Personality perception based on LinkedIn profiles

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Abstract

Purpose – Job-related social networking websites (e.g. LinkedIn) are often used in the recruitment process because the profiles contain valuable information such as education level and work experience. The purpose of this paper is to investigate whether people can accurately infer a profile owner's self-rated personality traits based on the profile on a job-related social networking site.

Design/methodology/approach – In two studies, raters inferred personality traits (the Big Five and self-presentation) from LinkedIn profiles (total $n = 275$). The authors related those inferences to self-rated personality by the profile owner to test if the inferences were accurate.

Findings – Using information gained from a LinkedIn profile allowed for better inferences of extraversion and self-presentation of the profile owner (r's of 0.24-0.29).

Practical implications – When using a LinkedIn profile to estimate trait extraversion or self-presentation, one becomes 1.5 times as likely to actually select the person with higher trait extraversion compared to the person with lower trait extraversion.

Originality/value – Although prior research tested whether profiles of social networking sites (such as Facebook) can be used to accurately infer self-rated personality, this was not yet tested for job-related social networking sites (such as LinkedIn). The results indicate that profiles at job-related social networks, in spite of containing only relatively standardized information, "leak" information about the owner's personality.

Keywords Recruitment, Online social networks, LinkedIn, Big Five traits, Person perception, Self-presentation

Paper type Research paper

We examine if profiles from a job-related social networking site (LinkedIn) can be used to accurately form impressions of a profile owner's self-rated personality. The use of social networking websites like Facebook and LinkedIn has grown tremendously in the last decade. In total, 92 percent of US companies use social networking sites to prescreen applications for recruitment purposes (Jobvite, 2012). Recruiters not only look at social networking sites to see someone's prior training or work experience, but viewers of a profile also infer personality characteristics from it (Bohnert and Ross, 2010). Personality affects job performance (Barrick and Mount, 2005) and recruiters therefore look for personalities that fit the job as well as the organization (Kristof-Brown, 2000). Insight into personality traits in the early stages of the recruitment process might help to select the employees that best fit the organization and vacancy. We therefore test whether these profiles on job-related social networking sites allow accurate personality inferences: do inferences based on a profile at a job-related social networking site correlate with self-rated personality of the profile owners?

The fit between an employee and an organization is important for the employee's job satisfaction and turnover intentions (Kristof, 1996; O'Reilly *et al.*, 1991). Because of this, a company is not only looking for someone with the right qualifications, but also for someone whose personality fits the job and organization. Personality assessment, both online and offline, has therefore become an important tool in personnel selection (Barrick and Mount, 1991; Dineen *et al.*, 2002; Salgado, 1998). It is perhaps not surprising that many companies use personality tests in the screening of job candidates. Heller (2005), for example, estimates that 30 percent of American companies use personality assessments. However, extensively testing all applicants can be expensive. In cases when personality is a key criterion for selection but no resources are available to test all applicants, a pre-selection that allows one to only test the most promising candidates would increase efficiency. Companies already use application letters and résumés to infer key aspects of the applicant (including personality) to make better choices in the pre-selection phase (Brown and Campion, 1994). Furthermore, research confirms that this works; application letters and résumés contain valid cues to infer certain personality traits (Burns *et al.*, 2014; Cole *et al.*, 2003a, b).

Similar to inferring personality from an application letter or résumé, one can quite accurately infer someone's personality based on profiles at social networking sites such as Facebook (Back *et al.*, 2010; Tskhay and Rule, 2014), or even predict job performance from such profiles (Kluemper and Rosen, 2009; Kluemper *et al.*, 2012; cf. Van Iddekinge *et al.*, 2013). Profile viewers' estimates of the personality traits of profile owners correlates between 0.22 and 0.41 with the actual personality (a combination of self- and other ratings on a given trait) of the profile owners across the traits of extraversion, agreeableness, openness to experience, and conscientiousness (Back *et al.*, 2010). For example, cues in the profile picture (clothing style, a rebellious pose, etc.) or the number of groups one is a member of can help to predict personality (Stopfer *et al.*, 2014; Gosling *et al.*, 2011). Such online-based personality predictions are more closely related to actual personality than to the ideal personality of the profile owner (a self-rating of how the profile owner would ideally want to score on a given trait; Back *et al.*, 2010). This suggests that profiles provide cues that allow others to estimate the actual personality of a profile owner, rather than how (s)he wants to appear.

