Career Adapt-Abilities Scale Short Form (CAAS-SF): Construction and Validation

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Abstract

The Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012) has become one of the most widely used questionnaires to assess career adaptability. To facilitate the integration of this instrument into large surveys, in varied settings with different populations, the aim of this article was to develop a briefer version consisting of 12 items, the CAAS-SF. A sample of 2,800 French and German-speaking adults living in Switzerland (M_{age} = 41.2, *SD* = 9.4) completed the 24-item version of the CAAS. On a first random subsample, item-reduction using principal component analyses highlighted a four-factor solution corresponding to the original CAAS. Confirmatory factor analyses, conducted on a second random subsample, confirmed the hierarchical factor structure of the short version. The CAAS-SF reached measurement equivalence across linguistic and gender groups. Furthermore, the 12 and 24-item versions were strongly associated. Overall, the results supported the CAAS-SF as pertinent and economical alternative to the 24-item version.

Keywords: Career adapt-ability, CAAS, short format, scale validation, confirmatory factor analyses, measurement equivalence

Introduction

Due to transformations in economy, society and technology, the world of work –and consequently the nature of employment– has seen dramatic changes over the last two-three decades, resulting in higher labor market uncertainty and competition, employment insecurity, and fragmented career paths (Baruch & Bozionelos, 2011). In the contemporary professional landscape, individuals must respond to increased work pressure and demands in terms of flexibility, geographical mobility, continuous upskilling, and managing and coping with constant uncertainty (Kanfer, Wanberg, & Kantrowitz, 2001). In this context, new barriers interrupt professional paths across adulthood, making them more unstable and less predictable (Mercure, 2001). Professionally active individuals (or career actors) often need to repeatedly consider their current situation and future possibilities and make decisions to foster their career or take new directions (Baruch & Bozionelos, 2011). In this unstable and challenging environment, regulation skills and adaptability resources (and more specifically career adaptability) that people can (re)activate, are crucial competencies for mastering unpredictable and changing tasks and demands, and private and career transitions throughout the adult life-span (***, in press). To measure career adaptability, an instrument was recently developed, the Career Adapt-Abilities Scale (Savickas & Porfeli, 2012). However, for surveys studies with large and representative samples or in applied contexts it is important to use scales with the least possible number of items. For this reason, the aim of this contribution is to present a brief 12-item version of the Career Adapt-Abilities scale.

Career adaptability represents a pivotal construct in career construction theory (Savickas; 1997, 2005) and reflects the constellation of individuals' behaviors, competencies and attitudes engaged "in fitting themselves into work that suits them" (Savickas, 2005, p. 45). This concept has been proposed by Savickas (1997) as a concept bridging the major theoretical

segments composing Super's (1990) life-span and life-space theory (i.e., life-role theory, developmental self-concept theory, and career development theory). The career construction theory integrates vocational personality, career adaptability and life themes and represent respectively the *what*, *how* and *why* of vocational behavior (Savickas, 2005). Thus, inter-individuals differences in career adaptability concern the "how" individuals build and develop their career. Savickas and Porfeli (2012) define career adaptability resources as "the self-regulation strengths or capacities that a person may draw upon to solve the unfamiliar, complex and ill-defined problems presented by developmental vocational tasks, occupational transitions, and work traumas" (p. 662). So, these resources contribute to develop and determine the strategies that individuals use to direct adapting behaviors. Thus, these psychosocial resources (or transactional competencies) are contextual contingencies that are dynamic and not simply statics entities.

Savickas (2005) describes career adaptability as multi-dimensional and hierarchical, where a higher-order general career adaptability dimension includes four career adapt-abilities supporting self-regulation strategies, i.e.: concern, control, curiosity and confidence. *Concern* indicates the extent to which an individual is aware of and prepares his or her own vocational future. *Control* reflects beliefs about personal responsibility for preparing their career and the perceived personal control over their vocational situation and future. *Curiosity* reflects the personal tendency and the ability to explore professional environments, for example by exploring and learning about types of work and occupational opportunities. Finally, *confidence* suggests perceived self-efficacy to solve problems and the ability to successfully do the necessary to overcoming obstacles. This confidence emerges from facing and solving problems encountered in professional and personal daily life activities (Savickas, 2005; Savickas & Porfeli, 2012). To jointly develop the Career Adapt-Abilities Scale (CAAS), an international team of vocational

psychologist from 18 countries adopted a multi-centric approach (Duarte & Rossier, 2008). The first step was to cross-culturally specify and define the main aspects and dimensions of career adaptability (i.e., concern, control, curiosity and confidence). With reference to these definitions, a set of 25 items for each dimension was developed. Based on several pilot studies, the number of items was reduced to 11 for each dimension. This pool of 44 items represented the Career Adapt-Abilities Scale research form (or CAAS 1.0). Subsequently, the research form was administered to different population of students and workers across 13 countries (e.g., Brazil, China, Italy, Switzerland, and United States). The data were analyzed to reduce the number of items for each dimension to 6, and to examine the hierarchical and multi-dimensional factor structure proposed in Savickas' theoretical model of adaptability. The 24 selected items represent the CAAS International version (or CAAS 2.0) (Porfeli & Savickas, 2012). The CAAS 2.0 demonstrated configural and metric invariance, suggesting that the instrument evaluates similarly the same constructs across countries. The internal consistency was satisfactory for the four dimensions (ranking from .74 for control to .85 for confidence) and particularly high for the adaptability total score, .92. Furthermore, in each country, confirmatory factor analyses showed adequate fit indices. Up to now, ten language versions of the CAAS 2.0 were validated and are available (***, in press).

