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Validation of an Adapted French Form of the Career Adapt-Abilities Scale in four Francophone Countries

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Abstract

This study presents the validation of a French version of the Career Adapt-Abilities Scale in four Francophone countries. The aim was to re-analyze the item selection and then compare this newly developed French-language form with the international form 2.0. Exploratory factor analysis was used as a tool for item selection, and confirmatory factor analysis (CFA) verified the structure of the CAAS French-language form. Measurement equivalence across the four countries was tested using multi-group CFA. Adults and adolescents (N=1,707) participated from Switzerland, Belgium, Luxembourg, and France. Items chosen for the final version of the CAAS French-language form are different to those in the CAAS international form 2.0 and provide an improvement in terms of reliability. The factor structure is replicable across country, age, and gender. Strong evidence for metric invariance and partial evidence for scalar invariance of the CAAS French-language form across countries is given. The CAAS French-language and CAAS international form 2.0 can be used in a combined form of 31 items. The CAAS French-language form will certainly be interesting for practitioners using interventions based on the life design paradigm or aiming at increasing career adapt-ability.

Keywords: career adapt-abilities, adaptability, test adaptation, measurement invariance
Validation of an Adapted French Form of the Career Adapt-Abilities Scale in four Francophone Countries

Career adapt-ability is a psychosocial construct comprised of the resources an individual uses to respond to tasks and challenges of vocational development (Savickas, 1997; Savickas & Porfeli, 2012). The four dimensions of adapt-ability -- concern, control, curiosity and confidence -- combine to represent a total adapt-ability score. Twenty-five items were created for each adapt-ability dimension, which were reduced to 11 items per dimension following pilot studies in the US. These 44 items became the CAAS research form (Savickas & Porfeli, 2012). The outcome of a subsequent large international data collection project was the CAAS international form 2.0 consisting of 6 items per scale. The French translation of the international form 2.0 of the Career Adapt-Abilities Scale (CAAS) has been used in French-speaking Switzerland (Rossier, Zecca, Stauffer, Maggiori, & Dauwalder, 2012b) and France (Pouyaud, Vignoli, Dosnon, & Lallemand, 2012). However, a comparison between the international form and this French translation suggested poor replicability on the translation and the need for further analysis (Savickas & Porfeli, 2012).

The international research conducted in 13 countries indicated that the underlying structure of career adapt-abilities was stable across countries. Metric invariance was usually reached across countries, signifying that item perception and interpretation is occurring similarly across different countries (Savickas & Porfeli, 2012). However, the CAAS international form 2.0 did not display scalar invariance. The authors offered the psychosocial nature of adapt-abilities as an explanation; adapt-abilities are not trait-like or context-independent. As such, for different countries, item selection can be adjusted to ensure that the CAAS reflects cultural uniqueness while still ensuring that individuals across countries interpret the CAAS in a conceptually similar
A FRENCH-LANGUAGE ADAPTATION OF THE CAAS

manner (Savickas & Porfeli, 2012). Further, the same French translation of the international form
2.0 of the CAAS performed better in French-speaking Switzerland (Rossier et al., 2012b) than in
France (Pouyaud et al., 2012) suggesting that despite utilizing the same language version,
influencing contextual factors may still be present. In this paper, we present the results of a study
to develop the CAAS French-language form through a reanalysis of the item selection.

In the original international study, the items selected for the final inventory functioned
best in all 13 countries. For any particular country, a slightly different set functioned slightly
better. In addition to effectiveness, the international set of items were selected to maximize
efficiency. Initially, it was determined that the four international scales could each include seven
effective items. However, only the six best items in each set composed the final scales. While the
seventh item in each set functioned effectively, they were not efficient in adding psychometric
 gain. Because the seventh item provided only minimal gain, compared to the substantial gain
provided by each of the first six items in a set, they were not included in the final inventory. In
short six items worked as well as seven items. For each country, an eighth and even ninth item
may have offered substantial psychometric gains, but these items were not the same across
countries. Each country could produce a slightly different version of the CAAS that functioned a
little better than the single international version. Yet, the value of numerous unique inventories
that functioned slightly better for each country did not offset the value of a common international
set. However, given that the French language was used in four different countries, it makes sense
to consider whether a French-language version of the CAAS might supplement the international
version. The present study examined whether an improved version could be constructed for
Francophone countries. The basic question was not whether a slightly more effective inventory
could be constructed for each of the four Francophone countries. We already know that this is
possible. The question under investigation herein is whether it is possible to construct a French-language version that generalizes across four Francophone countries.

