Level of education | | |
| No degree or up to high school | 228 | 39.6 |
| Bachelor's degree or equivalent | 280 | 48.6 |
| Master's degree and above | 68 | 11.8 |

284

285 ***Measures used***

286

287 All the questionnaire items were adapted from existing instruments. To evaluate an individual's
288 personality traits, we used the 44-item Big Five Inventory (BFI) (John & Srivastava, 1999). To
289 evaluate an individual's level of social desirability (modelled as SD in our structural model),
290 we used a shortened (8-item) version of the original 33-item Marlowe-Crowne scale (Ray,
291 1984). An individual's intention to use privacy settings was evaluated by adapting items from
292 similar behavioural information privacy instruments (Parsons, Calic, Pattinson, *et al.*, 2017;
293 Taneja, Vitrano & Gengo, 2014).

294

295 **Analysis and results**

296

297 To develop our structural model, we made use of SmartPLS v3.3.3 (Ringle, Wende & Becker,
298 2015). Our choice of PLS-SEM was driven by two factors. First, the primary data was not
299 normally distributed, and second, PLS-SEM is particularly adept at evaluating recursive
300 models of an exploratory nature (Hair, Hult, Ringle, *et al.*, 2017). To our knowledge, no studies
301 have used a social desirability scale in this manner.

302

303 ***Measurement model evaluation***

304

305 To evaluate our measurement model, we first ensured that all the items exhibited acceptable
306 outer loadings. To this end, we assessed outer loadings using a PLS-specific approach
307 consisting of two decision criteria advocated by Hair *et al.* (2017):

308

- 309 • Eliminating items with outer loading below 0.4.
- 310 • Eliminating items with outer loadings between 0.4 and 0.7 if they do not increase the
311 average variance extracted (AVE) value of the latent variable in question.

312

313 After assessing the outer loadings, we ensured that all the remaining items loaded significantly
314 (i.e. t-values in excess of 1.96) on their intended latent variable. We also assessed the
315 magnitude of the AVE value of each latent variable. None of the items exhibited a t-value
316 below 1.97, and all the latent variables exhibited an AVE in excess of the accepted 0.5
317 threshold. Together, the above enabled us to declare that the questionnaire satisfied convergent

318 validity. To ensure that our model satisfied the criteria for discriminant validity, we used three
319 techniques. First, we assessed the heterotrait-monotrait (HTMT) ratios, which were all below
320 the accepted threshold of 0.85. Second, we assessed the values on the diagonal of Table 2
321 (presented in bold) – commonly referred to as the Fornell-Larcker criterion. As a final means
322 to assess discriminant validity, we ensured that each item loaded the highest on its intended
323 latent variable. Together, the above enabled us to declare that our model was valid from a
324 convergent and discriminant perspective.

325

326 To assess the reliability of our model we inspected the Cronbach's alpha (CA) and
327 composite reliability (CR) value of each latent variable which were all within accepted
328 thresholds. We concede that the CA value for the social desirability latent variable is slightly
329 below 0.7, but we argue this to be an acceptable outcome given that Hair et al. (2017) explicitly
330 state thresholds of 0.6 to be acceptable when creating path models of an exploratory nature.
331 We argue that our evaluation of the influence of social desirability within the context of
332 Facebook privacy is exploratory. We also inspected the variance inflation factor (VIF) value
333 of each item to check for signs of multicollinearity. None of the items exhibited VIF values in
334 excess of 5, thus enabling us to eliminate multicollinearity. See Table 3 in the Appendix for a
335 complete outline of this study's instrument and associated descriptive statistics.

336

Table 2. Measurement model statistics

| Variables | <i>AGR</i> | <i>CON</i> | <i>EXT</i> | <i>IUPS</i> | <i>NEU</i> | <i>OPEN</i> | <i>SD</i> |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <i>agreeableness (AGR)</i> | <u>0,715</u> | | | | | | |
| <i>conscientiousness (CON)</i> | 0,472 | <u>0,723</u> | | | | | |
| <i>extraversion (EXT)</i> | 0,399 | 0,323 | <u>0,719</u> | | | | |
| <i>intention to use privacy settings (IUPS)</i> | 0,162 | 0,245 | -0,013 | <u>0,794</u> | | | |
| <i>neuroticism (NEU)</i> | -0,461 | -0,524 | -0,460 | -0,033 | <u>0,791</u> | | |
| <i>openness (OPEN)</i> | 0,272 | 0,293 | 0,390 | 0,130 | -0,218 | <u>0,787</u> | |
| <i>social desirability (SD)</i> | -0,490 | -0,208 | -0,251 | 0,013 | 0,310 | -0,171 | <u>0,705</u> |