Recent studies on career adapt-abilities, showed that career resources were related to different aspects of the work and career domains, such as work engagement (Rossier, Zecca, Stauffer, Maggiori, & Dauwalder, 2012), employability skills (for example, team work skills) (de Guzman & Choi, 2013), job search self-efficacy (Guan et al., 2013), job satisfaction (Maggiori, Johnston, Krings, Massoudi, & Rossier, 2013), work stress (Johnston, Luciano, Maggiori, Ruch, & Rossier, 2013), and career anxiety (Pouyaud, Vignoli, Dosnon, & Lallemand, 2012).

Furthermore, Guan and colleagues (2013) highlighted a positive relationship between career adapt-abilities and future employment status. Concerning others vocational psychology construct, career adapt-ability was strongly related to several dimensions of individuals' vocational identity (such as, in-depth career exploration and identification with career commitments) (Porfeli & Savickas, 2012). Several studies also reported a relationship between personality dimensions and career adapt-abilities (e.g., Rossier et al., 2012; Texeira, Badagi, Lassance, Magalhaes, & Duarte, 2012). Finally, the career resources associated positively with general health, life satisfaction and quality of life (e.g., Maggiori et al., 2013; Soresi, Nota, & Ferrari, 2012) as well as related to adaptive outcomes of mental health, such as self-esteem (e.g., van Vianen, Klehe, Koen, & Dries, 2012). Overall, the increasing number of studies highlights that career adapt-abilities might constitute a protective factor to face undesirable professional conditions and represents an essential resource to successfully cope with career transitions and stressful situations, such as unemployment. More precisely career adaptability seems to mediate the relationship between personal dispositions and contextual constraints on the one hand, and vocational-, work-, and health-related outcomes on the other hand (Johnston, Luciano, et al., 2013; Maggiori et al., 2013; ***).

The aim of this study was to develop a brief version of the CAAS, (i) to easier integrate it into large surveys in combination with a battery of others tests or in applied organizational contexts, and consequently facilitate the implementation of the CAAS in more studies with different population and professional contexts, and (ii) for career counseling and life designing practitioners to reduce administration time, and facilitate aspects of their practical work, for example counselee follow-up (**, in press). The reduction of items should nevertheless preserve the excellent psychometric properties of the instrument and for this reason, 3 items per scale seemed to be a good *a priori* option to consider (Byrne, 1998).

Method

Participants

The participants consisted of 2,800 French and German-speaking adults aged between 20 and 65 years (M_{age} = 41.2, *SD* = 9.4). Women represented 51.0% of the sample and German-speakers 52.8%. More precisely 2,375 participants (M_{age} = 41.9; *SD* = 8.6) were a representative sample from the Swiss population aged between 25 to 55 years. These participants were contacted in the context of the first data collection wave of a longitudinal study on professional trajectories of the Swiss National Centre of Competence in Research – LIVES, "Overcoming vulnerabilities." To obtain younger, participants we added a convenience sample recruited in several high schools, vocational schools, and career service centers, that also included older participants (*n* = 425, M_{age} = 37.4, *SD* = 12.3).

Measure

Career Adapt-Abilities Scale (CAAS). For this study we used the validated French (Johnston, Broonen, et al., 2013; Rossier et al., 2012) and German (Johnston, Luciano, et al., 2013) version of the CAAS 2.0. This 24-item scale assesses each of the four subscales concern, control, curiosity and confidence with 6 items. A global score can also be computed. To evaluate each item a five-point Likert scale ranging from 1 = *Not a strength* to 5 = *Greatest strength* is proposed (Savickas & Porfeli, 2012). The German and French versions showed excellent internal reliability for the total score, with respective values of .94 and .92. The reliabilities for the dimension scores varied between .86 and .88 for the German version, and between .75 and .86 for the French version.

Procedures

For the purpose of cross validation, of the CAAS-SF, participants were randomly split in two subsamples (respectively, *n* = 1'407 and *n* = 1'393) (Byrne, 2001). The two subsamples were

similar with regard to sex ($\chi^2(1) = 0.68$, $p > .05$) and language ($\chi^2(1) = 0.12$, $p > .05$) distributions, and mean age ($t(2798) = 1.09$, $p > .05$). In the analyses presented in this paper, language was coded 1 = German and 2 = French, sex was coded 1 = male and 2 = female, and age was measured as a continuous variable.

