

**The Luxembourg Workplace Mobbing Scale: Psychometric properties of a short
instrument in three different languages**

Georges Steffgen¹, Philipp Sischka¹, Alexander F. Schmidt¹, Diane Kohl¹, & Christian Happ²

¹ University of Luxembourg, Institute for Health and Behaviour

² International School of Management, Psychology & Management

Corresponding author:

Georges Steffgen,

University of Luxembourg,

Maison des Sciences Humaines,

11, Porte des Sciences,

Esch-sur-Alzette L-4365,

LUXEMBOURG,

Email: georges.steffgen@uni.lu,

Tel.: (+352) 46 66 44 6644,

Fax: (+352) 46 66 44 39782

**This manuscript has been accepted for publication in
European Journal of Psychological Assessment (5/2016)**

Luxembourg Workplace Mobbing Scale

Abstract

Workplace mobbing is a serious phenomenon that is costly to organizations and has various negative consequences of those targeted. The main purpose of the present study was to develop and validate a new short scale of workplace mobbing experience in three different language versions (German, French, Luxembourgish). Data were collected via computer-assisted telephone interviews in a sample of 1500 employees working in Luxembourg (aged from 17 to 64; 52.7 % male) that was representative of the commuter structure of Luxembourg's workforce. Confirmatory factor analysis showed that the newly developed 5-item scale has good psychometric properties and partial scalar measurement invariance for the three different language versions. Internal consistency was satisfactory ($\alpha = .73$). Correlations and hierarchical regression analysis with different working condition scales and psychological health scales confirm the construct validity of the new questionnaire. Although the present findings are preliminary in nature, they nevertheless support the reliability and validity of the scale and its use in psychological research.

Keywords: Workplace mobbing, scale development, well-being, working conditions, measurement invariance

Luxembourg Workplace Mobbing Scale

Many definitions of workplace mobbing as well as different terms for this phenomenon (e.g., bullying, harassment; Saunders, Huynh, & Goodman-Delahunty, 2007) exist in the research literature. Workplace mobbing can include personal attacks, social ostracism, hostile interactions or communications, and physical violence or threats, respectively (Lutgen-Sandvik, 2006). Most workplace mobbing definitions include notions of a power imbalance between the perpetrator and the victim as well as the frequency and length of the mobbing incidences (Vartia, 2003). Our use of the term workplace mobbing will refer to the following situation: An employee experiences workplace mobbing, when (s)he is being subjected to a series of negative and/or hostile acts or other behaviors that are experienced as annoying and/or oppressive at the workplace (Agervold & Mikkelsen, 2004). This definition includes workplace abuse from individual to individual as well as from group to individual.

Workplace mobbing is a serious phenomenon that is costly to organisations and has various negative consequences for the targeted employees. For instance, prolonged exposure to mobbing experiences at the workplace has been shown to decrease the overall job satisfaction (Nielsen & Einarsen, 2012) as well as life satisfaction (Bowling & Beehr, 2006). Moreover, it does not just have negative consequences for employees' health and well-being, but also for the company. Mobbing victims tend to have more sickness absence due to their mobbing related health issues (Nielsen & Einarsen, 2012). Similarly, the strain, fatigue, and reduced satisfaction with work resulting from prolonged exposure to mobbing can lead to a reduction of commitment as well as increased intention to leave or actual turnover (Herscovis & Barling, 2010).

Mobbing Questionnaires

Two approaches are commonly used in survey research to assess mobbing (Nielsen, Notelaers, & Einarsen, 2011). First, respondents indicate how often they have been subjected to mobbing based on a given definition (*self-labelling method*). Second, the respondents are

Luxembourg Workplace Mobbing Scale

asked how often they experienced certain behaviors that researchers define as mobbing behavior (*behavioral experience method*). Sometimes a combination of the two methods is used. The two approaches lead to different estimates in the prevalence of workplace mobbing (Nielsen, Matthiesen, & Einarsen, 2010). However, studies showed that a clear overlap exists between self-reported mobbing and the indication of experiences of negative acts (e.g., Agervold, 2007).