337

338 ***Structural model evaluation***

339

340 We used two indicators to assess the quality of our structural model. First, we inspected the in-
341 sample predictive power of both endogenous latent variables (expressed as R^2). In short, the R^2
342 value of an endogenous variable explains to what extent the related exogenous variables
343 influence the variance in the endogenous variable in question. Here we found that the
344 personality traits evaluated explained 26.6% ($R^2 = 0.266$) of the variance in the *social*
345 *desirability* latent variable and 10.7% ($R^2 = 0.107$) of the variance in the latent variable
346 *intention to use privacy settings*. Second, we assessed the out-of-sample predictive power
347 (Stone-Geisser's Q^2) of the endogenous latent variables in the model (*social desirability* = 0.12
348 and *intention to use privacy settings* = 0.05 respectively). Given that both these Q^2 values were
349 in excess of 0, we concluded that the model has an adequate amount of predictive power (Stone,
350 1974).

351

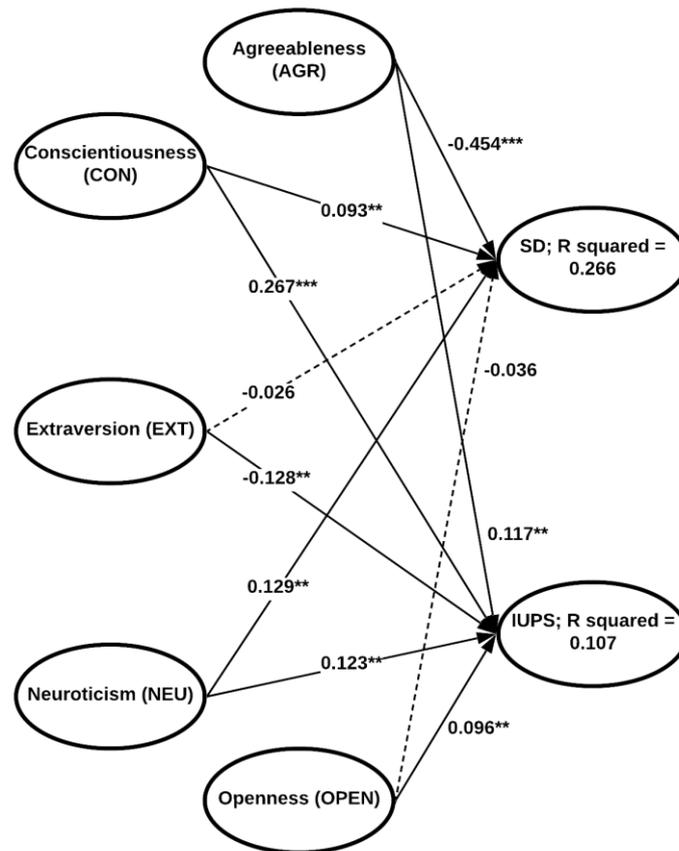
352 As per Table 4, there is no support for hypotheses 1a, 3a or 4a. There is, however,
353 support for hypotheses 1b and 2b. In other words, both *openness* and *conscientiousness*
354 significantly influence *intention to use privacy settings*. Hypothesis 2a is also supported,
355 indicating that *conscientiousness* is significantly related to *social desirability*. This provides
356 some evidence to suggest that, within the context of intended use of Facebook privacy settings,
357 conscientious individuals may provide socially desirable answers. Additionally, hypothesis 3b
358 is also supported, indicating that extraverts are not inclined to use privacy settings. The results
359 also provide support for hypothesis 4b. Our results therefore provide evidence to suggest that
360 within the context of Facebook privacy decision-making, agreeable individuals tend not to
361 provide socially desirable responses (i.e. they don't "fake good"). Given that we are focused
362 on the intended use of Facebook privacy settings, this suggests that these individuals' intentions
363 are more likely to result in similar actual behaviour. In other words, they would likely make
364 use of Facebook privacy settings. The results also provide support for hypotheses 5a and 5b.
365 In particular, the significant positive relationship between *neuroticism* and *social desirability*
366 indicates that neurotic individuals may provide socially desirable responses within the context
367 of privacy decision-making. Considering this result within the context of the significant
368 positive relationship between *neuroticism* and *intention to use privacy settings*, we argue that
369 neurotic individuals are not likely to make actual use of their Facebook privacy settings, despite
370 their intention to do so. See Figure 1 for a visual illustration of our research model.