Analyses

The analyses were computed using the Statistical Package for Social Sciences version 21 (IBM SPSS Statistics 21, SPSS Inc., Chicago, Illinois) and AMOS statistical package version 19.0 (Arbuckle, 2010). Firstly, to reduce the total number of items to 12, we conducted a principal component analyses (PCA) with promax rotation on the first subsample. For each dimension we selected the three items with the highest factor loadings. However, items with cross-loadings greater than .40 were not considered (Stevens, 1992; Tabachnick & Fidell, 2001). Afterwards, we computed a second PCA with the 12 selected items to verify that each item loaded on the respective factor and did not present high secondary loadings. Secondly, based on the second random subsample we realized confirmatory factor analysis (CFA), with maximum likelihood rotation, to replicate and assess the structural validity of the 12-item solution emerging from the PCA. Following the recommendations of several authors (e.g., Byrne, 2010; Kenny & McCoach, 2003; Kline, 1998) we considered multiple goodness-of-fit indices to assess models fit, i.e.: χ^2 per degree of freedom (χ^2/df), the normed fit index (NFI), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root-mean-square error of approximation (RMSEA). Generally, a model is considered to have an acceptable fit if χ^2/df is equal or lower than 5 (Bollen, 1989). For the NFI, the CFI and the TLI, values between .90 and .95 are considered acceptable, and values above .95 suggest a good fit (Byrne, 2010; Hu & Bentler, 1999). A RMSEA below .05 indicates an adequate fit, while values between .05 and .08 reflect an acceptable fit (Browne & Cudeck, 1992). Thirdly, to test the measurement invariance (or

measurement equivalence) across languages (French vs. German) and sex (women vs. men) we realized a series of multi-group CFAs, on the total sample, adopting a "bottom-up" test procedure, from the least to the most demanding form of invariance (Davidov, Schmidt, & Schwartz, 2008). More specifically, we tested three levels of invariance, i.e.: the configural invariance (or equal form invariance), the metric invariance and the scalar invariance (or intercept invariance). The respect of scalar invariance is necessary to compare groups' scores. Additionally the overall fit of each model (in terms, for instance, of NFI and TLI), to assess differences in models we used χ^2 change test ($\Delta\chi^2$) and changes in model fit indices, i.e. CFI and RMSEA (Cheung & Rensvold, 2002; Davidov et al.2008). These indices are superior to $\Delta\chi^2$ because they are not affected by sample size (Cheung & Rensvold, 2002). Concerning the ΔCFI, an absolute value ranking between 0.02 and 0.01 reflects some possible differences between the models (or groups), while an absolute value of 0.01 (or smaller) suggests that the invariance hypothesis cannot be rejected. For the ΔRMSEA currently no critical value was mentioned in the literature. However, some authors (e.g. Oreg et al., 2008) used the .01 threshold. Lastly, we computed internal reliability descriptive statistics for the four dimensions and entire scale also on the total sample, and we compared the scores, with reference to linguistic groups and sex, using analyses of variance (ANOVA).

Results

Exploratory Principal Component Analyses and Item Selection

Based on the first subsample (n = 1'407), we performed a principal-components analysis (PCA) with promax rotation on the 24 items composing the CAAS 2.0. Examination of the scree-plot and eigenvalues highlighted a four-factor solution, explaining 62.54% of the total variance (the five first eigenvalues were: 10.97, 1.71, 1.28, 1.04 and 0.77). The Kaiser-Meyer-Olkin (KMO) value (.96) indicated an excellent sample adequacy and Bartlett's test of sphericity was

significant, $\chi^2(276) = 19'782.00$, $p < .001$. All the items showed a factor loading greater than .40 on their respective factor. However, an item substantially loaded on more than one factor and another item loaded on the wrong dimension and were not considered. Based on these results we selected the three items with highest factor loading on each dimension. A new PCA was performed with the selected 12 items. The scatter-plot suggested considering a four-factor solution, that accounted for 73.34% of the total variance, and the first five eigenvalues were 5.80, 1.16, 0.97, 0.87 and 0.59. The KMO value was .90 and the Bartlett's test of sphericity was once again significant, $\chi^2(66) = 8'376.08$, $p < .001$. As shown in table 1, all the items loaded substantially on to the respective factor. These twelve selected items constitute the brief version of the CAAS 2.0, the CAAS-SF (see Appendix 1).