Numerous self-report inventories and scales measuring exposure to mobbing have been developed. Two of the most known and most widespread workplace mobbing questionnaires utilizing the behavioral experience method are the Leymann Inventory of Psychological Terror (LIPT; Leymann, 1996a, 1996b) and the Negative Acts Questionnaire-Revised (NAQ-R; Einarsen, Hoel, & Notelaers 2009). The LIPT consists of a list of 45 negative acts asking whether employees have experienced them within the last 12 months. These negative acts are clustered in five categories: attacks on communication, on social relations, on the work performance, on an employees' reputation, and on the physical and psychological health of an employee (Leymann, 1996a). Garthus-Niegel and colleagues (2015) developed a short scale with five items based on the LIPT. They selected items with the aim to maximize sensitivity. The NAQ-R consists of a list of 22 negative acts relating to workplace mobbing. Einarsen, Hoel, and Notelaers (2009) showed a three-factor solution for the NAQ-R: personal bullying, work-related bullying, and physically intimidating forms of bullying. Simons, Stark, and DeMarco (2011) developed a four-item scale from the NAQ-R-US, a slightly modified version from the original NAQ-R. They extracted their items looking at the tradeoff between maximizing internal consistency, the amount of criteria variance explained (e.g., job satisfaction), and parsimony of the item set.

Importantly, existing scales have some weaknesses that may be pointed out: Both the LIPT and the NAQ-R (and most of their modified versions) are (still) rather long for practical

Luxembourg Workplace Mobbing Scale

issues. The four-item scale from Simons, Stark, and DeMarco (2011) is very short but has been tested only in a selective sample of nurses in the US showing limited generalizability. Moreover, most workplace mobbing questionnaires contain behaviors that might constitute a necessary part of work (e.g., workload, being transferred). These working-related necessities might not always be related to mobbing; in certain occupations, having to respect tight deadlines is simply part of the job, and employees might be transferred due to restructuring of the company as a consequence of financial hardship (Agervold, 2007). Additionally, there are other scales that only have been tested in one or a few studies, a single language, or in specific cultural contexts. Finally, most studies are lacking profound tests of psychometric properties (Einarsen, Hoel, & Notelaers, 2009). Most importantly, none of these scales were tested for measurement invariance across different language versions that is a required condition to allow for comparisons across different language versions (Vandenberg & Lance, 2000).

To close this gap in the literature, we sought to develop a short scale that taps into similar criteria while at the same time avoiding to include behaviors into its items that might be unspecific to workplace mobbing. As far as we know, no brief workplace mobbing scale with satisfying psychometric properties across different language versions in a general working population exists. Hence, the main purpose of the present study was to validate the newly developed Luxembourg Workplace Mobbing Scale (LWMS) and test it for measurement invariance between three different language versions.

Method

Data Collection

The LWMS was evaluated as part of a study on quality of work and its effects on health and well-being in Luxembourg. This study was implemented by the University of Luxembourg in collaboration with the Luxembourg Chamber of Labor (a council that aims to defend the employees' rights with regards to legislation) in 2014 and entailed Computer

Luxembourg Workplace Mobbing Scale

Assisted Telephone Interviews (CATI) with 1532 employees from Luxembourg's working population. The survey was conducted according to the Declaration of Helsinki (i.e., voluntary participation, participants were free to withdraw their consent at any time throughout the interviews without negative consequences for them). The LWMS exists in four language versions: Luxembourgish, French, German, and Portuguese. For the translation of the questionnaire two translators were used. To check for correct translation, the questionnaire was back-translated using different translators, subsequently.