In short, personality inferences based on social network profiles (such as Facebook) have been found to be possible. However, job-related social network profiles (such as LinkedIn) differ from social network profiles in a number of ways that makes it necessary to test whether personality can also be inferred from those profiles.

Why study personality perception based on job-related social networking sites?
An obvious reason why studying personality inferences based on job-related social networking sites is important, is that these sites are very popular with recruiters, more so than typical social networking sites such as Facebook (Nikolaou, 2014; Roulin and Bangerter, 2013). LinkedIn is for example used by 92 percent of recruiters (Jobvite, 2012). It is perhaps no surprise that profiles on job-related social networks are used, as they obviously contain relevant information such as work experience. Indeed, Roulin and Bangerter (2013) found that both recruiters and applicants think that profiles at job-related social networking sites are good indicators of person-job fit. Furthermore, the information on job-related social networking sites (such as profiles on LinkedIn) has been found to be more honest than paper résumés (Guillory and Hancock, 2012). Guillory and Hancock indicate that it seems that the openness of the internet forces people to be accurate and not inflate one's résumé.

Another reason to investigate job-related social networks instead of general social networks is that very few general social network profiles are open to the general public. For example, 80 percent of Americans indicated that their Facebook profiles are set to

private and can only be seen by their friends (Madden, 2012). Even if one could predict job performance based on someone's Facebook profile (Kluemper and Rosen, 2009; Kluemper *et al.*, 2012), recruiters cannot use Facebook for pre-screening candidates if only 20 percent of profiles are accessible. In contrast, people see their profile at a job-related social networking site as an online résumé that they are willing to share with others (including recruiters) for job-related purposes (Roulin, 2014). This makes it possible to use job-related social networks as a tool for general pre-screening purposes.

It is clear that recruiters regularly use job-related social networking sites such as LinkedIn in their screening of candidates. It is also clear that people infer personality traits based on profiles of social networking sites, and that this information subsequently influences evaluations of whether someone is suited for a job (Bohnert and Ross, 2010). However, we do not know how accurate personality inferences from profiles at job-related social networks are. Although the work of Nikolaou (2014) demonstrates that HR professionals prefer using job-related social networks over the more social networks, there are at least three factors that threaten their potential in screening for personality traits.

First, people are likely to post information more deliberately on job-related social networking sites like LinkedIn than they do on social networking sites like Facebook. On social networking sites, someone might for example post information about using excessive amounts of alcohol with friends, which potential employers could interpret in a negative light in the selection process (Roulin, 2014). For job-related social networking sites, it seems likely that profile owners are aware that colleagues, customers, or potential employers will view their profile, which is why they more carefully consider what they put online (Roulin and Levashina, 2016). Self-presentation concerns might be particularly salient for job-related networking sites, which could restrict the range of possible expressions people make, thereby making it more difficult to predict personality (Back *et al.*, 2010).

Second, social networking sites are typically more dynamic than job-related social networking sites. Theories on personality indicate that personality traits leave behavioral residue (Gosling *et al.*, 2002), as individuals who score high on a certain personality trait are more likely to engage in activities indicative of those personality traits. Furthermore, even if the profile owner does not share certain activities, friends might do so (Stoughton *et al.*, 2013). These traces of past behavior are more likely in the more dynamic profiles (that include interactions with others) at social networks, than at the typically more static profiles at job-related social networks that function as an online résumé.

