http://www.psychologistpapers.com



What's behind LinkedIn? Measuring the LinkedIn Big Four Dimensions through rubrics

José Carlos Andrés¹, David Aguado^{1,2} y Jesús de Miguel^{1,3}

¹Universidad Autónoma de Madrid, España. ²Instituto de Ingeniería del Conocimiento, España. ³Centro de Investigación para la Efectividad Organizacional, España

LinkedIn es la red social más utilizada en el ámbito profesional para funciones de reclutamiento y selección de personal. Aunque los profesionales de Recursos Humanos realizan inferencias sobre los candidatos en base a la información contenida en el perfil de LinkedIn, estas inferencias no se realizan de forma sistematizada y objetiva. En esta investigación se proponen rúbricas, basadas en el modelo LinkedIn Big Four, como herramienta para hacer más sistemáticas y objetivas las inferencias de los profesionales de selección. Para el análisis se utilizó una muestra de profesionales del sector IT (n = 105). Los resultados muestran unos resultados de fiabilidad adecuados a los estándares al uso y una evidencia inicial de validez que relaciona las puntuaciones en las rúbricas con las competencias genéricas de los profesionales.

Palabras clave: LinkedIn Big Four, Rúbricas, Reclutamiento online, Selección de personal online.

LinkedIn is the most used social network in the professional field for recruitment and selection. Although human resources professionals make inferences about candidates based on the information contained in the LinkedIn profile, these inferences are not made in a systematized or objective way. In this research, rubrics, based on the LinkedIn Big Four model, are proposed as a tool to make the inferences of selection professionals more systematic and objective. A sample of professionals from the IT sector (n = 105) was used. Results show adequate reliability and initial evidence of validity by means of correlation between the rubrics and generic competencies scores.

Key words: LinkedIn big four, Rubrics, On line recruitment, On line selection.

Increasingly, organizations are giving the recruitment and selection process a fundamental role in organizational success and competitiveness (Derous & De Fruyt, 2016). In this context of "the war" for talent (Frasca & Edwards, 2017), technology has emerged as a key element (Derous & De Fruyt, 2016; García-Izquierdo et al., 2019; Ryan & Derous, 2019) in the identification and selection of professionals with an appropriate fit to the position and the organization (García-Izquierdo et al., 2015; Sylva & Mol,

NTRODUCTION

Among these uses of technology, along with the use of computerized tests, gamification, audio-visual resources, and corporate websites among others, social network websites (SNW) have become one of the main tools used by professionals in various fields and occupations, as well as by recruitment and selection professionals (Chapman & Mayers, 2015; Nikolaou, 2014; Woods et al, 2020). For the former, the search for a job is one of the most important reasons for joining a professional social network such as LinkedIn (Frasca & Edwards, 2017), towards which they show a positive attitude (Aguado et al., 2016). For the latter, SNWs are a tool, used in online recruitment, for screening candidates and configuring a bank on which to develop the evaluative processes associated with the selection process (Black & Johnson, 2012; Chiang & Suen, 2015).

However, the use of SNW for recruitment and selection does involve some difficulties. For example, the traditional division

Received: 1 November 2021 - Accepted: 10 December 2021 Correspondence: David Aguado. Universidad Autónoma de Madrid e Instituto de Ingeniería del Conocimiento. España. E-mail: david.aguado@uam.es between recruitment (attracting a sufficient number of suitable candidates) and selection (assessing their fit with the requirements of the position) can be blurred (Aguado et al., 2016). Thus, HR professionals infer, from the information that the candidate provides in their profile, characteristics about their personality, their competencies, and even predictions regarding the quality of their future performance in the company (Van Iddekinge et al., 2016), and based on this they assess the candidate's suitability in terms of their fit with the position and the organization (Back et al., 2010; Chamorro-Premuzic & Steinmetz, 2013; Kluemper et al., 2012; Roulin & Bangerter, 2013). This decision-making process associated with the analysis of the candidate's public information and not with a standardized measurement process, can be accompanied by deficits in the reliability of the measures, and a lack of validity due to the scarcity of associated evidence. There are limitations that, in addition, can produce biases when using information that is not related to job performance (García-Izquierdo et al., 2015; Seiter & Hatch, 2005; Shannon & Stark, 2003; Villeda et al., 2019).

In this context, different authors call for both further research on the use of SNW for recruitment and selection (e.g., Ryan & Derous, 2016) and the development of tools that enable the use of SNW according to established psychometric criteria (Ötting & Maier, 2018).

Thus, the aim of our work is to construct four specific rubrics to assess the information present in LinkedIn profiles, taking as a substantive model the LinkedIn Big Four (Aguado et al., 2019), and to obtain initial evidence about its reliability and validity. To this end, the reliability of the rubrics is explored through their internal consistency, temporal reliability, and inter-rater reliability; and their predictive



validity is examined through the analysis of their relationship with the generic competencies established in the Great Eight Competency Model (Bartram, 2005).

THEORETICAL FOUNDATION

SNW in the context of Recruitment and Selection

A SNW is characterized by allowing the user to: (a) define a profile within a bounded system; (b) articulate a list of contacts with whom to share information; and (c) view and browse their own list and those of other users to identify opportunities for connection and contact (Boyd & Ellison, 2007). In addition, professional social networks, such as LinkedIn, make information about professional projects, positions held, and contributions to professional organizations available to a large number of Internet users (Black & Johnson, 2012; Nikolaou, 2014).