Career Adapt-Ability

Savickas (1997) conceptualized career adapt-ability as an extension of Super’s (1957) life-span, life-space theory and later as part of Savickas’s (2005) own integrated career construction theory. Career construction requires four tasks, to 1) become concerned with one’s future role as worker, 2) increase personal control over the professional activities one does, 3) display curiosity before making educational and vocational choices, and 4) build the necessary confidence to make and implement career choices (Savickas, 2002, 2005; Savickas et al., 2009). These dimensions of career adapt-ability represent general adaptive resources and strategies required at different career transitions, even those beginning in adolescence, as well as in daily general life (Savickas, 2005).

As a set of personal capacities and strengths, career adapt-ability has an important impact on various personal and work-related outcomes, such as quality of life (Soresi, Nota, & Ferrari, 2012), self-esteem (Van Vianen, Klehe, Koen, & Dries, 2012), and work engagement (Rossier et al., 2012b). Adapt-abilities assist individuals in adjusting their behaviors to specific situations, are evident at the intersection of the individual and environment, and thus are closely tied to specific contexts and roles and function as a type of self-regulation (Ebberwein, Krieshok, Ulven, & Prosser, 2004; McMahon, Watson, & Bimrose, 2012; Savickas & Porfeli, 2012). Relevant factors include the availability or lack of financial resources, the family situation, and the presence of support networks (Ebberwein et al., 2004). Further, there are indications that unemployed individuals respond to job loss with increased levels of adapt-ability (Maggiori, Johnston, & Massoudi, 2012).
Importance of the Context for the Development and Activation of Career Adapt-Abilities

Adapt-abilities represent a synthesis of the four key aspects of the life-span, life-space theory of careers: individual differences, development, self, and context (Savickas, 1997; Savickas & Porfeli, 2012). First individual differences in adaptivity, or the personality trait of flexibility and willingness to change, shape how an individual responds to his or her environment (Savickas & Porfeli, 2012). Second, anticipated development tasks or career interventions may differ based on the context and timing (e.g. the age at which students must make career decisions) and require the individual to be an actor in his or her context (Guichard, 2003). Third, the individual develops a particular self-concept within the framework of a set of unique circumstances, and this self-concept affects vocational behavior (Savickas, 1997). Fourth, the interplay of work and life roles, such as those adopted in the family, is partly a function of context in terms of social norms, family make-up, and availability of resources (Savickas, 1997). Aspects unique to a particular context are strongly related to the formation and activation of an individual’s career adapt-ability. Broader social structures or policies are further influencing forces: “Countries vary in the degree to which they prompt the formation of adaptability because they provide different opportunities and imperatives to develop and express psychosocial resources and transactional competencies” (Savickas & Porfeli, 2012, p. 663). Practical ways in which work, education and employment are distributed, as well as commonly shared beliefs about “career” and “work” (Guichard, 2009) specific to a particular context, may contribute to country differences in adapt-ability scores.

Life-cycle transitions, representing adaptive challenges, are situations in which contextual factors may be more pertinent (Savickas, 1997). Adolescents preparing for and negotiating the transition from school to work, where career discourses are forefront, are in the process of
constructing their career-related identities (Guichard, Pouyaud, de Calan, & Dumora, 2012). Educational systems with associated variations in timing, flexibility, assistance provided, and opportunities for career interventions (Guichard, 2003; Savickas, 1997) may contribute to different country mean scores on adapt-abilities. School system organization is determined locally, whereas factors associated with work organization that influence career issues are more similar across industrialized countries (Guichard, 2003). As such, the differences between adolescents across countries may be more evident than the differences between adults.

The Necessity for Equivalence in Cross-Cultural Research

Establishing valid cross-cultural differences (or the lack thereof) is mainly interesting as a starting point for further exploration into the factors that can explain cross-cultural similarities and differences (Matsumoto & Yoo, 2006; van de Vijver & Tanzer, 2004). Measurement equivalence and the lack of bias are prerequisites for cross-country score comparisons (van de Vijver & Tanzer, 2004). Establishing measurement equivalence for the CAAS allows for cross-country comparisons to be made, creating the foundation for subsequent studies to explore these differences.