Third, the more static nature of job-related social networking sites also reflects a difference in how much information is typically available. A profile on a social networking site (such as Facebook) can, in theory, be endless as posts can be added at will and this history of posts remains available. For LinkedIn, the amount of text is limited to the categories provided by the profile. Indeed, Tskhay and Rule (2014) conclude in their meta-analysis on inferring personality from social networking sites that more text makes personality inference more accurate (especially for a trait like extraversion, see John and Srivastava, 1999). Because more information allows for more accurate assessment of personality (Funder, 1995), information on general social networking sites might be more predictive of actual personality than information on job-related sites.

To summarize, although job-related social networks are often used in the selection process, little empirical research actually exists on it (Roth *et al.*, 2013; McFarland and Ployhart, 2015). One reason for this set of studies is therefore to bridge the gap between research on personality inferences from online presence (that typically investigates social networks such as Facebook) and the recruitment practice (that typically uses job-related social networks such as LinkedIn). Furthermore, there are some reasons to expect less accuracy when inferring personality from profiles at job-related social networks than from social networks, so testing this is important.

The current studies
In two studies, we gathered the samples of LinkedIn profile owners who filled out a personality measure and consented to have raters infer their personality from their profile. Personality impressions were based on the Big Five (Costa and McCrae, 1992), which are:

(1) conscientiousness: people who score high on this trait are well-organized and goal-directed;

(2) emotional stability: people who score high on this trait are even tempered, calm, and not easily stressed out;

(3) extraversion; people who score high on this trait are sociable, enthusiastic, and emotionally expressive;

(4) openness to experience; people who score high on this trait are open to new experiences, creative, and unconventional; and

(5) agreeableness: people who score high on this trait are sympathetic and warm persons, who prefer to avoid confrontation.

We chose these traits because they are generally considered the core dimensions of personality (Costa and McCrea, 1992), typically used in other research on personality impressions based on social networking sites (Tskhay and Rule, 2014), and are important predictors of various aspects of employee performance (Barrick and Mount, 2005). In Study 2, we extended our analysis to include trait self-presentation, which reflects the eagerness and self-confidence to present oneself (Van der Linden *et al.*, 2011).

Study 1
Method
LinkedIn profile owners were recruited via online posts and asked to participate voluntarily in a study on personality perception. In return for participating, they received a summary of their scores on the personality traits that we measured. The respondents were separated into a student sample (62 current full-time students, 35 females, $M_{age} = 23.1$, SD $= 2.78$, range 19-35) and a working sample (116 employed people, 61 females, $M_{age} = 36.8$, SD $= 10.87$, range 22-65)[1].

The respondents filled out the Big Five on the TIPI-measure (Gosling *et al.*, 2003; for Dutch translation, see Denissen *et al.*, 2008). This is a short, ten-item measure that sacrifices reliability (i.e. two items covering a single underlying dimension) for relative scale breadth (i.e. items with different content that potentially cover at least two facets of the underlying dimension). Reliability of those measures was low (r: conscientiousness $= 0.49$, emotional stability $= 0.49$, extraversion $= 0.52$, openness to experience $= 0.35$, agreeableness $= 0.14$). This is similar to the values reported in other studies (e.g. Denissen *et al.*, 2008; Gosling *et al.*, 2003). Gosling *et al.* (2003) explain that the TIPI was created as a short measure with moderate construct breadth, which has the unavoidable consequence of lower reliability. More specifically, given that traits like extraversion are quite broad, if a researcher can only use two questions to measure this trait, the overlap between the two questions should not be too substantial. With too much overlap, it would not be possible to capture the entire construct. For example, trait extraversion could have very reliably been measured with items like "I talk a lot" and "I am talkative" (creating a high Cronbach's α); but this would not capture the breadth of the construct extraversion, as that also includes traits like enthusiasm. This is why for scales with only a few items αs can actually be misleading when evaluating their usefulness (Kline, 2000; Wood and Hampson, 2005). Most importantly, studies showed that the TIPI has content validity: the Big Five traits as measured by the TIPI predict outcomes that it theoretically should, and the test-retest

reliability is good (Denissen *et al.*, 2008; Gosling *et al.*, 2003). Table I contains the means and standard deviations of self-rated personality on these traits.