Participants

The sample consisted of 1532 employees working in Luxembourg who were randomly chosen from the working population. Due to incomplete data 1.7% ($n = 26$) of participants had to be excluded from the analyses. Only 0.4% ($n = 6$) of participants used the Portuguese version, thus it was excluded as well. Therefore, the effective sample consisted of 1500 employees (47.3% females, $n = 708$). In the effective sample, 13.8% ($n = 207$) answered the Luxembourgish version, 47.6% ($n = 714$) the French, and 38.6% ($n = 579$) the German questionnaire. Included were Luxembourg residents (59.7%, $n = 895$) and commuters from Belgium (9.9%, $n = 148$), France (20.1%, $n = 302$), and Germany (10.3%; $n = 155$), who received wages for work with at least 10 hours of work per week. People doing unpaid voluntary work or internships were excluded from the sample. The sample is representative in terms of workers' state of residency in Luxembourg (Inspection générale de la sécurité social Luxembourg, 2014; $\chi^2(3) = 5.631$, $p = 0.131$). The interviewees' age ranged from 17 to 64 years ($M = 44.0$, $SD = 9.4$). The majority of participants had an apprenticeship (34.3%, $n = 511$) or an academic degree (37.5%, $n = 558$). Most participants worked in commercial or business-related service professions (34.9%, $n = 495$) followed by production-oriented professions (29.5%, $n = 418$), personal service professions (25.2%, $n = 357$), other services (7.5%, $n = 107$) and IT- and natural science services (3.0%, $n = 42$).

Luxembourg Workplace Mobbing Scale

Measures

Luxembourg Workplace Mobbing Scale (LWMS). In a first step, the workplace mobbing literature was screened for relevant workplace mobbing behaviors. During this literature review, priority was given to those mobbing behaviors that are typically found to be particularly detrimental. Accordingly, studies found that criticism and devaluation concerning an employee's work have the worst effect on psychological health, while ignoring an employee and assigning pointless tasks to someone have the worst effects on self-esteem (e.g., Vartia, 2001, 2003). Thus, four items were developed based on the LIPT that cover these forms of mobbing behavior. The authors chose one item out of three of the five categories of mobbing acts listed by Leymann (1996b) ("criticized", "ridiculed", "absurd duties"). Another item was self-formulated that covers the isolation-category of mobbing listed by Leymann ("ignored"). The last item was chosen because of its high sensitivity ("conflicts"). In light of the recent debate on the usefulness of frequency and duration of mobbing behaviors (Agervold, 2007), it was also decided against including time limitations in the item set (such as 'in the last 12 months').

The LWMS is comprised by five items that are presented in the Appendix. The response scale is a 5-point-Likert scale ranging from 1 (= *Never*) to 5 (= *Almost at all times*). Scores on the LWMS were calculated as the total mean across the items, thus ranging from 1 to 5, with higher scores reflecting a higher level of mobbing exposure. The reliability of the scale for the total sample is satisfactory ($\alpha = .73$). This was confirmed across the different language versions (Luxembourgish $\alpha = .76$, French $\alpha = .71$, German $\alpha = .73$).

All following scales have been ad-hoc designed for validation purposes. Unless specified, a 5-point Likert response format ranging from 1 (= *To a very small extent*) to 5 (= *To a very high extent*) was used.

Luxembourg Workplace Mobbing Scale

Work Satisfaction. The four item Work Satisfaction Scale (total $\alpha = .82$; language versions α ranged from .79 to .83) assesses global judgment of work satisfaction. It evaluates an employee's satisfaction with important work characteristics, such as work climate and work conditions. Higher scores imply that the employee is satisfied with her/his work. A sample item is 'Are you satisfied with your work climate?'

Respect. The second scale (total $\alpha = .72$; language versions α ranged from .71 to .76) relates to the employee's perceived respect and consists of three items. Higher scores signify that an employee feels herself/himself respected from her/his company, superior and colleagues. A sample item is 'Is your work appreciated by your company?'

Communication and Feedback. The third scale (total $\alpha = .61$; language versions α ranged from .59 to .62) aggregates three items that relate to the communication between a company and the employee. Thus, this scale is concerned with whether an employee gets to participate in decision-making at work and whether the company informs her/him of future plans that the company has. Higher scores imply that an employee has ample opportunities to be involved in the decision-making process at work and received feedback from his work concerning future company plans. A sample item is 'Can you participate in the decisions made by your company?'

Cooperation. The two item Cooperation Scale (total $\alpha = .64$; language versions α ranged from .53 to .66) relates to cooperation and social support between colleagues at work. One question asks whether an employee is supported by his/her colleagues at work. The second question enquires whether an employee cooperates with his/her colleagues at work. Higher scores imply that the employee cooperates with and gets social support from others at work. A sample item is 'Do your colleagues support you at work?'