Aim of This Research

Following the work on the CAAS international form 2.0 (Savickas & Porfeli, 2012), this was the first study to reanalyze the item selection of the CAAS. The aims of this study were: 1) to analyze the psychometric properties of the CAAS in a Francophone sample of adolescents and adults across Switzerland, Belgium, Luxembourg and France; and 2) to compare the international form 2.0 with a specific French-language form resulting from a reanalysis of the item selection. Following this, measurement equivalence of the CAAS French-language form across the different countries was tested.
Method

Participants

Data were collected in the French-speaking regions of Switzerland, Belgium, and Luxembourg and in France, resulting in a combined sample of 1,707 participants (57% female, 40% male, missing values are due to non-response) with an age range of 13-79 ($M = 24.22, SD = 12.33$). The Swiss sample ($n = 468$) consisted of 54% female and 46% male participants with an age range of 14 to 79 ($M = 35.92, SD = 13.37$). Participants in the Belgian sample ($n = 395$) consisted of 54% females and 35% males with ages ranging from 16-21 ($M = 17.49, SD = .87$). The Luxembourgish sample is smaller with only 181 participants ranging in age from 16 to 75 ($M = 33.61, SD = 12.90$) with 68% female and 32% male participants. Finally, the French sample ($n = 663$) was 42% male and 58% female with ages ranging from 13 to 21 ($M = 16.59, SD = .88$).

Measures

Career Adapt-Abilities Scale (CAAS). The French translation of the CAAS research form contains a larger pool of items consisting of 11 items per scale for concern, control, curiosity, and confidence (Savikas & Porfeli, 2012). Participants responded to each item on a scale from 1 (not a strength) to 5 (greatest strength). As the items for the international form 2.0 were drawn from the research form item pool, it was possible to create total scores per dimension for each participant that correspond to those of the CAAS international form 2.0. Reliabilities of the research form (44 items) are .93 for adapt-abilities, .81 for concern, .81 for control, .81 for curiosity and .83 for confidence.

Translations

The CAAS research form was translated into French by Francophone career counseling experts in France, Belgium, and Switzerland, and then back-translated into English. Agreement
on the final translation was reached through discussion between the original authors of the English version and the authors of the French version.

Procedure

In France, data were collected by career guidance counselors during school hours; students were assured of confidentiality and were debriefed after completing the paper-pencil questionnaires. All students were in their second-to-last year of high school, a grade in which they were not forced to make career choices. They were recruited from public high schools both in the general and technological streams in French territories, both in urban and rural areas. In Liège, Belgium, data were collected in small groups ($n = 15-25$) of voluntary participants in selected secondary schools, and targeted students in their last year of general or technological streams. The questionnaires were administered (paper-pencil) in the classroom after an information-discussion session on career choice and were immediately returned to the counselor who organized the session. Data was collected in two primary ways in Switzerland. First, convenience sampling took place at the Geneva Cité des Métiers where researchers invited participants in this event to complete the CAAS French research form and another instrument and return their packet immediately. Participants received a movie ticket for each instrument as an incentive. Second, psychology bachelor students at the University of Lausanne participating in a 3-credit statistical laboratory concerning multifactorial methods completed the questionnaire themselves and then had to recruit six other working people (3 males and 3 females) to complete the questionnaire. These recruited participants sent the completed questionnaires back to the researchers directly in a pre-addressed envelope. Participants from Luxembourg were recruited through an advertisement at the University of Luxembourg as well as classroom presentations requesting volunteers to participate in a study on adaptive capacities. Volunteers had the option
to request individual feedback and had the chance to win a 100€ gift card from Amazon.

Participants responded to the CAAS French research form to yield data on 44 items measuring adapt-abilities. Using this pool of data, exploratory factor analysis (EFA) was conducted to select 24 items (6 per scale to match the international form 2.0) to develop the CAAS French-language form. EFA was used as a tool for item reduction (Gorsuch, 1997) and various approaches were used to select items. First, the six items with the highest factor loadings per scale were selected (Gorsuch, 1997). Second, items were removed one by one that loaded onto more than one factor, and simultaneously items that failed to load onto any factor were removed (Raubenheimer, 2004). This process was continued until 6 items per scale remained.