Ten psychology students (six females, four males) rated the profiles in our laboratory in return for course credit. Five students rated all profiles from the student sample, the other five rated those from the working sample. Raters saw a profile on one half of the computer screen, and indicated their estimate of each personality trait of the Big Five via a survey program on the other half of the screen. The order of the profiles was randomized for each rater. Traits were scored on a scale from 0 (extremely low score on that trait) to 100 (extremely high score on that trait), with 50 indicating an average score on that trait. A slider scale was used that always started at the midpoint of the scale. The exact description of each trait given to raters was based on the description of traits in the TIPI. Raters were not financially incentivized in this study, but they knew that they would learn whether they had succeeded in correctly predicting the personality traits (they received feedback on whether their impressions correlated with self-rated personality of profile owners, and how their correlations compared to those of other raters). The raters' mean ratings (including standard deviation) for each trait are presented in Table I.

Results and discussion

Table I provides the interrater reliability of the five raters for each personality trait per sample. The ICCs (intraclass correlation coefficients tested with two-way random model with absolute agreement for average measures, see McGraw and Wong, 1996) were all satisfactory to good (for reference values, see Landis and Koch, 1977). For each profile, raters' estimates of a trait were combined into an average. Table II contains the correlations between the raters' average personality estimate with the self-rated personality by the profile owner. We found that the raters' estimates of extraversion were significantly related

| | Student sample | | | | | Working sample | | | | |
| | Self-rated personality | | Raters' average trait estimate and consensus | | | Self-rated personality | | Raters' average trait estimate and consensus | | |
	M	(SD)	M	(SD)	ICC	M	(SD)	M	(SD)	ICC
Extraversion	4.52	(1.43)	58.79	(13.84)	0.73	5.10	(1.31)	58.11	(10.56)	0.59
Agreeableness	5.29	(1.00)	56.21	(9.38)	0.54	5.58	(0.84)	55.60	(10.10)	0.58
Conscientiousness	4.99	(1.34)	58.82	(12.16)	0.63	5.40	(1.16)	60.63	(8.79)	0.41
Emotional stability	4.85	(1.34)	61.84	(9.13)	0.57	5.47	(1.13)	55.93	(8.85)	0.49
Openness to experience	4.87	(1.18)	49.62	(14.12)	0.68	5.37	(1.34)	52.87	(10.14)	0.57

Table I.
Mean and standard deviation of self-rated personality and raters' consensus per trait in Study 1

Notes: Self-rated traits measured on a scale from 1 to 7. Raters' trait estimates on a scale from 0 to 100. ICC's reflect interclass correlation tested with two-way random model with absolute agreement for average measures

| | Study 1 | | Study 2 | |
Profile sample	Student	Working	Full profile	Limited profile
Extraversion	0.37**	0.24**	0.29**	0.27**
Agreeableness	0.14	0.29**	−0.07	−0.02
Conscientiousness	0.20	0.06	−0.00	−0.11
Emotional stability	0.18	−0.05	−0.09	−0.02
Openness to experience	0.13	0.39***	0.07	−0.06
Self-presentation			0.29**	0.29**

Table II.
Correlations between raters' inference of trait and self-rated personality by profile owner in Studies 1 and 2 (accuracy)

Notes: Limited profile refers to same profile as full profile, but with name and picture removed. **$p < 0.01$; ***$p < 0.001$

to self-rated extraversion by the profile owner in both samples. In the working sample, but not the student sample, the raters' perceived openness and agreeableness correlated with self-rated personality by the profile owner. As we only found this relationship for openness and agreeableness in one of our two samples, a main goal of Study 2 was to replicate our study to test whether these traits could reliably be inferred from a profile in a new sample.