Among the advantages of using SNW as a means of online recruitment we can highlight: (a) the speed with which candidates can apply for current vacancies; (b) the quality of information regarding the candidate's specific competencies, skills, and experience; (c) the savings in both cost and time invested; (d) the brand image that the organization offers to candidates; (e) the increased ability to reach a larger and more diverse number of candidates; and (f) the ease of approaching passive candidates, who are not actively seeking employment (Ghazzawi & Accoumeh, 2014; Kaur 2015; Lievens & Harris, 2003).

On the other hand, from the candidate's perspective, SNWs also have important advantages. Among them, the immediacy of the process is especially valued (Nikolaou, 2014), as well as the possibility of searching and comparing different job offers and the ease of applying to them (Sylva & Mol, 2009), the speed of establishing contact with more job opportunities (Lievens & Harris, 2003), and the access to a greater flow of information about the position and the organization, which allows better and faster decisions to be made about which vacancies to apply for (Galanaki, 2002; Kashi & Zheng, 2013). Furthermore, as well as for

organizations, the SNW also means cost savings for candidates (Sylva & Mol, 2009). Additionally, SNWs allow users to control the way in which they present themselves, being able to choose what information, comments, photographs, etc., to offer in their profile in order to create a certain online image (Roulin, 2014).

A structural look at LinkedIn: LinkedIn Big Four

Of the professional SNWs, LinkedIn is probably the most used by recruitment and selection professionals (Aguado et al., 2016; Chiang & Suen, 2015). LinkedIn allows users to include information equivalent to their CV, combining personal and professional information (Chiang & Suen, 2015). Thus, from using LinkedIn, recruitment and selection professionals are able to extract representative information about the specific skills displayed by candidates. For example, by using professional experience, academic background, or volunteering tasks, professionals infer information about leadership skills; by observing the structure of the profile, planning skills are assessed; and, through the descriptions that the user includes in their profile about their professional experience, their communication skills are assessed (Roulin & Levashina, 2019). On the other hand, the information contained in the profile, which is managed by the user themselves, is also relevant for their positioning in recruitment processes. For example, recruiters pay more attention to profiles with more information and they tend to evaluate worse the profiles in which the information is incomplete (McCabe, 2017; Shahani-Denning et al., 2017).

Table 1 shows the organization of the LinkedIn profile in its 8 different aspects.

On this LinkedIn structure, Aguado et al. (2019) propose the LinkedIn Big Four (LKBF). Using the LKBF, the existing information in LinkedIn profiles is organized into four dimensions: 1) breadth of professional experience; 2) social capital; 3) interest in keeping training up to date; and 4) breadth of non-professional information (see Table 2). These dimensions are generalizable across any professional profile and have proven to be effective both in analyzing

TABLE 1
MAIN ITEMS IN THE LINKEDIN PROFILE

Appearance	Description			
Basic data	Personal photograph; name; number of contacts; professional title; location; contact information.			
Extract	Abstract with keywords (up to 2,000 characters)			
Activity	Posts, images, comments on other users' posts.			
Experience	Description of professional experience and achievements			
Studies	Accredited qualifications			
Certifications and courses	Certifications achieved and courses completed			
Volunteer Experience	Volunteer experiences and causes			
Skills and validations	User skills and validations made of each skill by other users			
Recommendations	Recommendations made and received			
Achievements	Publications; languages; projects; awards			
Interests	Follow-up of: relevant personalities; companies; groups; and universities.			



differences among ICT professionals based on their experience and in predicting their professional performance (Aguado et al., 2019).

Measuring LKBF dimensions using rubrics

The use of rubrics for assessment in educational and organizational contexts has a long tradition (e.g., Hung et al., 2013; Nadelson et al., 2015; Riebe & Jackson, 2014; Vaughan et al., 2019). In essence, a rubric is a guide that allows a score to be attributed to a certain dimension based on the fulfilment of a set of criteria (Wenzlaff et al., 1999). Thus, a rubric consists of a set of items that describe through different scaled levels the performance or execution of a given task or dimension (Unal et al., 2012).

In our work, four different rubrics were developed to measure the four dimensions specified in the LKBF (one for each dimension, see Appendix I). In creating them, we followed the standards in use (Wenzlaff et al., 1999) and specified both the aspects of the LinkedIn profile to be evaluated and the items to be used for this purpose. In establishing the different response categories, for each item the frequency distributions found by Aguado et al., (2019) in their original study conducted on 618 LinkedIn profiles in the ICT sector were analyzed. As a result of this exercise, the different items contemplated in the rubrics are rated on scales of 10 categories, five categories, or two categories (presence-absence). Due to these differences in the response scales, following the recommendations of Meade (2010), the total score in each rubric is obtained by adding the standardized scores of each item.

METHOD

Participants

The sample is composed of 105 candidates to fill vacancies in the ICT sector: 79% of the participants are men aged between 22 and 57 years (mean age 32.27). All participants were informed of the research objectives and their informed consent was required. It was

made clear that non-participation in the research was of no consequence to the selection process. No participant declined to participate in the study.