371

Table 4. Path estimates ($p < 0.01$, ** $p < 0.05$, ns = non-significant)**

| Hypothesis | Path | β | t-statistic | Supported | |
|------------|------|---|-------------|---------------------|-----|
| 1 | a | <i>openness</i> → <i>social desirability</i> | - 0.036 | 0.879 ^{ns} | No |
| | b | <i>openness</i> → <i>intention to use privacy settings</i> | 0.096 | 2.010** | Yes |
| 2 | a | <i>conscientiousness</i> → <i>social desirability</i> | 0.093 | 2.265** | Yes |
| | b | <i>conscientiousness</i> → <i>intention to use privacy settings</i> | 0.267 | 4.897*** | Yes |
| 3 | a | <i>extraversion</i> → <i>social desirability</i> | - 0.026 | 0.689 ^{ns} | No |
| | b | <i>extraversion</i> → <i>intention to use privacy settings</i> | - 0.128 | 2.472** | Yes |
| 4 | a | <i>agreeableness</i> → <i>social desirability</i> | - 0.454 | 10.916*** | No |
| | b | <i>agreeableness</i> → <i>intention to use privacy settings</i> | 0.117 | 2.549** | Yes |
| 5 | a | <i>neuroticism</i> → <i>social desirability</i> | 0.129 | 2.639** | Yes |
| | b | <i>neuroticism</i> → <i>intention to use privacy settings</i> | 0.123 | 2.558** | Yes |

372



373

374

Figure 1. Structural model (*) $p < 0.01$, ** $p < 0.05$)**

375 Discussion

376

377 It is important to emphasise that we are not arguing the extent to which each of the various
378 personality traits influence Facebook privacy behaviour as a direct interaction with an
379 individual's level of social desirability (as an interaction term, for example). Instead, we are
380 using the 8-item Marlowe-Crowne scale first to determine those traits within the Big Five that
381 relate significantly to a tendency to provide *socially desirable* responses to privacy-related
382 surveys. If the relationship is significant, we deem it appropriate also to evaluate the
383 significance of the relationship of these traits with the veracity of responses expressing an
384 *intention to use the privacy settings*. For example, if a positive relationship is exhibited in
385 relation to *social desirability*, we can argue that those individuals who are characterised by that
386 personality trait will tend to provide socially desirable answers and their privacy-related
387 questions might not reflect their actual intention. The opposite is true when a negative
388 relationship is exhibited in relation to the tendency to provide *socially desirable* responses.
389 Their stated intention to engage with privacy settings can be taken at face value, given that it
390 is less likely to be a socially desirable response.

391

392 Our results indicate that *conscientiousness*, *agreeableness* and *neuroticism* are
393 significantly related to both *social desirability* and *intention to use privacy settings*. However,
394 it is the significant negative relationship between *agreeableness* and *social desirability* that is
395 of particular interest. This may, for example, indicate that the agreeable individuals are more
396 likely to provide honest responses (not faking goodness). This applies specifically, to the
397 privacy-related decision-making context. In other words, an agreeable individual's intention to
398 use their privacy settings is likely to be honest. Within the context of our study's main
399 objective, this implies that agreeable individuals are likely to provide less socially desirable
400 self-reported responses when completing privacy-related surveys. We found the converse to be
401 true for those who score high on *neuroticism*. In essence, neurotic individuals are likely to
402 *intend* using their privacy settings, but may not actually do so. This, in turn, suggests that these
403 individuals are more likely to provide socially desirable responses when completing privacy-
404 related surveys.

405

406 This finding calls the existence of the privacy paradox into question, confirming Solove's
407 (2021) reservations. Consider that the paradox manifests when people's stated intentions do
408 not match the privacy-preserving actions they engage in. As such, neurotics might well give

409 socially desirable responses, saying that they intend to take privacy protective actions (i.e.
410 misrepresenting their intentions).