Third, items were removed based on their potential to improve reliability (Raubenheimer, 2004). Finally, a fourth approach involved selecting and combining items that performed well based on the above criteria. The result of this selection process was five possible options, each with six items per scale. These five options were then compared in terms of reliability, factor loading strength and pattern, as well as congruence coefficients. Based on these comparisons, one option, labeled the CAAS French-language form, was retained for further analysis and subjected to confirmatory factor analysis (CFA) to test the structural validity of the instrument. Item parceling was employed as a technique to increase stability of parameter estimates, improve the variable-to-sample-size ratio, increase the proportion of common variance relative to unique variance, and obtain a more continuous and normal distribution (Bandalos, 2002; Coffman & MacCallum, 2005; Little, Cunningham, Shahar, & Widaman, 2002). Items in both the CAAS French-language form and CAAS international form 2.0 are presented in the Appendix. Finally, a multi-group CFA allowed for the testing of measurement equivalence across the four countries.

Results
Descriptive Statistics

Reliabilities and normality data for the CAAS French-language form and CAAS international form 2.0 are given in Table 1. Overall, alpha values were slightly higher for the CAAS French-language form (α range from .74 to .90) than the CAAS international form 2.0 (α range from .68 to .89). For the CAAS French-language form, skewness values ranged from -.15 to .18 and kurtosis from -.26 to .07. Skewness values ranged from -.35 to .13 and kurtosis from -.09 to .33 for the CAAS international form 2.0. Thus the distributions were similar for both versions and comparable to that found in Savickas and Porfeli (2012). Turning to gender differences, a series of ANOVAs were conducted to explore possible differences (Table 2). Concerning the French-language form, men had significantly higher scores on control, confidence, and adapt-abilities. Concerning the CAAS international form 2.0 in this data (not tabled), men had higher scores on control (F[1,1658] = 33.09, p < .001, η² = .02), curiosity (F[1,1658] = 7.02, p < .05, η² < .01), confidence (F[1,1658] = 14.64, p < .001, η² < .01), and total adaptabilities (F[1,1658] = 11.82, p < .001, η² < .01). Accordingly, the gender differences on the two versions were quite similar, and of negligible to small amplitude.

Considering age and the CAAS French-language form, age correlated significantly and positively with control (r = .19, p < .01), curiosity (r = .22, p < .01), confidence (r = .11, p < .01), and total adapt-abilities (r = .17, p < .01). However, all these correlations are of a small size. To explore differences in scores between adolescents (age 16-18, n = 906) and adults (age 19-65, n = 670), a series of ANOVAs were conducted with these groups representing the median split of the sample (Table 2). Adults showed higher scores than adolescents on all dimensions of adapt-abilities. For the CAAS international form 2.0, small positive and significant correlations were found between age and concern (r = .06, p < .05), control (r = .14, p < .01), curiosity (r = .22, p <
.01), confidence ($r = .15, p < .01$), and total adapt-abilities ($r = .18, p < .01$). For the international form 2.0 (not tabled), adults scored higher than adolescents on all the adapt-abilities dimensions: concern ($F[1,1574] = 31.98, p < .001, \eta^2 = .02$), control ($F[1,1574] = 34.62, p < .001, \eta^2 = .02$), curiosity ($F[1,1574] = 124.37, p < .001, \eta^2 = .07$), confidence (Welch’s $F[1,1574] = 59.54, p < .001, \eta^2 = .04$), and adaptabilities ($F[1,1574] = 93.49, p < .001, \eta^2 = .06$).

**Principle Components Analysis**

Table 3 shows the factor loadings for both the CAAS French-language form and CAAS international form 2.0. After equamax rotation, four factors were specified to correspond with the four sub-scales of concern, control, curiosity, and confidence. For the CAAS French-language form these four factors explained 51% of the total variance. The first five eigenvalues were 7.56, 1.82, 1.58, 1.28, and .98. The first five eigenvalues for the CAAS international form 2.0 were 7.07, 1.79, 1.36, 1.19, and 1.00, with the first four factors explaining 47% of the total variance. Factor loadings were slightly higher, the secondary loadings slightly lower, and the four-factor solution explained slightly more variance for the CAAS French-language form compared to the CAAS international form 2.0. For both the CAAS French-language form and CAAS international form 2.0 the correlations between sub-scales and the components scores were inspected. One-to-one associations were observed with correlations ranging from .85 to .92 for the CAAS French-language form and from .87 to .93 for the CAAS international form 2.0.