Instruments

LinkedIn profile of the participants

In order to keep the information of the profiles to be analyzed stable, they were printed in pdf format. A recruiter license from LinkedIn was used for this purpose.

Generic Competencies

The assessment of the participants' competencies was carried out with the PRISMA 4D test (Instituto de Ingeniería del Conocimiento, 2015). This test explores the eight competencies defined in the *Great Eight Competency Model* (Bartram, 2005) by analyzing (a) the behaviors of the individual being assessed, which are called skills; (b) the professional experience in positions that favor the development of each competency, which is termed experience; (c) the development of training actions that allow the assessed person to acquire skills related to each competency, which is called training; and (d) the attitudes of the assessed person towards each competency, which are termed preferences. Therefore, for each competency, four different scores are obtained through PRISMA 4D.

Rubrics for the assessment of the four dimensions of the LinkedIn profile

The four rubrics described above (see Appendix I) were used: breadth of professional experience (LKBF1), social capital (LKBF2), interest in keeping training up to date (LKBF3), and breadth of non-professional information (LKBF4).

In order to make an initial assessment of the quality of the content of the rubrics, following the customary recommendations (Curran et al., 2011; Roblyer & Wiencke, 2003), we worked in a Focus Group

TABLE 2 LINKEDIN BIG FOUR DIMENSIONS (AGUADO ET AL., 2019)

Description **Dimensions and Items** Breadth of Professional Experience. Number of different experiences reflected in This dimension expresses the breadth and depth of the professional experience. It allows the profile: number of different roles played in the professional activity: number of us to approach the different work experiences of the individual, as well as their duration companies in which professional activity has been carried out; number of lines dedicated and the roles performed. to developing professional experience; number of months that make up the candidate's work experience. **Social Capital**. Number of contacts the candidate has in his/her profile; number of skills Reflects the intensity of the participant's interaction with the community present in the validations; recommendations received by the candidate; number of companies the social network, as well as the degree of dynamism of this activity. candidate follows; number of groups the candidate follows. Interest in maintaining up-to-date knowledge. Number of university degrees Integrates information on formal and non-formal academic training. Reflects the interest (undergraduate or postgraduate); number of courses in addition to university education; in keeping updated regarding the relevant contents for the professional activity. number of universities the candidate follows. Extent of non-professional information. Number of categories filled out in the Signals the user's interest in presenting a complete LinkedIn profile, so that other users profile that show information about the candidate; number of languages the candidate can learn about their interests beyond the strictly professional sphere reports knowing (except Spanish); interests; charitable causes; existence of an "About" or "Extract" section



made up of 12 experts. These were chosen based on their experience in the use of LinkedIn for recruitment and selection tasks. The work of the Focus Group was aimed at assessing the degree to which the rubrics were easy to use, straightforward, and comprehensible, both in the aspects they contain and in the assessment requested from the evaluator. As a result of this process, modifications were made to the nomenclature of the LinkedIn sections and to the wording of some statements.

Procedure

The participants filled in the PRISMA 4D questionnaire in the framework of the different selection processes in which they were participating (the processes took place throughout 2019 and early 2020). After that, the first author of the paper collected the LinkedIn profiles of the participants and saved them as printable document format (pdf) documents.

The reliability of the rubrics was explored through (a) inter-rater reliability (the 12 experts who were part of the focus group); (b) test-retest reliability (through the assessments of 6 of the 12 experts, after a period of 6 weeks); and (c) internal consistency (through the scores that the 12 experts gave to the different items of the rubrics in the first assessment of the profiles). The validity of the scores obtained with the rubrics was examined based on the correlations between these scores and those obtained in the skills, experience, training, and preferences, relating to the 8 generic competencies.

RESULTS

Reliability Evidence

Table 3 shows the results obtained in relation to the reliability of the measures. The inter-rater reliability of the four measures was found to be higher than the recommended standards (Stellmack et al., 2009) in all dimensions except the third (LKBF3). The average Kappa index for the 12 recruiters was .86, .94, .65, and .83 respectively for each of the four measures. The results for temporal reliability were also found to be adequate for all measures. The Pearson correlation indices obtained for each of the four dimensions assessed were 1, 1, .97, and .99 respectively. Finally, regarding internal consistency, values above the usual standard (> .70) were obtained for LKBF1 (.89), LKBF2 (.72), and LKBF4 (.70), but for LKBF3 (.40) this standard was not reached.

Validity Evidence

Table 4 shows the correlations between the scores obtained in the rubrics and those obtained in the four items of each competency: skills, training, experience and preferences.

A first analysis of the results shows that the scores obtained in the rubrics appear to be useful for inferring both the degree to which professionals have developed their competencies based on professional experience and the degree to which they are effective in the competencies through their behavior. The score on rubric LKBF1 (breadth of professional experience) correlates significantly with experience in the competencies Leading-Deciding (r = .30; p < .05) and Analyzing-Using Knowledge (r = .30, p = .05); the score on rubric LKBF2 (social capital) correlates significantly with experience in all 8 competencies: Leading-Deciding (r = .41, p < .05), Cooperating-Respecting (r = .27, p < .05), Communicating-Relating (r= 46, p < .001), Analyzing-Using Knowledge (r = .46, p < .001), Learning and Innovation (r = .40, p < .05), Planning and Organizing (r = .30, p < .05), Adapting and Coping (r = .30, p < .05), and Achievement and Entrepreneurship (r = .41, p < .05). The score on LKBF3 (interest in keeping training current), correlates significantly with experience in the Communicating-Relating competency (r = .37, p < .05). Finally, the score on rubric LKBF4 (breadth of nonprofessional information) shows significant correlations in the experience component with 6 of the 8 competencies: Cooperating-Respecting (r = .31, p < .05), Communicating-Relating (r = .39, p < .05) .05), Analyzing-Using Knowledge (r = .29, p < .05), Planning and Organizing (r = .39, p < .05), Adapting and Coping (r = .32, p < .05), and Achievement and Entrepreneurship (r = .32, p < .05).