411

412 ***Practical & Research Implications***

413 Based on our results, it might be advisable for privacy researchers to include questions that
414 evaluate respondents' personality traits. This is likely to complicate the analysis process and
415 lengthen the surveys. There are, however, established short form BFI scales that have proven
416 to be reliable in similar research. This is likely to be an acceptable trade-off, given that it will
417 enable privacy researchers to improve the trustworthiness of survey responses. For example,
418 some respondents' responses (e.g. those high in neuroticism) cannot be relied on to be accurate.
419 Having said this, our results do not indicate the threshold, within the neuroticism sub-scale, at
420 which the relationship between neuroticism and social desirability will significantly impair the
421 veracity of responses. Determining this threshold would be an interesting topic of future
422 research. Being able to pin down this threshold would enable a more granular approach when
423 eliminating untrustworthy responses.

424 In this paper we have highlighted a particular confound that makes stated privacy-related
425 intentions less reliable indicators of actual future privacy-related behaviours. It seems that, in
426 order to truly understand privacy behaviors and related decision-making, we should not expect
427 all data from self-reported instruments to be truthful. It is possible that excluding responses
428 from highly neurotic respondents would improve data quality. A better option would be to find
429 ways to observe actual future privacy-related behaviours, especially where an intervention is
430 being evaluated which encourages people to engage with privacy-related settings. Unless we
431 remove unreliable responses, it will not be able to conclude, with any degree of confidence,
432 that the data, which includes self-reported intentions, is indeed a reliable measure of privacy
433 decision-making.

434

435 **Limitations and future research**

436

437 This study is subject to several limitations – all of which point to interesting areas for future
438 research. For example, we made use of a large cross-sectional survey, which does not provide
439 us with much latitude to generalise to other similar contexts. This ties in with the second
440 limitation in that we only made use of participants from the United States of America. This
441 likely presents only one specific view of privacy setting use: especially how it affects the data
442 collected from apps and websites that are integrated with Facebook. For example, many

443 websites and apps enable individuals to use their Facebook credentials to authenticate using
444 the *Facebook Login* developer feature.

445

446 **Conclusion**

447

448 In the study reported in this paper, we investigated the extent to which the Big Five personality
449 traits influence the provision of socially desirable responses within the context of self-reported
450 privacy-related intentions, specifically, the intention to engage with Facebook privacy settings.

451 It is clear from our results that socially desirable responding may indeed have influenced other
452 studies. Our results can help to improve the reliability of self-reported surveys that evaluate
453 personality traits as part of privacy related studies.

454

455 **Competing interests**

456 The authors have declared that no competing interest exists.

457

458 **Author contributions**

459 The first author collected, read and statistically analysed the primary data. The second author
460 also wrote (and edited) sections of the article and provided conceptual input. Following this,
461 the third author further edited and refined the resultant article.

462

463 **Funding**

464 This research received no specific grant from any funding agency in the public, commercial,
465 or not-for-profit sectors.

466

467 **Data availability**

468 The research made use of anonymised survey data that is not publicly available.

469

470 **Disclaimer**

471 The views and opinions expressed in this article are those of the authors and do not necessarily
472 reflect the official policy or position of any affiliated agency of the authors.

473 **References**

474

475 Af Wählberg, A.E. & Dorn, L. 2015. How reliable are self-report measures of mileage,
476 violations and crashes? *Safety Science*. 76:67–73.

477 Bansal, G., Zahedi, F.M. & Gefen, D. 2016. Do context and personality matter? Trust and
478 privacy concerns in disclosing private information online. *Information & Management*.
479 53(1):1–21.

480 Brown, A.J. 2020. “Should I Stay or Should I Leave?”: Exploring (dis)continued Facebook use
481 after the Cambridge Analytica scandal. *Social Media Society*. 6(1):1-8.

482 Costa Jr, P.T. & McCrae, R.R. 1992. Four ways five factors are basic. *Personality and*
483 *individual differences*. 13(6):653–665.

484 Crant, J.M. 1995. The proactive personality scale and objective job performance among real
485 estate agents. *Journal of Applied Psychology*. 80(4):532–537.

486 Crant, J.M. & Bateman, T.S. 2000. Charismatic leadership viewed from above: The impact of
487 proactive personality. *Journal of Organizational Behavior*. 21(1):63-75.