Study 2

In real-life situations in which a recruiter wants to prescreen candidates, candidates typically have a relatively similar background when they are applying for the same job. The main reason is that people with similar personality traits find similar jobs or organizations interesting (Holland, 1997). Furthermore, personality predicts which education people choose (Humburg, 2017), and having followed certain educational paths makes certain career paths more likely. This homogeneity in personality traits of people applying to a job or organization may make it more difficult to accurately infer personality. Study 2 therefore used a sample from within one organization in order to replicate our initial study in a more homogenous sample. This choice should make it more difficult to replicate the results of Study 1.

To be able to reach this more homogeneous sample we had to use a different Big Five questionnaire (the G5-R; Van der Linden *et al.*, 2011), as this was the questionnaire typically used by the company, we recruited our participants from. In addition to the Big Five traits used in Study 1, the G5-R also includes a measure for trait self-presentation. This trait contains the tendency to be dominant, energetic, achievement-oriented, and self-confident, and is defined as the eagerness and ambition with which one tries to present oneself. Both ambition (Huang *et al.*, 2013) and having a proactive personality (Crant, 1995) relate positively to performance at work, so trait self-presentation is likely to also positively affect job performance and could be a valuable trait to predict when pre-screening candidates.

Two other changes were made as well. First, we incentivized raters to be as accurate as possible. Second, we also had one set of raters infer personality based on the profiles from which we had removed the name and picture of the profile owner. This allowed us to test whether personality inferences accurately predicted self-rated personality without information on gender and outward appearance.

Method

Employees of a large Dutch human resources development company (involved in consultancy, assessments, and training) were asked to participate in a study on personality perceptions (97 employees out of the approximately 250 employees participated; 46 males/51 females; age was indicated in categories, with 23 percent being 35 or younger, 35 percent being 36-45, 32 percent being 46-55, and 10 percent being 56+). If they consented, they filled out the Big Five on the abbreviated 36-item G5-R (Van der Linden *et al.*, 2011). The reliability of the traits was satisfactory for all traits: (α: conscientiousness $= 0.70$, emotional stability $= 0.79$, extraversion $= 0.78$, openness to experience $= 0.72$, agreeableness $= 0.69$, self-presentation $= 0.84$). Descriptive statistics are presented in Table III.

In total, 20 psychology students (11 females, nine males; $M_{age} = 20.60$, SD $= 2.21$) were recruited to rate the profiles in return for course credits. Ten students rated all profiles in full, the other ten rated all profiles without the picture and name of the profile owner (and thus effectively also without gender information). The raters received printed color versions of the profiles, in a different order for each rater, and rated each profile on each trait on a scale from −4 to +4 with the extremes of each trait on the endpoints. For example, for extraversion, −4 had the label "very introverted" and +4 was labeled "very extraverted."

	Self-rated personality		Raters' average trait estimate and consensus full profile			Raters' average trait estimate and consensus limited profile		
	M	(SD)	M	(SD)	ICC	M	(SD)	ICC
Extraversion	3.78	(0.53)	0.71	(0.98)	0.76	0.85	(1.20)	0.91
Agreeableness	3.61	(0.46)	1.84	(0.59)	0.61	1.42	(0.55)	0.71
Conscientiousness	3.36	(0.60)	1.53	(0.68)	0.59	1.30	(0.58)	0.66
Emotional stability	3.64	(0.65)	1.03	(0.79)	0.64	1.26	(0.47)	0.56
Openness to experience	4.26	(0.36)	0.94	(0.77)	0.48	0.86	(0.94)	0.84
Self-presentation	3.36	(0.70)	1.04	(1.07)	0.81	0.82	(1.26)	0.92

Notes: Self-rated traits measured on a scale from 1 to 5. Raters' trait estimates on a scale from −4 to +4, with for example the endpoints labeled as extremely introverted (−4) to extremely extraverted (+4). ICC's reflect interclass correlation tested with two-way random model with absolute agreement for average measures. Data separately presented for raters who rated the full profile and those who rated the limited profile (without name and picture)

The slider scale (that measured responses to 1 decimal) always started at the midpoint of the scale. Description of the traits was again based on the personality measure itself, using the description associated with the scale. This time, we also handed out a €50 bonus to each of the two best-performing raters, to provide an extra incentive to work on the task with their full attention. Furthermore, they also knew we would tell them how well they had done compared to the other raters. The raters' mean ratings (including standard deviation) for each trait are presented in Table III.