Appraisal of Work. This scale (total $\alpha = .72$; language versions α ranged from .74 to .69) aggregates two items which are concerned with an employee's appraisal of work. These

Luxembourg Workplace Mobbing Scale

two questions relate to intrinsic job rewards such as whether an employee considers his/her work to be important or if (s)he is proud of her/his work. Higher scores imply that an employee feels that her/his work is important and that (s)he is proud of her/his work. A sample item is 'Are you proud of your work?'

Mental Strain at Work. The three item scale (total $\alpha = .64$; language versions α ranged from .61 to .71) is concerned with mental strain experienced at work. Three items cover having to work on different tasks at once, working under pressure, and doing intellectually demanding work. Higher scores signify that an employee faces high mental strain at work. A sample item is 'How often do you work under pressure?' The response scale is a 5-point-Likert scale ranging from 1 (= *Never*) to 5 (= *Almost at all times*).

Burnout. The seven item Burnout scale (total $\alpha = .77$; language versions α ranged from .74 to .80). is based on the classical burnout description by Maslach, Jackson, and Leiter (1996). Thus, the items enquire about experiences of exhaustion, cynicism, and lack of professional efficacy. Exhaustion is characterized as lack of energy and feelings of chronic fatigue or strain (Hakanen, Bakker, & Schaufeli, 2006). Higher scores imply that employees experience burnout. A sample item is 'How often do you feel that you cannot master your job any longer?' The response scale is a 5-point-Likert scale ranging from 1 (= *Never*) to 5 (= *Almost at all times*).

Psychological Stress. This seven item scale (Total $\alpha = .81$; language versions α ranged from .80 to .85). refers to psychological consequences of job demands, such as feeling stressed by work, feelings of frustration and not being able to let go of work even after work hours. Higher scores signify that an employee faces high psychological stress related to work. A sample item is 'How often are you feeling stressed because of your work?'. The response scale is a 5-point-Likert scale ranging from 1 (= *Never*) to 5 (= *Almost at all times*).

Results

Luxembourg Workplace Mobbing Scale

The overall mean of the LWMS was 1.80 ($SD = 0.58$). Men were more concerned with mobbing ($M = 1.84$, $SD = 0.59$) than women ($M = 1.75$, $SD = 0.56$, $F(1, 1498) = 9.238$, $p = .002$, $d = 0.16$). People who chose the Luxembourgish version had a mean of 1.83 ($SD = 0.63$), people who answered the French version reached a mean of 1.81 ($SD = 0.58$), and people who chose the German version had a mean of 1.77 ($SD = 0.55$). The language versions did not differ across mean scores ($F(2, 1497) = 1.506$, $p = .222$, $\eta^2 = .00$).

Factor-Structure

Table 1 details the results of the descriptive data analysis for the whole sample and the different language versions. Due to high univariate skewness (0.60 to 3.03) and kurtosis (0.05 to 10.15) as well as multivariate kurtosis (Mardia's normalized multivariate kurtosis = 24.34), Satorra-Bentler scaled χ^2 and robust SEs (Satorra & Bentler, 2001) were calculated as they have been found to provide more accurate parameter estimations (Finney & DiStefano, 2013). Factor loadings for the Maximum Likelihood estimation ranged from .51 to .74. The results indicated that the single-factor model presented a good fit to the data for all versions (Table 2). While χ^2 was significant for the whole sample, it became non-significant for all language versions.

(insert Table 1 about here)

(insert Table 2 about here)

Table 3 shows the results for the tests of different forms of measurement invariance. The ΔCFI was used to assess goodness of fit of measurement invariance models. A CFI change of $\geq -.01$ between a baseline model and the resulting model indicates measurement invariance (Little, 2013). Factor-form and metric invariance were confirmed but scalar invariance was rejected between the different language versions of the LWMS. Therefore, a model with partial scalar invariance was estimated (Steinmetz, Schmidt, Tina-Booh, Wieczorek, & Schwartz, 2009). The intercept of item 2 for the French version, the intercept of

Luxembourg Workplace Mobbing Scale

item 3 for the German version, and the intercept of item 4 for the Luxembourgish version were freely estimated. Thus, partial scalar invariance was confirmed. To determine generalizability, the measurement invariance tests were also conducted with weighted least squares means and variance adjusted estimator (Sass, Schmitt, & Marsh, 2014). This led to similar results.