488 Dienlin, T. & Trepte, S. 2015. Is the privacy paradox a relic of the past? An in-depth analysis
489 of privacy attitudes and privacy behaviors. *European Journal of Social Psychology*.
490 45(3):285–297.

491 Egelman, S. & Peer, E. 2015. Predicting privacy and security attitudes. *ACM SIGCAS*
492 *Computers and Society*. 45(1):22–28.

493 Flynn, F.J. 2005. Having an open mind: The impact of openness to experience on interracial
494 attitudes and impression formation. *Journal of Personality and Social Psychology*.
495 88(5):816–826.

496 Gerber, N., Gerber, P. & Hernando, M. 2017. Sharing the ‘Real Me’ – How usage motivation
497 and personality relate to privacy protection behavior on Facebook. *Lecture Notes in*
498 *Computer Science (including subseries Lecture Notes in Artificial Intelligence and*
499 *Lecture Notes in Bioinformatics)*. 10292 LNCS:640–655.

500 Hair, J., Hult, T., Ringle, C. & Sarstedt, M. 2017. *A primer on Partial Least Squares Structural*
501 *Equation Modeling (PLS-SEM)*. 2nd ed. Los Angeles: Sage.

502 Hao, Q., Yang, W. & Shi, Y. 2019. Characterizing the relationship between conscientiousness
503 and knowledge sharing behavior in virtual teams: An interactionist approach. *Computers*
504 *in Human Behavior*. 91:42–51.

505 Heaven, P.C.L. & Shochet, I.M. 1995. Dimensions of neuroticism: Relationships with gender
506 and personality traits. *Personality and Individual Differences*. 18(1):33–37.

- 507 Househ, M. 2011. Sharing sensitive personal health information through Facebook: The
508 unintended consequences. *Studies in Health Technology and Informatics*. 169:616–620.
- 509 Jackson, C.J. & Francis, L.J. 1998. Interpreting the correlation between neuroticism and lie
510 scale scores. *Personality and Individual Differences*. 26(1):59–63.
- 511 John, O. & Srivastava, S. 1999. The Big Five trait taxonomy: History, measurement, and
512 theoretical perspectives. In 2nd ed. L. Pervin & O. John (eds.). New York: Guilford
513 *Handbook of personality: Theory and research*. 102–138.
- 514 Junglas, I. & Spitzmuller, C. 2006. Personality traits and privacy perceptions: An empirical
515 study in the context of location-based services. In *2006 International Conference on*
516 *Mobile Business*. 36.
- 517 Karim, N.S.A., Zamzuri, N.H.A. & Nor, Y.M. 2009. Exploring the relationship between
518 internet ethics in university students and the Big Five model of personality. *Computers &*
519 *Education*. 53(1):86–93.
- 520 Milne, G.R., Rohm, A.J. & Bahl, S., 2004. Consumers' protection of online privacy and
521 identity. *Journal of Consumer Affairs*. 38(2):217-232.
- 522 McCormac, A., Zwaans, T., Parsons, K., Calic, D., Butavicius, M. & Pattinson, M. 2017.
523 Individual differences and information security awareness. *Computers in Human*
524 *Behavior*. 69:151–156.
- 525 McCrae, R.R. & Costa, P.T. 1983. Social desirability scales: More substance than style.
526 *Journal of Consulting and Clinical Psychology*. 51(6):882–888.
- 527 Ones, D. & Viswesvaran, A. 1996. Role of social desirability in personality testing for
528 personnel selection: The red herring. *Journal of Applied Psychology*. 81(6):660–679.
- 529 Osatuyi, B. 2015. Personality traits and information privacy concern on social media platforms.
530 *Journal of Computer Information Systems*. 55(4):11–19.
- 531 Parsons, K., Calic, D., Pattinson, M., Butavicius, M., McCormac, A. & Zwaans, T. 2017. The
532 human aspects of information security questionnaire (HAIS-Q): Two further validation
533 studies. *Computers & Security*. 66:40–51.
- 534 Pentina, I., Zhang, L., Bata, H. & Chen, Y. 2016. Exploring privacy paradox in information-
535 sensitive mobile app adoption: A cross-cultural comparison. *Computers in Human*
536 *Behavior*. 65:409–419.
- 537 Ray, J.J. 1984. The reliability of short social desirability scales. *The Journal of Social*
538 *Psychology*. 123(1):133–134.
- 539 Ringle, C., Wende, S. & Becker, J. 2015. SmartPLS 3. Boenningstedt: SmartPLS. Available
540 at: <https://www.smartpls.com> (Accessed: 18 February 2022).