When examining the correlations with the skills we observe that the scores obtained in LKBF1 and LKBF3 do not correlate significantly with the behavior related to the competencies. On the other hand, the score on LKBF2 shows significant correlations with Leading-Deciding (r= .32, p< .05), Communicating-Relating (r= .40, p< .05), Learning and Innovation (r= .40, p< .05), and Achievement and Entrepreneurship (r= .40, p< .05). Finally, the LKBF4 score correlates significantly at the skill level with Learning and Innovation (r= .29, p< .05) and with Achievement and Entrepreneurship (r= .33, p< .05).

On the other hand, the results show that there is no significant correlation between the rubric scores and the "training" aspect of the competencies. Similarly, the rubric scores only show two significant

TABLE 3
DESCRIPTIVE STATISTICS AND RELIABILITY INDICATORS OF THE RUBRICS

	Mean	SD	Inter-rater reliability	Temporal Reliability	Internal Consistency
LKBF1: Breadth of Professional Experience	34	4.50	.86 (.95)	1	.89
LKBF2: Social Capital	15	3.40	.94 (.99)	1	.72
LKBF3: Interest in Up-to-date Training	23	1.69	.65 (.84)	.97	.40
LKBF4: Breadth of Non-Professional Information	21	3	.83 (.93)	.99	.70

Note: mean values are normalized; SD, standard deviation; Inter-rater reliability (Cohen's Kappa, weighted kappa in parentheses). Temporal Reliability (Pearson's Correlation); Internal Consistency (Cronbach's Alpha).



relationships with the participants' "preferences" regarding the competencies: for the attitudes related to achievement and entrepreneurship, and for those related to communication and relationship, in both cases with the score obtained in LKBF2 (Social Capital) (r=.29; p < .05) and (r=.32; p < .05) respectively.

DISCUSSION

In this paper the initial psychometric properties have been shown of four rubrics designed to assess LinkedIn profiles in light of the dimensions proposed by Aguado et al. (2019) in the LinkedIn Big Four model. The results show a good reliability of the measures obtained by the rubrics both in terms of inter-rater reliability and temporal reliability. The reliability expressed based on Cronbach's

Alpha coefficient was adequate for three of the measures obtained with the rubrics, but not for the rubric designed for the measurement of LKBF3 (interest in keeping training up to date). Likewise, our results provide initial evidence of the validity of the rubrics for reporting candidates' generic competencies. The measurement of the LinkedIn Big Four using the rubrics shows a strong relationship with the experiential and behavioral components of the competencies, but not with the training or attitudinal components.

More specifically, the social capital score (LKBF2) shows a significant and positive relationship with the experience components in all competencies, indicating that participants' development of job positions that allow them to develop their competencies correlates with the development of their social capital as expressed on LinkedIn.

TABLE 4
CORRELATIONS BETWEEN RUBRIC SCORES AND COMPETENCY SCORES

	LKBF1: Breadth of Professional Experience	LKBF2: Social Capital	LKBF3: Interest in Up-to-date Training	LKBF4: Breadth of Non-Professional Information
Leading-Deciding				
Training	.06	.23	.02	.14
Attitudes	.18	.18	07	.12
Experience	.30*	.41*	.17	.23
Skills	.13	.32*	06	.19
Cooperating-Respecting				
Training	01	.15	.03	.18
Attitudes	.07	.13	06	.09
Experience	.02	.27*	.18	.31*
Skills	.14	.19	.03	.25
Communicating Relating				
Training	.07	.16	.13	.17
Attitudes	.03	.32*	.10	.16
Experience	.25	.46**	.37*	.39*
Skills	.18	.40*	.16	.24
Analyzing-Using knowledge				
Training	.08	.15	.03	.07
Attitudes	.09	.14	.01	.13
Experience	.30*	.46**	.23	.29*
Skills	.19	.22	.08	.25
earning and Innovation				
Training	.06	.22	.05	.07
Attitudes	.06	.14	.03	.04
Experience	.22	.40*	.11	.23
Skills	.24	.40*	.03	.29*
Planning and Organization	 .			
Training	.17	.25	.12	.14
Attitudes	02	.07	.01	.04
Experience	.27*	.30*	.14	.39*
Skills	.20	.20	07	.17
Adaptation and Coping	.20	.20	,	•••
Training	.12	.23	08	.00
Attitudes	03	.15	03	.06
Experience	.23	.30*	.07	.32*
Skills	.12	.24	03	.22
Achievement and entrepreneu		· - ·	.00	
Training	.03	.16	.01	.03
Attitudes	09	.29*	01	.01
Experience	.24	.41*	.19	.32*
Skills	.16	.40*	.08	.33*
JKIII3	.10	.40	.00	.55



