



Project Title: Reducing Occupational Stress in Employment

Project acronym: ROSE

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Product

Appendix 12 A Report on the Psychometric Properties of the Tools Selected for the ROSE Stress Management Intervention

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A Report on the Psychometric Properties of the Tools Selected for the ROSE Stress Management Intervention

To assess the reliability and validity of the questionnaire selected for the self-assessment of stress on the ROSE intervention, the *Perceived Stress Scale* (PSS: S. Cohen, Kamarck, & Mermelstein, 1983) data were gathered at the pilot and full-test stage of the project. The aim was to gather data across the partner countries to enable analysis by language.

The reasons why the *PSS* was chosen for the ROSE project are described in Deliverable 11, Workpackage 4. It has previously been used with success cross-culturally. It consists of 6 negative and 4 *positive* items:

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. *In the last month, how often have you felt confident about your ability to handle your personal problems?*
5. *In the last month, how often have you felt that things were going your way?*
6. In the last month, how often have you found that you could not cope with all the things that you had to do?
7. *In the last month, how often have you been able to control irritations in your life?*
8. *In the last month, how often have you felt that you were on top of things?*
9. In the last month, how often have you been angered because of things that were outside of your control?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

The response options are 0 = never, 1 = almost never, 2 =sometimes, 3 = fairly often, 4 = very often

Reliability

Internal consistency reliability was estimated used Cronbach's alpha (α) reliability coefficient. This statistic demonstrates whether the items in a questionnaire are measuring the same construct. An internally consistent measure should have an alpha coefficient of 0.7 or above.

For the ROSE project, the statistic was calculated by language (excluding Italian, where there were too few participants for this to be possible) and for the whole dataset, including English, German and Romanian (respectively, $\alpha = 0.89, 0.86, 0.88$ and 0.89 for the three languages together). The results can be seen in Table 1. These are within the range of previously reported alphas for this measure (See Deliverable 11, Workpackage 4). The similarity between the alpha levels across the ROSE project languages suggests that the items translated from English are

operating similarly in each language, which implies the translations have been effective.

We also calculated the internal consistency of the *WSAS* which for English, German, Romanian and the three languages together was ($\alpha = 0.93, 0.86, 0.94$ and 0.93). this is similar to previously reported alpha levels for this measure ($\alpha = 0.90$, (Mundt, Marks, Shear, & Greist, 2002)).

Table 1

Descriptive statistics and Reliability coefficients of the PSS and WASA

			English	German	Romanian	All 3	Other source
N			122	20	23	166	
Perceived Stress Scale	Mean		16.01	12.55	17.87	15.83	13.02 ¹
	Median		16	11	18	16	
	SD		6.47	5.27	6.06	6.38	6.35 ¹
	Cronbach's alpha		0.89	0.86	0.88	0.89	0.79 ²
Work and Social Adjustment Scale	Mean		13.75	18.3	21.96	15.52	*6.5 ³
	Median		11	17.5	21	13	
	SD		8.2	8.47	10.18	9.02	*6.9 ³
	Cronbach's alpha		0.93	0.86	0.94	0.93	0.90 ³

¹Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage.

²Wijndaele, K., Matton, L., Duvigneaud, N., Lefevre, J., Duquet, W., Thomis, M., et al. (2007). Reliability, equivalence and respondent preference of computerized versus paper-and-pencil mental health questionnaires. *Computers in Human Behavior, 23*(4), 1958-1970.

³Mundt, J. C., Marks, I. M., Shear, M. K., & Greist, J. M. (2002). The Work and Social Adjustment Scale: a simple measure of impairment in functioning. *The British Journal of Psychiatry, 180*(5), 461-464.

*in a group of participants (N=190, classified with subclinical levels of depression)

Construct validity

To assess construct validity (whether the questionnaire measures what it claims to), we included an alternative questionnaire which measured the related construct of adjustment to work and social life, the *Work and Social Adjustment Scale* (WSAS: Mundt, et al., 2002). If the *PSS* is a valid measurement of stress, we would expect it to have a correlation with impairment to work and social adjustment. The *WSAS* measures functional impairment in the areas of work, home management, social leisure activities, private leisure activities (eg reading, gardening, etc) and close relationships. The impairment can be attributable to a disorder or problem (in this case occupational stress). The items are:

1. Because of my stress, my ability to work is impaired.
2. Because of my stress, my home management (cleaning, tidying, shopping, cooking, looking after home or children, paying bills) is impaired.
3. Because of my stress, my social leisure activities (with other people, such as parties, bars, clubs, outings, visits, dating, home entertainment) are impaired.
4. Because of my stress, my private leisure activities (done alone, such as reading, gardening, collecting, sewing, walking alone) are impaired.
5. Because of my stress, my ability to form and maintain close relationships with others, including those I live with, is impaired.

For the responses, 0 means not at all impaired and 8 means very severely impaired.

There was a significant positive correlation between perceived stress and impairment of work and social adjustment ($r = 0.39$, $N = 166$, $p < 0.01$, one-tailed). This is a correlation of moderate strength (J. Cohen, 1988). This indicates that when perceived stress increases, so does impairment to work and social adjustment, and this supports the construct validity of the *PSS*.

Conclusion

In conclusion, the *PSS* is a reliable and valid, psychometrically sound measure and is suitable for use on the ROSE project.

References

- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). New Jersey: Lawrence Erlbaum Associates.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Mundt, J. C., Marks, I. M., Shear, M. K., & Greist, J. M. (2002). The Work and Social Adjustment Scale: a simple measure of impairment in functioning. *The British Journal of Psychiatry, 180*(5), 461-464.