The loading matrix of the CAAS French-language form was compared across the four countries, between men and women, and between adolescents (age 16-18) and adults (age 19-65) by calculating total congruence coefficients (CCs). CCs higher than .90 indicated an overall high structural equivalence and those below .80 indicated an overall poor structural equivalence (Rossier, Hansenne, Baudin, & Morizot, 2012a). The results indicated high structural
equivalence of the CAAS French-language form with country comparisons ranging from .92 to .97 ($Mdn = .94$) and age and gender comparisons of CC = .97. The results for the CAAS international form 2.0 were similar, although slightly lower, with cross-country comparisons resulting in CCs ranging from .87 to .93 ($Mdn = .90$). The CCs for age and gender comparisons were .93 and .96, respectively.

**Confirmatory Factor Analyses**

CFAs with maximum likelihood rotation were performed using AMOS version 19 (Arbuckle, 2010) to assess the structural validity of the CAAS French-language form and compare this with the CAAS international form 2.0 (in this sample). In order to assess model fit, various goodness-of-fit indices were considered: $\chi^2$ per degree of freedom ($\chi^2/df$), the goodness of fit index (GFI), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA; Cheung & Rensvold, 2002; Fan, Thompson, & Wang, 1999; Vandenberg & Lance, 2000). A model is considered to have an acceptable fit if the $\chi^2/df$ is equal to or below 3, if the GFI, CFI, TLI values are about .90 or above, and a RMSEA of about .05 or less would indicate a close fit (Hu & Bentler, 1999). A hierarchical model was considered with four second-order variables (concern, control, confidence, and curiosity) and one third-order latent construct: adapt-abilities.

Considering the CAAS French-language form, the results (Table 4) indicated a moderate degree of model fit with GFI, CFI, TLI values close to .90, RMSEA below .08, and a $\chi^2/df$ of 8.66. On the whole, these results only were slightly less good than the model fit statistics for the CAAS international form 2.0. The standardized loadings for the CAAS French-language form ranged from .56 to .73 ($Mdn = .61$) for the items, and from .77 to .88 ($Mdn = .81$) for the second-order variables. These loadings were comparable to and even slightly better than those of the
CAAS international form 2.0, with item loadings ranging from .46 to .72 ($Mdn = .58$) and from .69 to .89 ($Mdn = .82$) for the second-order variables. Our results are comparable to the Savickas and Porfeli’s (2012) for the CAAS international form 2.0.

Two additional models that utilized item parceling were tested (Bandalos, 2002; Little et al., 2002). Three homogenous parcels per scale were created by pairing items with the highest correlations, and then using the mean score of the two items in the analysis (Coffman & MacCallum, 2005; Rogers & Schmitt, 2004). This technique provided some improvement on the model fit, as seen in Table 4. Standardized item weights for the CAAS French-language form ranged from .58 to .83 ($Mdn = .70$) and loadings from second-order to third-order constructs between .77 and .91 ($Mdn = .83$). For the CAAS international form 2.0, item loadings ranged from .64 to .76 ($Mdn = .68$), and the second-order constructs loaded onto the third-order constructs with a range of .71 to .93 ($Mdn = .84$).

**Multi-Group CFA**

In order to assess the measurement equivalence of the CAAS French-language form across four different Francophone countries, a multi-group CFA was conducted. Tests of measurement equivalence focus on aspects of observed variables and address the relationships between measured variables and latent constructs. Of interest here are factor loadings, intercepts and residual variances; but often invariance of residual variances (for both the items and second-order constructs) are not tested (Brown, 2006; Byrne & van de Vijver, 2010). There is a lack of consensus as to the order of testing for invariance, as well as to the nomenclature used, and thus we followed the recommendations of Vandenberg and Lance (2000). Along with overall model fit of each model, the changes in model fit statistics were also inspected (Cheung & Rensvold, 2002; Vandenberg & Lance, 2000). The change in CFI should be less than .01 (Byrne & van de
and some authors have used ΔRMSEA < .05 (e.g., Savickas & Porfeli, 2012), although no cut-off was provided (Vandenberg & Lance, 2000). The question becomes whether the constrained model represents a significant worsening in fit as each subsequent model corresponds to a different type of invariance test (Vandenberg & Lance, 2000).