Similarly, the relationship between LKBF2 and the behaviors developed by the participants is strong and positive for certain competencies. Thus, it is shown how the greater breadth of the participants' social capital also seems to indicate a greater development of their Leadership and Decision Making, Cooperation and Relationship with Others, Knowledge Analysis and Utilization, Learning and Innovation, and Achievement and Entrepreneurship behaviors. On the other hand, the dimension of breadth of professional experience (LKBF1) reflects well the experience acquired by the participants in job positions that allowed them to develop the competencies of Leadership and Decision Making, Analysis and Use of Knowledge, and Planning and Organization. On the other hand, the dimension related to the breadth of non-professional information represented on LinkedIn (LKBF4) seems to reflect the experience acquired by the participants in job positions that favor the development of Cooperation and Respect, Communication and Relationship with others, Analysis and Use of knowledge, Planning and Organization, Adaptation, and Achievement Entrepreneurship.

These findings seem to be in line with the results of previous studies where evidence is provided on the relationship between work experience and social capital and personal competencies related to strategic thinking, entrepreneurial thinking, managing people and leadership, decision making, and problem solving (Dragoni et al., 2011; Gabrielsson & Politis, 2012; Krueger, 2007; Lord & Hall, 2005; Mumford et al., 2000).

Finally, the measure of the LKBF3 dimension (interest in keeping knowledge up to date) does not have the same capacity as the other three to reflect the competency aspects assessed. In summary, the results seem to show that the rubrics presented can be a useful instrument to explore the development of competencies that users of LinkedIn profiles have gained through experience.

This has several practical implications for the recruitment and selection professional. The first is that they can use a standard tool to carry out their approach to candidates' LinkedIn profiles. This standardization allows professionals to make comparisons among the different professional profiles assessed. The second implication has to do with the possibility that professionals, using the measures provided by the rubrics, can make inferences about candidates' competencies based on the results presented.

Our study is not without some limitations. In particular, we only consider the structural information present in the profile, and in no case the specific content presented in the profile. Considering this information would provide additional information that should also be connected to the competencies acquired by the users of the profiles. In this sense, further studies could investigate the relationship between the specific content reported on Linkedln and the competencies of the users.

CONCLUSIONS

The results presented in this study provide initial evidence of the quality of the rubrics developed for measuring the four dimensions of the LinkedIn Big Four model. Professionals and academics have in these rubrics a standard tool to explore these dimensions and use the

measures obtained with them for the different decision-making processes that occur in the applied field of evaluating people in organizational contexts.

Moreover, it seems clear that SNWs are here to stay and that psychology professionals, in the development of their evaluative and/or diagnostic tasks, have in SNWs an important source of information about the behavior of individuals. Our study shows that the way in which LinkedIn users work with their profile can be understood as an expression of their individual competencies. The way of approaching the LinkedIn profile through a set of standardized measures through the rubrics could well be transferred to the assessment of the information present in other social networks, with different evaluative objectives other than personnel selection. The behavior of individuals in social networks is, in short, a particular expression of the individual differences that characterize each person. And, from this point of view, the psychologist has a very valuable resource in these networks. Their use, in any case, must be subject to at least two general principles: (a) use in accordance with social and legal conventions related to the protection of privacy; and (b) exploration based on instruments that allow valid and reliable information to be obtained with respect to the professional's objectives.

CONFLICT OF INTEREST

There is no conflict of interest.

REFERENCES

Aguado, D., Andrés, J. C., García-Izquierdo, A. L., & Rodríguez, J. (2019). LinkedIn "Big Four": Job Performance Validation in the ICT Sector. Journal of Work and Organizational Psychology, 35(2), 53-64. https://doi.org/10.5093/jwop2019a7

Aguado, D., Rico, R., Rubio, V. J., & Fernández, L. (2016). Applicant reactions to social network web use in personnel selection and assessment. Journal of Work and Organizational Psychology, 32(3), 183-190. https://doi.org/10.1016/j.rpto.2016.09.001

Back, M. D., Stopfer, J. M., Vazire, S., Gaddis, S., Schmukle, S. C., Egloff, B., & Gosling, S. D. (2010). Facebook profiles reflect actual personality, not self-idealization. *Psychological Science*, 21(3), 372-374. https://doi.org/10.1177/0956797609360756

Bartram, D. (2005). The Great Eight competencies: A criterion-centric approach to validation. *Journal of Applied Psychology*, 90(6), 1185 - 1203. https://doi.org/10.1037/0021-9010.90.6.1185

Black, S. L., & Johnson, A. F. (2012). Employers' use of social networking sites in the selection process. The Journal of Social Media in Society, 1(1), 7-28.