(insert Table 3 about here)

Construct Validity

Table 4 shows the intercorrelations between the LWMS and different work factors. All factors are negatively associated with the LWMS. Therefore, if employees are more satisfied with certain work characteristics and are well respected at their job, they are less likely to experience mobbing behaviors. Similar results are found for the different language versions of the LWMS. Additionally, Table 4 shows the correlations between the LWMS and measures of psychological stress and burnout. These are positively intercorrelated, as one would expect.

(insert Table 4 about here)

Table 5 shows the results of the hierarchical regression analysis with z-standardized variables. There is slight variation between the regression results of the different language versions. Only ‘satisfaction’ and ‘respect’ are significant predictors of mobbing experiences across all three language versions of the questionnaire. The predictors explained a considerable portion of criterion variance ($R^2 = .35$ to $.41$) of the LWMS.

(insert Table 5 about here)

Discussion

A review of the current literature on workplace mobbing revealed the lack of a short workplace mobbing scale that excludes work characteristics that might be unavoidable at work and therefore are unspecific to workplace mobbing (e.g., workload). The newly

Luxembourg Workplace Mobbing Scale

developed LWMS without such confounds showed good psychometric properties as tested in a CFA. Importantly, partial scalar measurement invariance for the three different language versions was corroborated which allows for meaningful mobbing level comparisons between the different language versions.

In order to evaluate the construct validity of the LWMS, correlations with other factors related to quality of work and measures of psychological health were assessed. As expected, all of these work factors were meaningfully intercorrelated with the LWMS and similar results were found for the different language versions. This finding makes sense, considering that mobbing at the workplace is often associated with a poor social climate at work (Agervold & Mikkelsen, 2004). Moreover, mobbing experiences are related to a decreased psychological health in the mobbing victim (Nielsen & Einarsen, 2012). Regression analyses revealed that particularly working place-related satisfaction and respect are associated with mobbing experiences across all language versions and showed (together with mental strain in the total version) the strongest links. Hence, these factors might be considered as focal but distinct byproducts of mobbing.

In general, the results are in line with previous research on work-related factors and workplace mobbing. Mobbing at the workplace is generally related to dissatisfaction with work, unsupportive and disrespectful relationships with superiors, and a work climate where the employee's output is not appreciated (Hershcovis et al. 2007). Furthermore, mobbing is associated with a strained work environment, where a high workload is prevalent and employees work under pressure (Notelaers, De Witte, & Einarsen, 2010). Notably, the LWMS is independent of respondent age and work place sector rendering it a rather universal measure that could be used independent of differing work contexts.

Limitations and Outlook

Luxembourg Workplace Mobbing Scale

One important restriction of the LWMS is that it does not take the mobbing victim's perception of the seriousness of the mobbing exposure into account. Therefore, we do not know how the mobbing victims evaluate these experiences. Accounting for this might add to more precise predictions of psychological and physiological health outcomes in future research. In addition, since the LWMS is a new instrument that has just passed preliminary tests, future studies should examine convergent and divergent validity with established constructs to further elucidate its construct validity. Nevertheless, in summary, we think due to its brevity and partial scalar invariance across language versions, the LWMS is a measure of workplace mobbing that is attractive for different research contexts.

References

- Agervold, M. (2007). Bullying at Work: A discussion of definitions and prevalence, based on an empirical study. *Scandinavian Journal of Psychology*, *48*, 161-172. doi: 10.1111/j.1467-9450.2007.00585.x
- Agervold, M., & Mikkelsen, E. G. (2004). Relationships between bullying, psychosocial work environment and individual stress reactions. *Work & Stress*, *18*, 336-351. doi: 10.1080/02678370412331319794
- Bowling, N. A., & Beehr, T. A. (2006). Workplace harassment from the victim's perspective: a theoretical model and meta-analysis. *Journal of Applied Psychology*, *91*, 998-1012. doi: 10.1037/0021-9010.91.5.998
- Einarsen, S., Hoel, H., & Notelaers, G. (2009): Measuring exposure to bullying and harassment at work: Validity, factor structure and psychometric properties of the Negative Acts Questionnaire-Revised. *Work & Stress*, *23*, 24-44. doi: 10.1080/02678370902815673
- Finney, S. J., & DiStefano, C. (2013). Nonnormal and categorical data in structural equation modeling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling – a second course*. 2. Ed. (pp. 439-492). Charlotte, NC: Information Age Publishing.
- Garthus-Niegel, S., Nübling, M., Letzel, S., Hegewald, J., Wagner, M., Wild, P. S., ... Seidler, A. (2015). Development of a mobbing short scale in the Gutenberg Health Study. *International Archives of Occupational and Environmental Health*. Advance online publication. doi:10.1007/s00420-015-1058-6
- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, *43*, 495-513. doi: 10.1016/j.jsp.2005.11.001