Configurational invariance, also called “equal form” invariance, refers to the comparability of the factors structure and requires that the same number of factors and the same factor loading pattern, and is evident across groups (Brown, 2006). In this stage, no equality constraints with reference to factor loadings were imposed, and this model provided the baseline for subsequent model comparisons (Model 1; Byrne & van de Vijver, 2010). Metric invariance implies the equivalence of factor loadings, and these factor loadings are constrained to be equal across samples (Brown, 2006; Byrne & van de Vijver, 2010). This entailed constraining the regression/measurement weights from each item to the relevant factor to be equal (Model 2a), as well as constraining the structural weights from each factor (2nd order) to the third-order construct (Model 2b). Scalar invariance is a test of the equivalence of intercepts and requires that the intercepts be constrained to be equal (Brown, 2006; Byrne & van de Vijver, 2010). In Model 3a, the measurement intercepts (i.e. intercepts of the items) were constrained, and in Model 3b the intercepts of the second-order factors were constrained.

Table 5 contains the results of the measurement equivalence testing for the CAAS French-language form considering three parcels per each second-order variable. The results indicated that scalar invariance in terms of measurement intercepts was reached across countries with CFI and TLI at .90 and RMSEA at .04. Inspection of the Δχ2(Δdf), ΔCFI and ΔRMSEA indicated that the changes in goodness-of-fit indices were acceptable, with the possible exception
of ΔCFI being slightly above the recommended .01 limit. Concerning the CAAS international form 2.0 in this data (not tabled), the results indicated that full scalar invariance was supported with the following overall model-fit statistics, $\chi^2$/df = 3.08, CFI and TLI = .91 and RMSEA = .035. In our results, ΔRMSEA was always below .05, and ΔCFI was below .01 with the exception of the change from the M3a (measurement intercepts) to M3b (structural intercepts).

**Country Differences Controlling for Age and Gender**

Considering the effect of age and gender in the total sample, country differences were assessed using ANCOVAs. After adjusting for the effects of age and gender on the CAAS French-language form, country differences were significant for concern ($F[3,1618] = 19.11, p < .001, \eta^2 = .03$), control ($F[3,1618] = 14.01, p < .001, \eta^2 = .02$), curiosity ($F[3,1618] = 24.30, p < .001, \eta^2 = .04$) and confidence ($F[3,1618] = 8.90, p < .001, \eta^2 = .02$), as well as total adaptabilities ($F[3,1618] = 24.72, p < .001, \eta^2 = .04$). Consistently the mean scores were highest for Luxembourg, followed by Switzerland, Belgium, and France, except for curiosity and confidence where the French scored slightly higher than the Belgians. Although these results could be attributed to the cultural context within the four countries, the age composition of the samples should be considered; the French and Belgian samples contained young participants, whereas the Swiss and Luxembourgish samples contained older participants.

When the comparison was restricted to Switzerland and Luxembourg only, the effect of the country variable on differences in adapt-abilities scores became non-significant. If only French and Belgians were compared with each other, the only country effect which remained was for the concern scale, but this effect was small ($F[1,971] = 10.58, p < .001, \eta^2 = .01$). When a subsample of adults was selected, aged between 35-55 (resulting in participants from only Switzerland and Luxembourg) there were no country differences. When only younger
participants were selected (16-18 year olds) only France, Switzerland, and Belgium were represented. The country differences in total mean scores on the adapt-abilities dimensions remained with the exception of a non-significant difference for confidence. After adjusting for the effects of age and gender, country differences were significant for concern \((F[2,894] = 13.77, p < .001, \eta^2 = .03)\), control \((F[2,894] = 9.40, p < .001, \eta^2 = .02)\), curiosity \((F[2,894] = 6.63, p < .001, \eta^2 = .01)\) and total adaptabilities \((F[2,894] = 12.11, p < .001, \eta^2 = .03)\). The country differences might be explained by the differences in educational systems in these countries.

**Discussion**

This study reconfirmed that some items that were not included in the CAAS international form 2.0 function better in the Francophone regions studied. Although only seven items varied in the two versions, the contents of the items reflected some important differences. For the Concern scale, a general future orientation seemed to fit better than planning related directly to goals. On the Control scale, the three items in the CAAS international form 2.0 that were replaced represented a self-focused orientation (e.g. “making decisions by myself”); the new items in the CAAS French-language form corresponded more with a general positive view of the future (e.g. “expecting the future to be good”), perseverance, and learning how to improve decision making. The items on the Curiosity scale that were changed represented similar content in both versions, but the items in the CAAS French-language form could be considered as representing more specific behaviors (e.g. “searching for information about choices I must make”), rather than general ones (e.g., “exploring my surroundings”). This “searching” item was the seventh item that worked in all 13 countries but was not used in the international form because it offered little psychometric gain. Finally, on the Confidence scale, doing challenging things rather than doing things well seemed to be more important. Again, this “doing” item was
the seventh item for the confidence scale in the international study which could have been included. Further explanations of the differences in item content could be offered by cross-cultural studies (Matsumoto & Yoo, 2006). Notably, the selection of these items allows for an improvement in reliability. The structures of both the CAAS International form 2.0 and CAAS French-language form are replicable in the countries of Switzerland, Belgium, Luxembourg, and France. Indeed, clear evidence for metric invariance and scalar invariance were provided.