Boyd, D., & Ellison N. (2007). Social network sites: Definition, history, and scholarship. Journal of Computer-Mediated Communication, 13(1), 210-230. https://doi.org/10.1111/j.1083-6101.2007.00393.x

Chamorro-Premuzic, T., & Steinmetz, C. (2013). Technology and psychology are reshaping the search for the best employees. *Scientific American Mind*, 1(1), 43-47. https://fermion.com.au/wp-content/uploads/The-Perfect-Hire-1.pdf

Chapman, D. S., & Mayers, D. (2015). Recruitment processes and



- organizational attraction. In *Employee Recruitment, Selection, and Assessment* (2nd ed., pp. 39-54). Psychology Press. https://doi.org/10.4324/9781315742175
- Chiang, J. K. H., & Suen, H. Y. (2015). Self-presentation and hiring recommendations in online communities: Lessons from LinkedIn. Computers in Human Behavior, 48, 516-524. http://dx.doi.org/10.1016/j.chb.2015.02.017
- Curran, V., Hollett, A., Casimiro, L. M., Mccarthy, P., Banfield, V., Hall, P., Lackie, K., Oandasan, I., Simmons, B. & Wagner, S. (2011). Development and validation of the interprofessional collaborator assessment rubric (ICAR). *Journal of Interprofessional Care*, 25(5), 339-344. http://dx.doi.org/10.3109/13561820.2011.589542
- Dawson, P. (2017). Assessment rubrics: towards clearer and more replicable design, research and practice. Assessment & Evaluation in Higher Education, 42(3), 347-360. http://dx.doi.org/10.1080/02602938.2015.1111294
- Derous, E., & De Fruyt, F. (2016). Developments in recruitment and selection research. *International Journal of Selection and Assessment*, 24(1), 1-3. https://doi.org/10.1111/ijsa.12123
- Dragoni, L., Oh, I. S., Vankatwyk, P., & Tesluk, P. E. (2011). Developing executive leaders: The relative contribution of cognitive ability, personality, and the accumulation of work experience in predicting strategic thinking competency. Personnel Psychology, 64(4), 829-864. http://dx.doi.org/10.1111/j.1744-6570.2011.01229.x
- Frasca, K. J., & Edwards, M. R. (2017). Web-based corporate, social and video recruitment media: Effects of media richness and source credibility on organizational attraction. *International Journal of Selection and Assessment, 25*(2), 125-137. http://dx.doi.org/10.1111/ijsa.12165
- Gabrielsson, J., & Politis, D. (2012). Work experience and the generation of new business ideas among entrepreneurs: An integrated learning framework. International Journal of Entrepreneurial Behavior & Research 18(1), 48. http://dx.doi.org/10.1108/13552551211201376
- Galanaki, E. (2002). The decision to recruit online: A descriptive study. Career Development International, 7(4), 243-251. https://doi.org/10.1108/13620430210431325
- García-Izquierdo, A. L., Ramos-Villagrasa, P. J., & Castaño, A. M. (2015). e-Recruitment, gender discrimination, and organizational results of listed companies on the Spanish Stock Exchange. Revista de Psicología del Trabajo y de las Organizaciones, 31(3), 155-164. https://dx.doi.org/10.1016/j.rpto.2015.06.003
- García-Izquierdo, A. L., Aguado, D., & Ponsoda-Gil, V. (2019). New insights on technology and assessment: Introduction to JWOP special issue. Revista de Psicología del Trabajo y de las Organizaciones, 35(2), 49-52. https://doi.org/10.5093/jwop2019a6
- Ghazzawi, K., & Accoumeh, A. (2014). Critical success factors of the e-recruitment system. Journal of Human Resources Management and Labor Studies, 2(2), 159-170.
- Hung, H. T., Chiu, Y. C. J., & Yeh, H. C. (2013). Multimodal assessment of and for learning: A theory-driven design rubric. British Journal of Educational Technology, 44(3), 400-409. http://dx.doi.org/10.1111/j.1467-8535.2012.01337.x

- Instituto de Ingeniería del Conocimiento (2015). PRISMA 4D. Retrieved from https://www.iic.uam.es/soluciones/recursos-humanos/evaluacion-por-perfiles-profesionales/
- Kashi, K., & Zheng, C. (2013). Extending Technology Acceptance Model to the e-recruitment context in Iran. *International Journal of Selection and Assessment*, 21(1), 121-129. https://doi.org/10.1111/ijsa.12022
- Kaur, P. (2015). E-recruitment: A conceptual study. International Journal of Applied Research, 1(8), 78-82.
- Kluemper, D. H., Rosen, P. A., & Mossholder, K. W. (2012). Social networking websites, personality ratings, and the organizational context: More than meets the eye? Journal of Applied Social Psychology, 42(1), 1143-1172. https://doi.org/10.1111/j.1559-1816.2011.00881.x
- Krueger Jr, N. F. (2007). What lies beneath? The experiential essence of entrepreneurial thinking. *Entrepreneurship Theory and Practice*, 31(1), 123-138. http://dx.doi.org/10.1111/j.1540-6520.2007.00166.x
- Lievens, F., & Harris, M. M. (2003). Research on Internet recruiting and testing: Current status and future directions. In C. Cooper & I.
 T. Robertson (Eds.), International review of industrial and organizational psychology (1st ed., 131-166). Wiley Online Library. https://doi.org/10.1002/0470013346.ch4
- Lord, R. G., & Hall, R. J. (2005). Identity, deep structure and the development of leadership skill. The Leadership Quarterly, 16(4), 591-615. http://dx.doi.org/10.1016/j.leaqua.2005.06.003
- McCabe, M. B. (2017). Social media marketing strategies for career advancement: An analysis of LinkedIn. *Journal of Business and Behavioral Sciences*, 29(1), 85 149.
- Meade, A. W. (2010). A taxonomy of effect size measures for the differential functioning of items and scales. *Journal of Applied Psychology*, 95(4), 728. http://dx.doi.org/10.1037/a0018966
- Mumford, M. D., Marks, M. A., Connelly, M. S., Zaccaro, S. J., & Reiter-Palmon, R. (2000). Development of leadership skills: Experience and timing. The Leadership Quarterly, 11(1), 87-114. https://doi.org/10.1016/S1048-9843(99)00044-2
- Nadelson, L. S., Pfiester, J., Callahan, J., & Pyke, P. (2015). Who is doing the engineering, the student or the teacher? The development and use of a rubric to categorize level of design for the elementary classroom. *Journal of Technology Education*, 26(2), 22-45. http://dx.doi.org/10.21061/jte.v26i2.a.2
- Nikolaou, I. (2014). Social networking web sites in job search and employee recruitment. *International Journal of Selection and Assessment*, 22(2), 179-189. https://doi.org/10.1111/ijsa.12067
- Ötting, S. K., & Maier, G. W. (2018). The importance of procedural justice in human–machine interactions: Intelligent systems as new decision agents in organizations. Computers in Human Behavior, 89, 27-39. https://doi.org/10.1016/j.chb.2018.07.022
- Riebe, L., & Jackson, D. (2014). The use of rubrics in benchmarking and assessing employability skills. *Journal of Management Education*, 38(3), 319-344. http://dx.doi.org/10.1177/1052562913511437
- Roblyer, M. D., & Wiencke, W. R. (2003). Design and use of a rubric to assess and encourage interactive qualities in distance courses. The American Journal of Distance Education, 17(2), 77-