Results and discussion
Table III provides the interrater reliability (ICC) of the raters for each personality trait. ICC's are presented separately for the raters of the full profiles and the raters who rated the profiles without the picture and name. The consistency amongst raters was satisfactory to good, in some cases even excellent (for reference values, see Landis and Koch, 1977). Table II contains the correlations between rater's averaged personality estimates of a trait with profile owner's self-rated personality.

For extraversion, we again found that the average score of the raters correlated with the self-rated extraversion of the profile owner, but not for the other traits from the Big Five. Even though all profile owners were working for the same company and might thus have been more similar to each other (at least based on their type of work), we still replicated the extraversion finding from Study 1 that self-rated extraversion can be inferred from someone's LinkedIn profile. The other Big Five traits could not be reliably predicted by raters in Study 2. We therefore think it is unlikely that these traits can be accurately inferred from LinkedIn profiles.

In this study, we also included trait self-presentation, which reflects the personality trait eagerness and ambition to present oneself to others. The results indicate that for self-presentation there was also a correlation between profile owners' self-reports and raters' inferences. This suggests that people can pick up this trait somewhat accurately based on a LinkedIn profile (the effect size being similar to that of trait extraversion).

Finally, as can be seen in Table III, the accuracy of raters did not seem to depend on whether or not a picture and name were present in the profile. Even raters who rated the profile without this information (and thus had no information about gender or outward appearance), were similarly accurate in their predictions for self-rated extraversion and self-presentation.

To conclude, our main finding is that we found correlations between the raters' perception of extraversion with self-rated extraversion (both in Studies 1 and 2). Whether this correlation

is strong enough to use it in pre-screening candidates is an important question. To get better insight into the feasibility of using inferred extraversion for pre-screening candidates (if one wanted to do so), we tested if raters can accurately identify the more extraverted individual from each possible pair of profiles. With 97 profiles, there are 4,656 possible comparisons between two profiles. From this set, we selected the pairs in which the profile owners differed in their self-rated extraversion (4,244 pairs). The profile rated as higher in extraversion by raters[2] was also the more extraverted person (based on self-ratings of the profile owner) 60.2 percent of the time. This implies that the odds of selecting the person with higher self-rated extraversion from a pair increases to 1.51 compared to a baseline of random guessing. This seems like a sizeable effect that might help in pre-screening candidates if one has a large number of candidates and only limited resources to find extraverted candidates. When looking for introverted or extraverted candidates, having a set of raters look at LinkedIn profiles and estimate scores on trait extraversion, might help in pre-screening (and the same holds for trait self-presentation).

General discussion
The basic question that started this research was whether personality traits can be predicted based on someone's profile on a job-related social networking website (i.e. LinkedIn). Earlier research on social network profiles (such as Facebook; Back *et al.*, 2010) found that traits can be predicted, but it was not clear if this was also possible with job-related social networks. We found that LinkedIn profiles can be used to predict self-rated extraversion (Studies 1 and 2) and self-presentation (Study 2) of profile owners to some degree. Agreeableness and openness to experience were successfully predicted in the Study 1 working sample, but this finding did not replicate in the Study 1 student sample or in Study 2. In general, the Big Five traits besides extraversion could not accurately be predicted from job-related social networking sites.

Practical usefulness
Earlier research found that extraversion is related to job performance of managers and sales executives (Barrick and Mount, 1991), affective organizational commitment (having an emotional attachment to the company you work for; Erdheim *et al.*, 2006), and well-being (Ozer and Benet-Martinez, 2006). Self-presentation is also likely to be of importance for organizations, as facets that are part of trait self-presentation such as ambition (Huang *et al.*, 2013) and having a proactive attitude (Crant, 1995) are important predictors of job performance. As impressions of extraversion and self-presentation based on job-related social networking sites appeared to be (somewhat) accurate, profiles on these sites might therefore be used to prescreen job applications. The chance of selecting the person higher in extraversion from a pair of candidates is 60.2 percent when using a LinkedIn profile, which means that one is 1.5 times as likely to actually select the person with the higher (self-rated) trait extraversion as the person with lower trait extraversion.