Luxembourg Workplace Mobbing Scale

- Hershcovis, M. S., Turner, N., Barling, J., Arnold, K. A., Dupré, K. E., Inness, M., LeBlanc, M. M., & Sivanathan, N. (2007). Predicting workplace aggression: A meta-analysis. *Journal of Applied Psychology, 92*, 228-238.
- Hershcovis, M. S., & Barling, J. (2010). Towards a multi-foci approach to workplace aggression: A meta-analytic review of outcomes from different perpetrators. *Journal of Organizational Behavior, 31*, 24-44. doi: 10.1037/0021-9010.92.1.228
- Inspection générale de la sécurité social (Ed.). (2014). *Rapport général sur la sécurité sociale au Grand-Duché de Luxembourg 2013*. Working Paper. Luxembourg.
- Leymann, H. (1996a). The content and development of mobbing at work. *European Journal of Work and Organizational Psychology, 5*, 165-184. doi: 10.1080/13594329608414853
- Leymann, H. (1996b). *Handanleitung für den LIPT-Fragebogen*. Tübingen: Deutsche Gesellschaft für Verhaltenstherapie Verlag.
- Little, T. D. (2013). *Longitudinal structural equation modeling*. New York: Guilford Press.
- Lutgen-Sandvik, P. (2006). Take this job and...: Quitting and other forms of resistance to workplace bullying. *Communication Monographs, 73*, 406-433. doi: 10.1080/03637750601024156
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory manual*. Mountain View, CA: Consulting Psychologists Press.
- Nielsen, M. B., Matthiesen, S. B., & Einarsen, S. (2010). The impact of methodological moderators on prevalence rates of workplace bullying. A meta-analysis. *Journal of Occupational and Organizational Psychology, 83*, 955-979. doi: 10.1348/096317909X481256
- Nielsen, M.B., Notelaers, G., & Einarsen, S. (2011). Measuring exposure to workplace bullying. In S. Einarsen, H. Hoel, D. Zapf & C. L. Cooper (Eds.). *Bullying and*

Luxembourg Workplace Mobbing Scale

harassment in the workplace: Developments in theory, research, and practice. 2. Ed.

(pp. 149-174). Boca Raton: CRC Press.

- Nielsen, M. B., & Einarsen, S. (2012). Outcomes of exposure to workplace bullying: A meta-analytic review. *Work & Stress, 26*, 309-332. doi: 10.1080/02678373.2012.734709
- Notelaers, G., De Witte, H., & Einarsen, S. (2010). A job characteristics approach to explain workplace bullying. *European Journal of Work and Organizational Psychology, 19*, 487-504. doi: 10.1080/13594320903007620
- Sass, D. A., Schmitt, T. A., & Marsh, H. W. (2014). Evaluating model fit with ordered categorical data within a measurement invariance framework: A comparison of estimators. *Structural Equation Modeling, 21*, 167-180. doi: 10.1080/10705511.2014.882658
- Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*, 507-514. doi: 10.1007/BF02296192
- Saunders, P., Huynh, A., & Goodman-Delahunty, J. (2007). Defining workplace bullying behaviour professional lay definitions of workplace bullying. *International Journal of Law and Psychiatry, 30*, 340-354. doi: 10.1016/j.ijlp.2007.06.007
- Simons, S. R., Stark, R. B., & DeMarco, R. F. (2011). A new, four-item instrument to measure workplace bullying. *Research in Nursing & Health, 34*, 132-140. doi: 10.1002/nur.20422
- Steinmetz, H., Schmidt, P., Tina-Booh, A., Wieczorek, S., & Schwartz, S. H. (2009). Testing measurement invariance using multigroup CFA: differences between educational groups in human values measurement. *Quality and Quantity, 43*, 599-616. doi: 10.1007/s11135-007-9143-x