- 98. http://dx.doi.org/10.1207/S15389286AJDE1702_2
- Roulin, N. (2014). The influence of employers' use of social networking websites in selection, online self-promotion, and personality on the likelihood of faux pas postings. *International Journal of Selection and Assessment*, 22(1), 80-87. https://doi.org/10.1111/ijsa.12058
- Roulin, N., & Bangerter, A. (2013). Social networking websites in personnel selection. *Journal of Personnel Psychology* 12(1), 143-151. https://doi.org/10.1027/1866-5888/a000094
- Roulin, N., & Levashina, J. (2019). LinkedIn as a new selection method: Psychometric properties and assessment approach. Personnel Psychology, 72(2), 187-211. https://doi.org/10.1111/peps.12296
- Ryan, A. M., & Derous, E. (2016). Highlighting tensions in recruitment and selection research and practice. *International Journal of Selection and Assessment*, 24(1), 54-62.
- Ryan, A. M., & Derous, E. (2019). The unrealized potential of technology in selection assessment. *Journal of Work and Organizational Psychology*, 35(2), 85-92. https://doi.org/10.5093/jwop2019a10
- Seiter, J. S., & Hatch, S. (2005). Effect of tattoos on perceptions of credibility and attractiveness. Psychological Reports, 96(3_suppl), 1113-1120. http://dx.doi.org/10.2466/pr0.96.3c.1113-1120
- Shahani-Denning, C., Patel, V., & Zide, J. (2017). Recruiter and applicant use of Linkedin: A spotlight on India. The Psychologist-Manager Journal, 20(2), 90 –105. https://doi.org/10.1037/mgr0000052
- Shannon, M. L., & Stark, C. P. (2003). The influence of physical appearance on personnel selection. Social Behavior and Personality: An International Journal, 31(6), 613-623. https://doi.org/10.2224/sbp.2003.31.6.613
- Stellmack, M. A., Konheim-Kalkstein, Y. L., Manor, J. E., Massey, A. R., & Schmitz, J. A. P. (2009). An assessment of reliability

- and validity of a rubric for grading APA-style introductions. Teaching of Psychology, 36(2), 102-107. http://dx.doi.org/10.1080/00986280902739776
- Sylva, H., & Mol, S. T. (2009). E-Recruitment: A study into applicant perceptions of an online application system. *International Journal of Selection and Assessment*, 17(3), 311-323. https://doi.org/10.1111/j.1468-2389.2009.00473.x
- Unal, Z., Bodur, Y., & Unal, A. (2012). A standardized rubric for evaluating Webquest design: reliability analysis of ZUNAL Webquest design rubric. Journal of Information Technology Education: Research, 11(1), 169-183. http://dx.doi.org/10.28945/1688
- Van Iddekinge, C. H., Lanivich, S. E., Roth, P. L., & Junco, E. (2016). Social media for selection? Validity and adverse impact potential of a Facebook-based assessment. *Journal of Management*, 42(7), 1811-1835. http://dx.doi.org/10.1177/0149206313515524
- Vaughan, B., Yoxall, J., & Grace, S. (2019). Peer assessment of teamwork in group projects: Evaluation of a rubric. Issues in Educational Research, 29(3), 961-978.
- Villeda, M., McCamey, R., Essien, E., & Amadi, C. (2019). Use of social networking sites for recruiting and selecting in the hiring process. *International Business Research*, 12(3), 66-78. http://dx.doi.org/10.5539/ibr.v12n3p66
- Wenzlaff, T. L., Fager, J. J., & Coleman, M. J. (1999). What is a rubric? Do practitioners and the literature agree? Contemporary Education, 70(4), 41.
- Woods, S. A., Ahmed, S., Nikolaou, I., Costa, A. C., & Anderson, N. R. (2020). Personnel selection in the digital age: A review of validity and applicant reactions, and future research challenges. European Journal of Work and Organizational Psychology, 29(1), 64-77. https://doi.org/10.1080/1359432X.2019.1681401