Confirming the Structure of the CAAS-SF Using a Confirmatory Factor Analysis

Based on the second random subsample ($n = 1'393$), the structure underlying the CAAS-SF was examined using CFA (with maximum likelihood rotation). The tested model considered four first-order latent variables (concern, control, curiosity and confidence) and a second-order latent construct (career adapt-ability or CAAS total score). Overall, the initial model showed a satisfactory fit with the NFI, CFI and TLI values all above .95. Furthermore the RMSEA indicated an acceptable fit. However, the χ^2/df was slightly higher than 5. More specifically, $\chi^2(50) = 333.01$, $\chi^2/df = 6.66$, NFI = .968, CFI = .964, TLI = .953, RMSEA = .064. In the following step, we considered two covariances between the errors terms associated with a modification index greater than 10. The adjusted model fitted the data very well, $\chi^2(48) = 209.85$, NFI = .976, CFI = .980, TLI = .972, RMSEA = .049. Moreover, χ^2/df decreased to 4.37. The loadings from the items to the corresponding factor varied between .63 and .94, and from the factors to career adapt-ability the coefficients ranged between .73 and .88 (see Figure 1). Furthermore, as suggested by Byrne (2010) and Milfont and Fischer (2010), we verified that the

initial suggested model showed also an adequate fit within the first randomly selected subsample, and overall the fit indices were satisfactory, $\chi^2(50) = 273.15$ $\chi^2/df = 5.463$, NFI = .970, CFI = .973, TLI = .965, RMSEA = .056.

Measurement Invariance Across Languages and Sex

Using the total sample, we tested measurement invariance of the four-factor model (with covariances included), analyzed in the previous CFA, across French and German speakers and across sex (see Table 2). With reference to language, the configural invariance model showed more than satisfactory fit indices confirming that the factorial structure was similar across the two language groups. Comparable results were obtained for the metric invariance model, with a χ^2/df of 4.18, a RMSEA lower than .04, and CFI, NFI and TLI values higher than .97. Regarding the differences in fit between configural and metric models, the $\Delta\chi^2$ test was significant ($\Delta\chi^2$ (8) = 25.250, $p < .001$). However, as indicated previously, this test suffers from some problems in determining model fit, notably with large samples. By contrast, differences in RMSEA and CFI met the limit of .01 and suggested no-difference (or negligible differences) between the models in terms of fit. Finally, the results for the scalar invariance model emphasized a satisfactory fit to the data. Once again the $\Delta\chi^2$ test was significant. However the comparative fit indices, ΔCFI and ΔRMSEA, were below .01 and highlighted that imposition of additional constraints (i.e., factor loading to be the same across groups) didn't imply a significant decreased in the model fit. Thus, we accepted the metric invariance model. Concerning men and women, except for χ^2/df that was above 6, overall the configural invariance model showed a fit to the data that was acceptable. The RMSEA was below 5 and the NFI, TLI and CFI values were higher than .95. Thus, the configural invariance of the hierarchical 4-factor model was confirmed. The indices emphasized by the metric invariance model demonstrated a satisfactory model fit. The comparison between configural and metric models in terms of fit suggested negligible differences. In fact, $\Delta\chi^2$ test was

non-significant, and ΔCFI and ΔRMSEA met the .01 threshold. Finally, for the scalar invariance, except for the χ^2/df (slightly higher than 5), the model presented a good fit. Regarding the differences in fit indexes between the metric and the scalar models, the values were .001 and .003 for ΔRMSEA and ΔCFI respectively, thus meeting the criteria of invariance. Overall, these results supported measurement invariance of the CAAS-SF structure across the two linguistic groups and between women and men.

Descriptive statistics

Regarding the internal consistency, calculated using the entire sample (N = 2,800), alphas ranged from .77 (for curiosity) to .83 (for confidence) and from .75 (for curiosity) to .82 (for control and confidence) respectively for the four dimensions of the German and French version of the CAAS-SF. For the total career adapt-ability score, the alpha was .90 for both the German and French versions (see Table 3). Considering the established measurement invariance of the 12-item version, we compared the two linguistic groups. The results from a series of analyses of variance yielded significant differences regarding concern and curiosity dimensions. In fact, German-speaking participants reported negligible higher level on concern, $F(1, 2798) = 4.19$, $p = .041$, $d = .08$, but slightly lower level on curiosity, $F(1, 2798) = 33.11$, $p < .001$, $d = .22$. Concerning the sex, analyses of variance highlighted no differences between women and men. In other words, women and med showed similar mean values on total and dimensions scores of the CAAS-SF. Furthermore, the results highlighted the absence of significant differences between women and men in both linguistics groups. Moreover, based also on the total sample (N = 2,800), the results revealed that age was correlated with the concern, $r = -.07$, and control, $r = .07$, dimensions. However, these associations were negligible ($|r| < .10$). Finally, correlational analyses showed that the corresponding dimensions in 12-item and 24-item versions were strongly associated, i.e.: for concern $r = .95$; for control $r = .93$; for curiosity $r = .93$; and for

confidence $r = .92$. The adapt-ability total score of the two versions was highly correlated, $r = .98$, and suggested that the CAAS-SF can represent a pertinent and adequate alternative to the 24-item version.

Discussion

Overall, although the questionnaire length was reduced by 50%, the CAAS-SF showed psychometric and structural properties close to those of the CAAS 2.0. Using PCA, and based on the first random subsample, we reduced the number of items, identifying for each dimension the three items with the highest factor loadings. The 12 selected items representing the CAAS-SF showed a four-factor solution coherent with the 24-item version and the career adapt-ability theoretical background (Savickas, 2005; Savickas & Porfeli, 2012). Using the second random subsample, CFA analyses highlighted a more than satisfactory hierarchical factor structure for the CAAS-SF. In fact, the analyses highlighted good fit indices for the adjusted hierarchical four-factor model of the 12-item version. Finally, we confirmed the adequacy of the highlighted model with the second subsample. However, even though the models fit correctly in different groups, this is not sufficient to guarantee the measurement invariance of the tested model.