Note that our findings indicate that our raters could not reliably infer the other traits from the Big Five (agreeableness, conscientious, emotional stability, and openness to experience) based on a LinkedIn profile. This is also an important insight, as many recruiters use profiles at job-related social networking sites for screening for desired personality traits (Roulin and Bangerter, 2013), which might not be effective for many traits.

Limitations and future research
It may be possible to predict the Big Five traits beyond extraversion based on LinkedIn profiles, despite the relatively low accuracy found in the current study. In our studies we tested whether raters could infer personality from a LinkedIn profile, not how they did so.

Although we did not ask them what type of cues they used, we conducted an exploratory analysis of the predictive value of profile cues from Study 2. We coded some possible cues on the LinkedIn profiles and found some relationships between profile cues (e.g. aspects of the picture or group membership) and self-rated personality (see the appendix that can be found via the link provided in footnote 1). For example, exploratory analysis suggests that more conscientious people were more likely to include a picture and had less connections to other profiles. However, we noted that raters did not seem to pick up on this (based on the lack of a correlation of these cues with raters' perceptions of conscientiousness). At the same time, raters seemed to have thought that those who wore formal clothes were more conscientious, which was in fact not true. Future research could specifically test which cues "leak" information about personality, and whether raters can be trained to use more predictive cues to assess a broader range of personality based on job-related social networking profiles.

In our study, the personality of the profile owner was self-rated by the profile owner. We realize that self-rated personality is only one option to assess actual personality, with ratings made by others and behavioral observations being other possibilities (McCrae and Costa, 1987). Self-ratings were found to not always be fully accurate, but they overlap considerably with other possible measures. Future research could test whether the inferred personality of profile owners also relates to, for example, co-worker's perception of the personality of the profile owner.

Another possible limitation is that the raters were untrained psychology students who had followed a course on personality psychology, but had no experience in recruitment and personnel selection. It would be interesting to see whether experienced HR staff or recruitment specialists would be more accurate in their inferences. These experts who administer personality assessments have had the opportunity to learn: when they meet a candidate, they have an initial impression of the candidate's personality, and the outcomes of a personality assessment allow them to learn how accurate their initial impression was. Given that feedback on one's past performance allows improvement (Balcazar *et al.*, 1985), these experts might become better over time at estimating personality of a candidate. However, whether this also holds for inferences based on social media profiles remains an open question.

Conclusion

Earlier research found that people can form accurate personality impressions based on social network profiles, but it was unclear whether this finding extended to profiles on job-related social networking sites (e.g. LinkedIn). This is important because job-related social networks are primarily used in the recruitment process. They contain more relevant information, they are more accessible to recruiters, and using them is seen as more ethical. Using job-related social network profiles for pre-screening might therefore circumvent some problems associated with more purely social networking sites (e.g. Facebook, see Davison *et al.*, 2011; Brown and Vaughn, 2011). Profiles on job-related social networks are, however, created more deliberately and include very little interaction with other people. Still, our research finds that the traits extraversion and self-presentation can be inferred from profiles at job-related social networks: inferences based on profiles at LinkedIn correlated with self-rated scores on those traits. This implies that information about important personality traits (extraversion and self-presentation) leaks through the deliberately and carefully created profiles on job-related social networks.

Notes

1. An online appendix with exploratory analyses, study materials, and an anonymous version of the data of Study 1 can be found at the Open Science Framework, http://doi.org/10.17605/OSF.IO/6CV75

2. For 0.4 percent of cases raters had predicted the exact same extraversion scores for each member of a pair of profile owners. In those cases, we calculated half as correct inferences (assuming that they would be guessed correct at chance level when forced to choose for those 0.4 percent of cases).

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