Appendix I: Rubrics for the collection of information contained in LinkedIn profiles

Rubric 1: Breadth of Professional Experience

Item 1: number of different experiences reflected in the profile (count the different experiences reflected by the candidate in his/her profile). 1 (score = 1); 2 (score = 2); 3 (score = 3): 4 to 5 (score = 4); > 5 (score = 5)

Item 2: number of different roles played in the professional activity (count the different roles in terms of position, category, etc.). 1 (score = 1); 2 (score = 2); 3 (score = 3): 4 to 5 (score = 4); > 5 (score = 5)

Item 3: number of companies in which the professional activity was carried out (count the companies in which professional activity was carried out). 1 (score = 1); 2 (score = 2); 3 (score = 3): 4 to 5 (score = 4); > 5 (score = 5)

Item 4: number of lines devoted to describing the professional experience (count the number of lines over which the professional experience section extends (lines are counted in the format that appears in the profile). O to 3 (score = 1); 4 to 7 (score = 2); 8 to 10 (score = 3); 11 to 13 (score = 4); 14 to 18 (score = 5); 19 to 24 (score = 6); 25 to 32 (score = 7); 33 to 42 (score = 8); 43 to 62 (score = 9); and > 62 (score = 10).

Item 5: total number of months of work experience of the candidate (add in months the duration of the different professional activities indicated in the profile). From 0 to 49 (score = 1); from 50 to 79 (score = 2); from 80 to 102 (score = 3): from 103 to 116 (score = 4); from 117 to 131 (score = 5); from 132 to 148 (score = 6); from 149 to 179 (score = 7); from 180 to 208 (score = 8); from 209 to 250 (score = 9); and > 250 (score = 10).



Appendix I: Rubrics for the collection of information contained in LinkedIn profiles (Continuation)

Rubric 2: Social Capital

Item 1: number of contacts the candidate has in his/her profile. 0 to 23 (score = 1); 24 to 49 (score = 2); 50 to 74 (score = 3); 75 to 91 (score = 4); 92 to 112 (score = 5); 113 to 138 (score = 6); 139 to 169 (score = 7); 170 to 213 (score = 8); 214 to 311 (score = 9); > 312 (score = 10)

Item 2: number of skills validations (sum of the number of skills validated in total). 0 (score = 1); 1 to 17 (score = 2); 18 to 44 (score = 3): 45 to 89 (score = 4); 89 (score = 5)

Item 3: recommendations received by the candidate (state whether the candidate has received any recommendations). No recommendations received (score = 0); yes, recommendations received (score = 1)

Item 4: number of companies followed by the candidate (count the companies followed by the candidate in the interest section). From 0 to 2 (score = 1); 3 (score = 2); from 4 to 5 (score = 3): from 6 to 12 (score = 4); and > 12 (score = 5)

Item 5: number of groups followed by the candidate (count the groups followed by the candidate in the interest section) 0 (score = 1); 1 (score = 2); 2 to 3 (score = 3): 4 to 7 (score = 4); and > 7 (score = 5)

Item 6: number of news items followed by the candidate (state whether the candidate follows any news item or not in the Interests section). Does not follow any news (score = 0); follows some news (score = 1).

Rubric 3: Interest in Keeping Training Up to Date

Item 1: number of university degrees (undergraduate or postgraduate) reported by the candidate (count the different university degrees reported by the candidate in his/her profile). O (score = 1); 1 (score = 2); 2 (score = 3): 3 (score = 4); > 3 (score = 5)

Item 2: number of additional courses to the university training mentioned by the candidate (state whether the candidate has taken any additional course to the university training). Does not mention any additional course (score = 0); mentions an additional course or courses (score = 1).

Item 3: number of universities the candidate follows (state whether the candidate follows any university). Does not follow any university (score = 0); follows a university or universities (score = 1).

Rubric 4: Breadth of Non-Professional Information

Item 1: number of categories filled in in the profile that show information about the candidate (count the categories that the candidate has filled in). From 0 to 4 (score = 1); from 5 to 6 (score = 2); 7 (score = 3): 8 (score = 4); and > 8 (score = 5)

Item 2: number of languages the candidate claims to know, except Spanish (count the languages mentioned, except Spanish). 0 (score = 1); 1 (score = 2); 2 (score = 3): 3 (score = 4); and > 3 (score = 5).

Item 3: interests mentioned by the candidate (check whether the candidate has mentioned interests or not). Does not mention any interest in his/her profile (score = 0); mentions an interest or interests in his/her profile (score = 1)

Item 4: charitable causes mentioned by the candidate (check whether the candidate has mentioned charitable causes or not). Does not mention any charitable cause in his/her profile (score = 0); mentions some charitable cause(s) in his/her profile (score = 1)

Item 5: Existence of the "About" or "Extract" section (check whether the candidate has filled in the "About" or "Extract" section). Has not filled in the "About" or "Extract" section (score = 0); has filled in the "About" or "Extract" section (score = 1).