Measurement invariance represents a central issue for studies investigating possible differences between groups (Steinmetz, Schmidt, Tina-Booh, Wieczorek, & Schwartz, 2009). This equivalence is not only important when comparing different cultural groups but also for group comparison (e.g. sex or age groups) within a same cultural context to reliably interpret potential differences (Vandenberg, & Lance, 2000). For this purpose, we conducted multi-group confirmatory analyses comparing, first the two languages, and second men and women. Overall, both across French and German-speaking participants and between women and men, the different models (i.e., configural, metric and scalar invariances) showed acceptable to good fit to the data. The goodness-of-fit indices, and the tests of differences in fit between adjacent models supported

measurement invariance indicating that the resources' latent means can be meaningfully compared and interpreted across the two subsamples. In fact, even the χ^2 difference test was significant, the incremental indices (i.e., ΔCFI and ΔRMSEA) meet the accepted threshold of .01. Furthermore, as indicated previously, the χ^2 difference test can be affected by large sample sizes. Overall, the CFA results demonstrated that the four-factor structure fits in two random subsamples and meets measurement invariance in two different linguistic regions of Switzerland and between women and men.

Furthermore, internal consistency of the CAAS-SF was more than satisfactory for the dimensions scores and excellent for the adapt-ability total score. Values were by and large consistent and comparable with previous research based on the CAAS 2.0 (see Savickas & Porfeli, 2012). Moreover, with reference to adapt-ability total score and the respective dimensions, the CAAS-SF and CAAS 2.0 were strongly correlated, and suggesting that the shorter version can be used as a reliable alternative to the CAAS 2.0.

In further studies it would be important to test the four-factor structure stability and the measurement invariance of the 12-item solution in additional linguistic regions or with reference to other population characteristics (such as, employment status). Furthermore, despite the strong correlation with the 24-item version, future studies need to evaluate the relationship between, on the one hand the CAAS-SF, and on the other hand professional-related outcomes measures (e.g., job satisfaction, work engagement or employability skills) and individuals' characteristics (such as, personality).

Conclusion

The CAAS-SF appears to be a psychometrically sound instrument to measure adapt-abilities resources. The respective scales of the CAAS 2.0 and of the CAAS-SF were strongly correlated and the 12-item version showed almost comparable reliability and measurement

invariance (for instance, across sex). Thus, the CAAS-SF could represent an economical and pertinent alternative to the CAAS 2.0 to assess individuals' career adapt-ability. Notably, a briefer version could be suitable in studies, such as panel surveys, where large batteries of instruments are proposed to reduce administration time and participants' lack of motivation (Meriac, Woehr, Gorman, & Thomas, 2013) or in organizational settings where generally participants completed the questionnaires during company time (Stöber & Joormann, 2001). Finally, due to its brevity the CAAS-SF could be an excellent supplement for career practitioners to assess and follow-up counselees' career adapt-abilities.

References

Arbuckle, J. L. (2010). *Amos* (Version 19.0) [Computer Program]. Chicago, IL: SPSS.

Baruch, Y., & Bozionelos, N. (2011). Career issues. In *APA handbook of industrial and organizational psychology, Vol 2: Selecting and developing members for the organization* (pp. 67–113). Washington, DC: American Psychological Association.

Bollen, K. A. (1989). *Structural equations with latent variables*. New York, NY: Wiley.

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research*, *21*, 230–258. doi:10.1177/0049124192021002005

Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Byrne, B. M. (2010). *Structural Equation Modeling with AMOS. Basic concepts, Applications, and Programming* (2nd ed.). New York, NY: Routledge Academic.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *9*, 233–255. doi:10.1207/S15328007SEM0902_5

Davidov, E., Schmidt, P., & Schwartz, S. H. (2008). Bringing values back in the adequacy of the European social survey to measure values in 20 countries. *Public Opinion Quarterly*, *72*, 420–445. doi:10.1093/poq/nfn035

De Guzman, A. B., & Choi, K. O. (2013). The relations of employability skills to career adaptability among technical school students. *Journal of Vocational Behavior*, *82*, 199–207. doi:10.1016/j.jvb.2013.01.009

Duarte, M. E., & Rossier, J. (2008). Testing and assessment in an international context: Cross- and multi-cultural issues. In J. A. Athanasou & R. V. Esbroeck (Eds.), *International*

Handbook of Career Guidance (pp. 489–510). Dordrecht: Springer Netherlands. doi:10.1007/978-1-4020-6230-8_24

Guan, Y., Deng, H., Sun, J., Wang, Y., Cai, Z., Ye, L., … Li, Y. (2013). Career adaptability, job search self-efficacy and outcomes: A three-wave investigation among Chinese university graduates. *Journal of Vocational Behavior*, *83*, 561-570. doi:10.1016/j.jvb.2013.09.003