Luxembourg Workplace Mobbing Scale

- Vandenberg, R. J., & Lance, C. E. (2000). A Review and Synthesis of the Measurement Invariance Literature: Suggestions, Practices, and Recommendations for Organizational Research. *Organizational Research Methods, 3*, 4-70. doi: 10.1177/109442810031002
- Vartia, M. (2001). Consequences of workplace bullying with respect to the well-being of its targets and the observers of bullying. *Scandinavian Journal of Work, Environment & Health, 27*, 63-69. doi: 10.5271/sjweh.588
- Vartia, M. (2003). Workplace bullying – A study on the work environment, well-being and health (Unpublished doctoral dissertation). University of Helsinki, Helsinki, Finland.

Acknowledgements

This research was supported by a grant from the Luxembourg Chamber of Labor. The authors would like to thank Alain Kinn and David Büchel as well as to anonymous reviewer for helpful comments on an earlier draft.

Luxembourg Workplace Mobbing Scale

Table 1.

Means, standard deviations, skewness, kurtosis, reliability, and completely standardized factor loadings for the one-factor LWMS model

Scale items	Mean	<i>SD</i>	Skewness	Kurtosis	<i>ML</i> λ
Total (<i>N</i> = 1500)					(.73)
Item 1 (“criticized”)	2.22	0.84	0.72	0.89	.60
Item 2 (“ignored”)	1.73	0.90	1.30	1.42	.63
Item 3 (“absurd duties”)	1.85	0.96	1.09	0.70	.55
Item 4 (“ridiculed”)	1.27	0.63	2.72	7.97	.58
Item 5 (“conflicts”)	1.93	0.80	0.78	0.84	.62
Luxembourg version (<i>n</i> =207)					(.76)
Item 1	2.25	0.87	0.83	0.91	.66
Item 2	1.70	0.95	1.45	1.62	.55
Item 3	1.89	0.96	0.91	0.05	.61
Item 4	1.36	0.69	2.11	4.22	.59
Item 5	1.98	0.87	0.77	0.53	.74
French version (<i>n</i> =714)					(.71)
Item 1	2.20	0.87	0.60	0.39	.59
Item 2	1.82	0.94	1.11	0.79	.65
Item 3	1.90	0.97	0.99	0.44	.51
Item 4	1.28	0.65	2.72	8.03	.54
Item 5	1.88	0.80	0.69	0.28	.61
German version (<i>n</i> =579)					(.73)
Item 1	2.24	0.78	0.90	1.73	.60
Item 2	1.63	0.83	1.49	2.48	.64
Item 3	1.77	0.95	1.31	1.42	.57
Item 4	1.22	0.57	3.03	10.15	.64
Item 5	1.97	0.77	0.91	1.79	.58

Notes. *ML* = maximum likelihood estimation; λ = factor loading; Cronbach’s α in brackets.

Luxembourg Workplace Mobbing Scale

Table 2.

Fit indexes of the LWMS factorial structures from Confirmatory Factor Analysis

Version	χ^2	<i>RMSEA</i>	<i>RMSEA</i> 90% <i>CI</i>	<i>SRMR</i>	<i>CFI</i>
Total (<i>N</i> = 1500)	22.770***	.049	[.033; .065]	.022	.978
Luxembourg (<i>n</i> = 207)	6.991	.044	[.000; .098]	.034	.985
French (<i>n</i> = 714)	8.317	.030	[.000; .059]	.019	.991
German (<i>n</i> = 579)	13.257	.053	[.026; .082]	.027	.978

Notes. *df* = 5. *RMSEA* = root mean squared error of approximation; *RMSEA* 90% *CI* =

90% confidence interval of root mean squared error of approximation; *SRMR* =

standardized root mean square residual; *CFI* = comparative fit index;

*** $p < .001$.

Luxembourg Workplace Mobbing Scale

Table 3.