- 541 van der Schyff, K. & Flowerday, S. 2021. Mediating effects of information security awareness.
542 *Computers & Security*. 106:1-12.
- 543 van der Schyff, K., Flowerday, S. & Lowry, P.B. 2020. Information privacy behavior in the
544 use of Facebook apps: A personality-based vulnerability assessment. *Heliyon*. 6:1-13.
- 545 Shappie, A.T., Dawson, C.A. & Debb, S.M. 2019. Personality as a predictor of cybersecurity
546 behavior. *Psychology of Popular Media Culture*. 9(4):475–480.
- 547 Solove, D.J. 2021. The myth of the privacy paradox. *George Washington Law Review*. 89(1):1-
548 51.
- 549 Stavrova, O. & Kokkoris, M.D. 2019. Struggling to be liked: The prospective effect of trait
550 self-control on social desirability and the moderating role of agreeableness. *International*
551 *Journal of Psychology*. 54(2):232–236.
- 552 Stober, J. 2001. The social desirability scale-17 (SDS-17): Convergent validity, discriminant
553 validity, and relationship with age. *European Journal of Psychological Assessment*.
554 17(3):1–21.
- 555 Stöber, J., Dette, D.E. & Musch, J. 2010. Comparing Continuous and Dichotomous Scoring of
556 the Balanced Inventory of Desirable Responding. *Journal of Personality Assessment*.
557 78(2):370-389.
- 558 Stone, M. 1974. Cross-validatory choice and assessment of statistical predictions. *Journal of*
559 *the Royal Statistical Society: Series B (Methodological)*. 36(2):111–133.
- 560 Taneja, A., Vitrano, J. & Gengo, N.J. 2014. Rationality-based beliefs affecting individual's
561 attitude and intention to use privacy controls on Facebook: An empirical investigation.
562 *Computers in Human Behavior*. 38:159–173.
- 563 Tang, J., Akram, U. & Shi, W. 2020. Why people need privacy? The role of privacy fatigue in
564 app users' intention to disclose privacy: Based on personality traits. *Journal of Enterprise*
565 *Information Management*. 34(4):1097–1120.
- 566 Taraszow, T., Aristodemou, E., Shitta, G., Laouris, Y. & Arsoy, A. 2010. Disclosure of
567 personal and contact information by young people in social networking sites: An analysis
568 using Facebook profiles as an example. *International Journal of Media & Cultural*
569 *Politics*. 6(1):81–101.
- 570 Thomsen, D.K., Mehlsen, M.Y., Viidik, A., Sommerlund, B. & Zachariae, R. 2005. Age and
571 gender differences in negative affect—Is there a role for emotion regulation? *Personality*
572 *and Individual Differences*. 38(8):1935–1946.
- 573 Uziel, L. 2010. Rethinking social desirability scales: From impression management to
574 interpersonally oriented self-control. *Perspectives on Psychological Science : A Journal*

- 575 *of the Association for Psychological Science*. 5(3):243–62.
- 576 Vishwanath, A., Xu, W. & Ngoh, Z. 2018. How people protect their privacy on Facebook: A
577 cost-benefit view. *Journal of the Association for Information Science and Technology*.
578 69(5):700–709.
- 579 de Vries, R.E., Zettler, I. & Hilbig, B.E. 2014. Rethinking trait conceptions of social
580 desirability scales: Impression management as an expression of honesty-humility.
581 *Assessment*. 21(3):286–299.
- 582 Zhang, C. & Conrad, F. 2014. Speeding in web surveys: The tendency to answer very fast and
583 its association with straightlining. *Survey Research Methods*. 8(2):127–135.
- 584