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1–55. doi:10.1080/10705519909540118

Johnston, C. S., Broonen, J. P., Stauffer, S., Hamtiaux, A. Pouyaud, J., Zecca, G., … Rossier, J. (2013). Validation of an adapted French form of the Career Adapt-Abilities Scale in four French-speaking countries. *Journal of Vocational Behavior, 83*, 1-10. doi:10.1016/j.jvb.2013.02.002

Johnston, C. S., Luciano, E. C., Maggiori, C., Ruch, W., & Rossier, J. (2013). Validation of the German version of the Career Adapt-Abilities Scale and its relation to orientations to happiness and work stress. *Journal of Vocational Behavior*, *83*, 295–304. doi:10.1016/j.jvb.2013.06.002

Kanfer, R., Wanberg, C. R., & Kantrowitz, T. M. (2001). Job search and employment: A personality–motivational analysis and meta-analytic review. *Journal of Applied Psychology*, *86*, 837–855. doi:10.1037/0021-9010.86.5.837

Kenny, D. A., & McCoach, D. B. (2003). Effect of the number of variables on measures of fit in structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, *10*, 333–351. doi:10.1207/S15328007SEM1003_1

Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York, NY: Guilford.

Maggiori, C., Johnston, C. S., Krings, F., Massoudi, K., & Rossier, J. (2013). The role of career adaptability and work conditions on general and professional well-being. *Journal of Vocational Behavior*, *83*, 437–449. doi:10.1016/j.jvb.2013.07.001

Mercure, D. (2001). *Une Société-monde? Les dynamiques sociales de la mondialisation*. Québec, Canada : Presses de l'Université Laval – De Boeck Université

Meriac, J. P., Woehr, D. J., Gorman, C. A., & Thomas, A. L. E. (2013). Development and validation of a short form for the multidimensional work ethic profile. *Journal of Vocational Behavior*, *82*, 155–164. doi:10.1016/j.jvb.2013.01.007

Milfont, T. L., & Fischer, R. (2010). Testing measurement invariance across groups: Applications in cross-cultural research. *International Journal of Psychological Research*, *3*(1), 111–130.

Oreg, S., Bayazit, M., Vakola, M., Arciniega, L., Armenakis, A., Barkauskiene, R., … van Dam, K. (2008). Dispositional resistance to change: Measurement equivalence and the link to personal values across 17 nations. *Journal of Applied Psychology*, *93*, 935–944. doi:10.1037/0021-9010.93.4.935

Porfeli, E. J., & Savickas, M. L. (2012). Career Adapt-Abilities Scale-USA Form: Psychometric properties and relation to vocational identity. *Journal of Vocational Behavior*, *80*, 748–753. doi:10.1016/j.jvb.2012.01.009

Pouyaud, J., Vignoli, E., Dosnon, O., & Lallemand, N. (2012). Career Adapt-Abilities Scale-France form: Psychometric properties and relationships to anxiety and motivation. *Journal of Vocational Behavior*, *80*, 692–697. doi:10.1016/j.jvb.2012.01.021

Rossier, J., Zecca, G., Stauffer, S. D., Maggiori, C., & Dauwalder, J.-P. (2012). Career Adapt-Abilities Scale in a French-speaking Swiss sample: Psychometric properties and relationships to personality and work engagement. *Journal of Vocational Behavior*, *80*, 734–743. doi:10.1016/j.jvb.2012.01.004

Savickas, M. L. (1997). Career adaptability: An integrative construct for life-span, life-space theory. *The Career Development Quarterly*, *45*, 247–259. doi:10.1002/j.21610045.1997.tb00469.x

Savickas, M. L. (2005). The theory and practice of career construction. In S. D. Brown & R. W. Lent. Hoboken (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 42-70). Hoboken, NJ: John Wiley & Sons.

Savickas, M. L., & Porfeli, E. J. (2012). Career Adapt-Abilities Scale: Construction, reliability, and measurement equivalence across 13 countries. *Journal of Vocational Behavior*, *80*, 661–673. doi:10.1016/j.jvb.2012.01.011

Soresi, S., Nota, L., & Ferrari, L. (2012). Career Adapt-Abilities Scale-Italian Form: Psychometric properties and relationships to breadth of interests, quality of life, and perceived barriers. *Journal of Vocational Behavior*, *80*, 705–711. doi:10.1016/j.jvb.2012.01.020

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 & Quantity*, *43*, 599–616. doi:10.1007/s11135-007-9143-x

Stevens, J. P. (1992). *Applied multivariate statistics for the social sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Stöber, J., & Joormann, J. (2001). A short form of the worry domains questionnaire: Construction and factorial validation. *Personality and Individual Differences*, *31*, 591–598. doi:10.1016/S0191-8869(00)00163-X

Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown, L. Brooks, & Associates (Eds.), *Career choice and development* (2nd ed., pp. 197–261). San Francisco, CA: Jossey-Bass.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon.