Test of measurement invariance and fit indices for LWMS one-factor model across language versions ($N = 1500$)

Form of invariance	χ^2	df	$RMSEA$	$\Delta RMSEA$	CFI	ΔCFI
Factor-form invariance	28.383	15	.042		.984	
Metric invariance	37.113	25	.031	-.011	.986	.002
Scalar invariance	74.344***	35	.047	.016	.954	-.032
Partial scalar invariance	46.919	29	.034	.003	.978	-.007

Notes. $RMSEA$ = root mean squared error of approximation; CFI = comparative fit index;

*** $p < .001$.

Luxembourg Workplace Mobbing Scale

Table 4.

Correlations between LWMS and different work factors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. LWMS								
2. Satisfaction	-.53**							
3. Respect	-.53**	.73**						
4. Communication and Feedback	-.31**	.51**	.62**					
5. Cooperation	-.26**	.36**	.34**	.38**				
6. Appraisal	-.22**	.37**	.31**	.25**	.23**			
7. Mental Strain at Work	.29**	-.24**	-.16**	.01	.01	-.01		
8. Burnout	.50**	-.57**	-.44**	-.31**	-.27**	-.31**	.27**	
9. Psychological Stress	.49**	-.47**	-.39**	-.21**	-.19**	-.14**	.48**	.66**

Note. ** $p < .01$.

Luxembourg Workplace Mobbing Scale

Table 5.
Regression model with LWMS as the outcome variable across all versions

	Total				Luxembourgish				French				German			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>
Age	-0.02	0.02	-0.02	0.01	-0.03	0.04	-0.03	0.03	-0.00	0.02	-0.02	0.02	-0.02	0.02	-0.01	0.02
Gender	-0.07*	0.03	-0.07*	0.03	-0.04	0.10	-0.04	0.08	-0.08	0.05	-0.05	0.04	-0.08	0.05	-0.08*	0.04
Work sector																
Production (omitted)																
Personal services	-0.03	0.04	-0.01	0.04	-0.04	0.13	0.02	0.10	-0.15*	0.07	-0.09	0.06	0.10	0.07	0.08	0.06
Commercial services	-0.00	0.04	-0.04	0.03	0.04	0.12	0.02	0.10	-0.01	0.06	-0.04	0.05	0.03	0.06	-0.04	0.05
IT and natural science services	0.11	0.09	0.05	0.08	-0.31	0.46	-0.22	0.36	0.08	0.12	0.06	0.10	0.25	0.15	0.10	0.12
Others	0.07	0.06	-0.03	0.05	0.23	0.20	0.07	0.16	-0.05	0.08	-0.14	0.07	0.23*	0.11	0.12	0.09
Satisfaction			-0.15**	0.02			-0.20**	0.06			-0.15**	0.03			-0.15**	0.03
Respect			-0.17**	0.02			-0.14*	0.06			-0.18**	0.03			-0.16**	0.03
Communication and Feedback			0.01	0.02			-0.03	0.05			0.05	0.03			-0.02	0.02
Cooperation			-0.03*	0.01			0.02	0.04			-0.09**	0.02			0.02	0.02
Appraisal			-0.1	0.01			-0.02	0.04			0.01	0.02			-0.04*	0.02
Mental Strain at Work			0.10**	0.01			0.07	0.04			0.11**	0.02			0.09**	0.02
<i>F</i> -Test	2.198*		63.896**		0.636		10.952**		1.978		31.507**		1.800		23.848**	
<i>R</i> ²	.01		.35		.02		.41		.02		.37		.02		.35	

Note. ** $p < .01$, * $p < .05$.

Luxembourg Workplace Mobbing Scale

Appendix

Table 6.

Items of the Luxembourg Workplace Mobbing Scale

Item 1	How often is your work being criticized by your colleagues or your superior?
Item 2	How often are you being ignored by your colleagues or your superior?
Item 3	How often are you being assigned absurd duties by your superior?
Item 4	How often are you being ridiculed by your colleagues or your superior in front of others?
Item 5	How often do you have conflicts with your colleagues or your superior?

Note. The response scale is a 5-point-Likert scale ranging from 1 (= *Never*) to 5 (= *Almost at all times*). The items of the different language versions are presented in the electronic supplementary material.