Appendix

586

Table 3. Descriptive statistics of questionnaire items (r = reverse coded)

| Latent variable | AVE | CA | CR | Item | M | SD | VIF | t-value | Loading | |
|---|-------|-------|-------|--|-----------|-------|-------|-----------|---------|--|
| <i>social desirability (SD)</i> | 0.500 | 0.658 | 0.795 | Are you always courteous, even to people who are disagreeable? | 2.351 | 0.859 | 1.573 | 34.306*** | 0.795 | |
| | | | | Are you always a good listener, no matter whom you are talking to? | 2.242 | 0.850 | 1.512 | 23.393*** | 0.733 | |
| | | | | Are you quick to admit making a mistake? | (dropped) | | | | | |
| | | | | Have there been occasions when you took advantage of someone? | (dropped) | | | | | |
| | | | | Do you sometimes try to get even rather than forgive and forget? | 2.203 | 0.929 | 1.199 | 19.332*** | 0.673 | |
| | | | | Do you sometimes feel resentful when you do not get your own way? | 1.635 | 0.879 | 1.162 | 13.384*** | 0.608 | |
| | | | | Are you always willing to admit when you make a mistake? | (dropped) | | | | | |
| | | | | Have you sometimes taken unfair advantage of another person? | (dropped) | | | | | |
| <i>intention to use privacy settings (IUPS)</i> | 0.629 | 0.802 | 0.870 | Using the privacy settings on my Facebook account is unnecessary (r) | 1.677 | 0.903 | 1.616 | 20.062*** | 0.790 | |
| | | | | Using the privacy settings on my | 1.498 | 0.761 | 2.266 | 29.736*** | 0.829 | |

Socially desirable responding within the context of privacy-related research: a personality perspective

| | | | | | | | | | |
|------------------------|-------|-------|-------|--|-----------|-------|-------|------------|-------|
| | | | | Facebook account is important | | | | | |
| | | | | Using the privacy settings on my Facebook account is good | 1.483 | 0.702 | 2.172 | 46.108**** | 0.863 |
| | | | | I must periodically review the privacy settings on my Facebook account | 1.920 | 0.992 | 1.282 | 14.405**** | 0.685 |
| | | | | I see myself as someone who is original, comes up with new ideas | 2.115 | 1.074 | 2.257 | 30.061**** | 0.831 |
| | | | | I see myself as someone who is curious about many different things | (dropped) | | | | |
| | | | | I see myself as someone who is ingenious, a deep thinker | 2.179 | 1.092 | 1.760 | 30.003**** | 0.800 |
| | | | | I see myself as someone who has an active imagination | 1.943 | 1.043 | 1.491 | 14.385**** | 0.697 |
| | | | | I see myself as someone who is inventive | 2.288 | 1.123 | 1.930 | 19.079** | 0.782 |
| | | | | I see myself as someone who values artistic, aesthetic experiences | (dropped) | | | | |
| | | | | I see myself as someone who prefers work that is routine | (dropped) | | | | |
| | | | | I see myself as someone who likes to reflect, play with ideas | 2.023 | 1.041 | 1.848 | 30.871**** | 0.821 |
| | | | | I see myself as someone who has few | (dropped) | | | | |
| <i>openness (OPEN)</i> | 0.617 | 0.846 | 0.889 | | | | | | |

| | | | | | | | | | |
|--------------------------------|-------|-------|-------|---|-----------|-------|-------|------------|-------|
| | | | | artistic interests | | | | | |
| | | | | I see myself as someone who is sophisticated in art, music, or literature | (dropped) | | | | |
| <i>conscientiousness (CON)</i> | 0.522 | 0.887 | 0.907 | I see myself as someone who does a thorough job | 1.497 | 0.771 | 1,837 | 24.674**** | 0.744 |
| | | | | I see myself as someone who can be somewhat careless (r) | 3.649 | 1.241 | 1,910 | 21.690**** | 0.700 |
| | | | | I see myself as someone who is a reliable worker | 1.470 | 0.770 | 1,808 | 27.304**** | 0.744 |
| | | | | I see myself as someone who tends to be disorganized (r) | 2.194 | 1.249 | 2,192 | 21.619**** | 0.710 |
| | | | | I see myself as someone who tends to be lazy (r) | 2.170 | 1.213 | 1,796 | 18.518**** | 0.693 |
| | | | | I see myself as someone who perseveres until the task is finished | 1.740 | 0.934 | 2,060 | 32.690**** | 0.782 |
| | | | | I see myself as someone who does things efficiently | 1.670 | 0.837 | 1,894 | 26.180**** | 0.755 |
| | | | | I see myself as someone who makes plans and follows through with them | 1.731 | 0.906 | 1,788 | 24.319**** | 0.737 |
| | | | | I see myself as someone who is easily distracted (r) | 2.399 | 1.276 | 1,617 | 15.731**** | 0.628 |
| <i>extraversion</i> | 0.505 | 0.875 | 0.867 | I see myself as someone who is | 2.911 | 1.358 | 2,252 | 8.2810**** | 0.709 |