Teixeira, M. A. P., Bardagi, M. P., Lassance, M. C. P., Magalhães, M. de O., & Duarte, M. E. (2012). Career Adapt-Abilities Scale-Brazilian Form: Psychometric properties and relationships to personality. *Journal of Vocational Behavior*, *80*, 680–685. doi:10.1016/j.jvb.2012.01.007

Van Vianen, A. E. M., Klehe, U.-C., Koen, J., & Dries, N. (2012). Career Adapt-Abilities Scale-Netherlands form: Psychometric properties and relationships to ability, personality, and regulatory focus. *Journal of Vocational Behavior*, *80*, 716–724. doi:10.1016/j.jvb.2012.01.002

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

** (in press). *Handbook of the life design paradigm: From practice to theory, from theory to practice*. Göttingen, Germany: Hogrefe.

*** (in press). Career adaptability and life designing. In ** (Eds.), *Handbook of the life design paradigm: From practice to theory, from theory to practice*. Göttingen, Germany: Hogrefe.

Table 1

Factor loading of the CAAS-SF obtained computing a PCA after a promax rotation

Items	Concern	Control	Curiosity	Confidence
CON02	**.89**	.06	-.02	-.06
CON01	**.87**	-.02	-.01	-.02
CON03	**.77**	<.01	.02	.11
COL03	-.04	**.85**	<.01	.02
COL01	.09	**.85**	.03	-.08
COL02	.00	**.81**	.01	.07
CUR03	-.08	.01	**.90**	.01
CUR02	.02	-.01	**.88**	-.06
CUR01	.08	.04	**.67**	.08
COF02	.01	-.08	.01	**.96**
COF03	.07	-.05	.05	**.88**
COF01	-.11	.29	-.07	**.66**

Note. *n* = 1’407 (first random subsample); PCA = principal components analysis; Loadings above .40 in absolute value are in bold; Items’ label are those of the CAAS-SF.

Table 2

Fit measures for multi-group confirmatory factor analysis of the CAAS-SF, verifying measurement invariance across language groups and sex

Model	χ^2	*df*	χ^2/df	*RMSEA*	*NFI*	*TLI*	*CFI*	$\Delta\chi^2$	Δ*RMSEA*	Δ*CFI*	*Comparison*	*Decision*
German vs. French												
Configural invariance	401.18	94	4.27	.034	.976	.974	.981	–	–	–	–	
Metric invariance	426.43	102	4.18	.034	.974	.974	.980	25.25 ***	.000	.001	Metric vs. Config.	Accept
Scalar invariance	568.90	114	4.99	.038	9.66	.968	.972	142.47 ***	.004	.008	Scalar vs. Metric	Accept
Women vs. men												
Configural invariance	669.17	100	6.69	.045	.960	.954	.965	–	–	–	–	
Metric invariance	691.19	108	6.40	.044	.958	.957	.964	12.02	.001	.001	Metric vs. Config.	Accept
Scalar invariance	752.57	120	6.27	.043	.955	.958	.961	61.38 ***	.001	.003	Scalar vs. Metric	Accept

Note. *** $p < .001$. NFI = normed fit index; TLI = Tucker–Lewis Index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Table 3

Descriptive statistics for the French and German version of the CAAS-SF

	French-version of the CAAS-SF					German-version of the CAAS-SF				
		Women		Men			Women		Men	
CAAS-SF	α	M	SD	M	SD	α	M	SD	M	SD
Concern	.81	3.47	0.74	3.54	0.74	.82	3.56	0.70	3.56	0.66
Control	.82	4.02	0.72	4.07	0.67	.82	4.06	0.65	4.03	0.66
Curiosity	.77	3.72	0.66	3.78	0.66	.77	3.63	0.70	3.58	0.65
Confidence	.83	3.94	0.65	3.93	0.64	.83	4.00	0.63	3.97	0.62
Career Adapt-ability	.90	3.79	0.55	3.83	0.56	.90	3.81	0.54	3.78	0.52

Note. French-version: Women, $n = 703$; Men, $n = 619$. German-version: Women, $n = 725$; Men, $n = 753$.

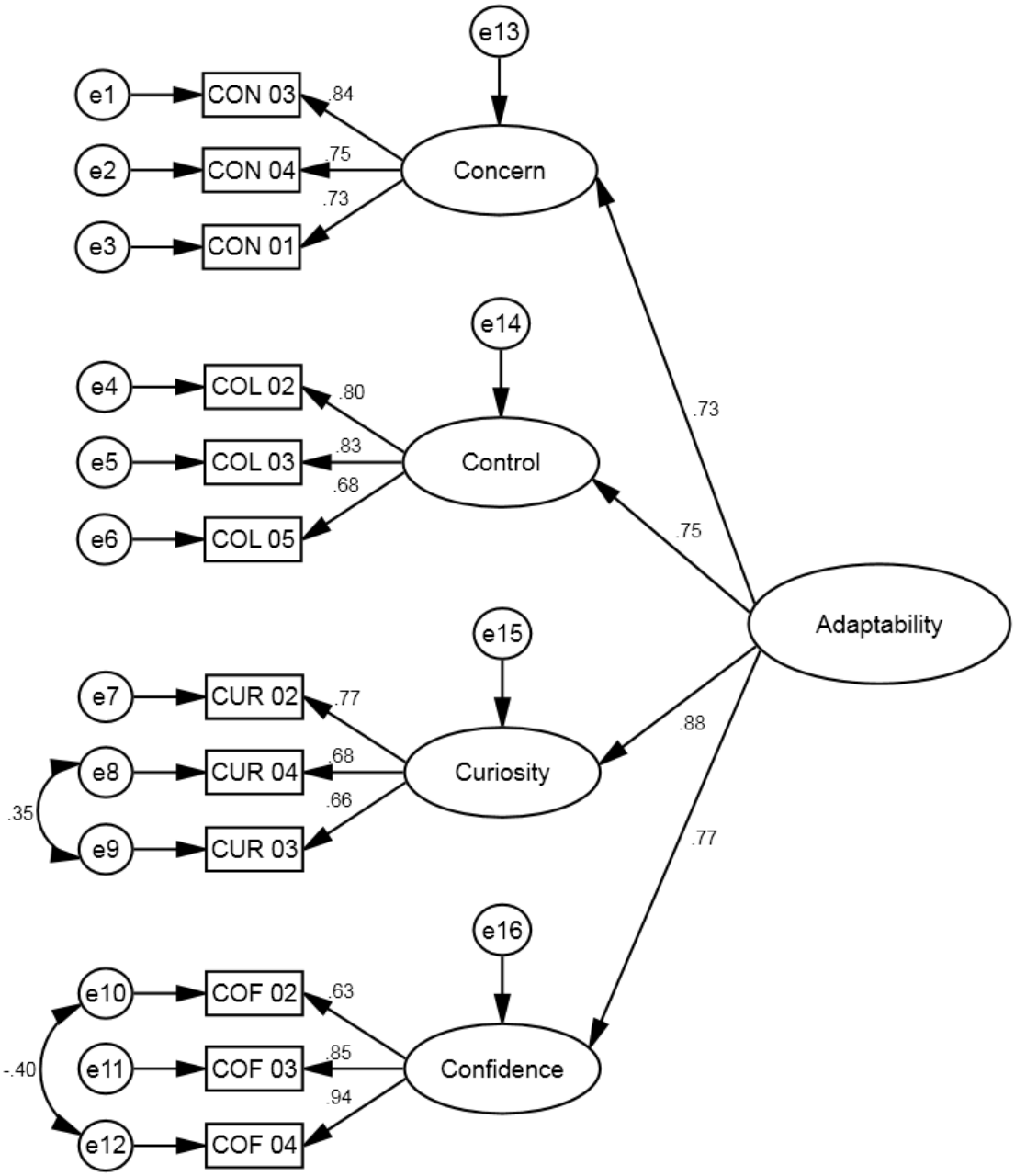

Figure 1. CFA (adjusted model) based on second random subsample (*n* = 1'393)**.**

Appendix 1

French, German, and English items of the CAAS-SF

CAAS 2.0	CAAS-SF	Items
CON01	CON01	Réfléchir à ce que sera mon avenir. darüber nachzudenken, wie meine Zukunft sein wird. Thinking about what my future will be like.
CON03	CON02	Me préparer à mon avenir. mich für die Zukunft vorzubereiten. Preparing for the future.
CON04	CON03	Devenir conscient-e des choix de formation et de profession que je dois faire. mir der Entscheidungen bewusst zu werden, die ich bezüglich Ausbildung und Beruf treffen muss. Becoming aware of the educational and vocational choices that I must make.
COL02	COL01	Prendre moi-même mes décisions. selbst Entscheidungen zu treffen. Making decisions by myself.
COL03	COL02	Prendre la responsabilité de mes actes. Verantwortung für mein Handeln zu übernehmen. Taking responsibility for my actions.
COL05	COL03	Compter sur moi-même. auf mich selbst zu zählen. Counting on myself.

CUR02	CUR01	Chercher les occasions de progresser en tant que personne. nach Gelegenheiten zu suchen, um als Person zu wachsen. Looking for opportunities to grow as a person.
CUR03	CUR02	Explorer les options avant de faire un choix. Möglichkeiten zu erforschen bevor ich eine Entscheidung treffe. Investigating options before making a choice.
CUR04	CUR03	Observer différentes manières de faire les choses. verschiedene Arten wahrnehmen Dinge zu tun. Observing different ways of doing things.
COF02	COF01	Prendre soin de bien faire les choses. darauf zu achten, Dinge gut zu machen. Taking care to do things well.
COF03	COF02	Acquérir de nouvelles compétences. neue Fertigkeiten zu lernen. Learning new skills.
CPF04	COF03	Développer mes capacités. meine Fähigkeiten zu entwickeln. Working up to my ability.