Socially desirable responding within the context of privacy-related research: a personality perspective

| | | | | | | | | | |
|----------------------------|-------|-------|-------|--|-----------|-------|--------|------------|-------|
| <i>(EXT)</i> | | | | talkative | | | | | |
| | | | | I see myself as someone who is reserved (r) | (dropped) | | | | |
| | | | | I see myself as someone who is full of energy | 2.585 | 1.236 | 1.8661 | 20.704**** | 0.824 |
| | | | | I see myself as someone who generates a lot of enthusiasm | 2.637 | 1.259 | 2.1050 | 23.356**** | 0.884 |
| | | | | I see myself as someone who tends to be quiet (r) | 3.542 | 1.330 | 2.3441 | 4.776**** | 0.565 |
| | | | | I see myself as someone who has an assertive personality | 2.903 | 1.345 | 1.4898 | 5.700**** | 0.546 |
| | | | | I see myself as someone who is sometimes shy, inhibited (r) | 3.323 | 1.387 | 2.0783 | 6.828**** | 0.651 |
| | | | | I see myself as someone who is outgoing, sociable | 2.908 | 1.381 | 2.4051 | 20.704**** | 0.786 |
| <i>agreeableness (AGR)</i> | 0.511 | 0.808 | 0.862 | I see myself as someone who tends to find fault with others (r) | 2.497 | 1.226 | 1.572 | 21.813**** | 0.679 |
| | | | | I see myself as someone who is helpful and unselfish with others | 1.880 | 0.892 | 1.635 | 23.770**** | 0.690 |
| | | | | I see myself as someone who starts quarrels with others (r) | (dropped) | | | | |
| | | | | I see myself as someone who has a | 2.141 | 1.224 | 1.387 | 20.192**** | 0.674 |

| | | | | | | | | | |
|--------------------------|-------|-------|-------|---|-----------|-------|--------|-----------|-------|
| | | | | forgiving nature | | | | | |
| | | | | I see myself as someone who is generally trusting | (dropped) | | | | |
| | | | | I see myself as someone who can be cold and aloof (r) | 2.503 | 1.275 | 1.660 | 27.503*** | 0.714 |
| | | | | I see myself as someone who is considerate and kind to almost everyone | 1.785 | 0.929 | 1.954 | 37.553*** | 0.777 |
| | | | | I see myself as someone who is sometimes rude to others (r) | 2.068 | 1.121 | 1.869 | 34.941*** | 0.751 |
| | | | | I see myself as someone who likes to cooperate with others | (dropped) | | | | |
| <i>neuroticism (NEU)</i> | 0.625 | 0.914 | 0.930 | I see myself as someone who is depressed, blue | 3.736 | 1.355 | 1.8110 | 27.817*** | 0.721 |
| | | | | I see myself as someone who is relaxed, handles stress well (r) | 3.674 | 1.271 | 3.1572 | 63.082*** | 0.861 |
| | | | | I see myself as someone who can be tense | 3.069 | 1.301 | 1.9482 | 39.222*** | 0.778 |
| | | | | I see myself as someone who worries a lot | 2.984 | 1.423 | 2.5225 | 41.357*** | 0.799 |
| | | | | I see myself as someone who is emotionally stable, not easily upset (r) | 3.760 | 1.245 | 2.8257 | 47.327*** | 0.839 |

Socially desirable responding within the context of privacy-related research: a personality perspective

| | | | | | | | | |
|--|--|--|--|-------|-------|--------|-----------|-------|
| | | | I see myself as someone who can be moody | 3.224 | 1.371 | 1.9047 | 38.269*** | 0.772 |
| | | | I see myself as someone who remains calm in tense situations (r) | 3.844 | 1.147 | 2.2273 | 28.682*** | 0.745 |
| | | | I see myself as someone who gets nervous easily | 3.186 | 1.426 | 2.6014 | 39.737*** | 0.806 |

587 *** = significant at $p < 0.01$