**Cross-Cultural Utility of Adapt-Abilities**

The results of the measurement invariance tests indicated that participants in the four countries have the same conceptual framework for understanding adapt-abilities, and that the scale used to measure the items is comparable across countries. Scalar invariance was necessary to conduct mean comparisons across countries, and would indicate that the measurement scales have the same origin, suggesting bias-free measurement (van de Vijver & Tanzer, 2004). In previous work on the CAAS, it was not expected for the CAAS to reach scalar equivalence, because the construct is psychosocial in nature and not independent from context (Savickas & Porfeli, 2012). However, the results of the multi-group analysis suggested that meaningful comparisons in mean scores could be made across these four Francophone countries that have similar cultures. This suggested that unique norms might be proposed for these four countries, but that age also should be taken into account. Further studies with culturally more different Francophone countries might give more information about the impact of the cultural setting on career adapt-abilities.

**Adapt-Abilities: An Argument for Activation**

Country differences were significant only when the sample was restricted to adolescents, which suggests that there is something particular about this life-stage in each country that
prompts these differences. We propose that differences in educational systems across the four countries may provide an explanation. Importantly, Savickas and Porfeli (2012) indicated that “psychosocial constructs, such as adaptability, are highly sensitive to context and age” (p. 666), influencing us to posit that educational system differences may contribute to mean score differences. Adolescents also are still in the stage of developing possible career selves, and exploring many possible options (Guichard, 2003; Guichard, Poyaud, de Calan, & Dumora, 2012). In Luxembourg and Switzerland, early vocational choices (before the age of 16) are requested for a large part of the population due to the dual vocational training system that combines apprenticeships in a company with training in a professional school. In Belgium and France, after compulsory schooling, most students continue their education in a high school.

Moreover, preliminary results (Maggiori et al., 2012) suggested that career adapt-abilities are resources that people might activate in some specific situations, such as being unemployed, and that adapt-ability levels may change with the duration of unemployment. Job loss, an imminent career transition, and the transition from work to retirement also prompted the display of adapt-abilities (Ebberwein et al., 2004; McMahon et al., 2012).

**Limitations**

Despite our interesting findings, our country samples are not equal; this may increase the chances of multivariate non-normality, which violates the assumption required for CFA (Byrne & van de Vijver, 2010). However, Cheung and Au (2005) argued that smaller sample sizes for a particular country should not matter, as long as the overall sample size is sufficiently large. Next, the use of various estimation methods in CFA has differing impacts on model fit statistics (Fan et al., 1999). The consideration of fit indices other than chi-square may be considered a limitation. However, our choice of goodness-of-fit indices, including both chi-square and other indices, was
in agreement with common approaches (Vandenberg & Lance, 2000) and gave us confidence in the adequacy of our model-fit results. RMSEA seems most sensitive to model misspecification and less influenced by estimation methods, and CFI is minimally influenced by sample size (Fan, Thompson, & Wang, 1999). Item parceling techniques can have a differential impact on model fit, but the chosen parceling technique provided more accurate parameter estimates and was more sensitive to model misspecification than other techniques (Rogers & Schmitt, 2004).

Finally, the age distribution of the sample is a limitation, resulting in a confound between age and country differences. Clearly there is a need to repeat this kind of analysis in more representative samples. However, the age distribution of the sample did allow us to replicate the factor structure (CCs) in different age groups, showing that it is viable to test adapt-abilities in adolescent samples. Further studies about the development of career adapt-abilities should certainly be conducted using other adolescent samples.

**Implications for Practice**

Given the preponderance of recent research on the subject of adapt-abilities and the CAAS used to measure them, school guidance and other career practitioners can start by administering the instrument in order to explore the starting points for the interventions that they plan. School guidance personnel and career counselors are in unique positions to help clients activate all four career adapt-abilities (i.e., concern, control, curiosity, and confidence) through direct interventions and the use of homework assignments. Generally, these adapt-abilities could be activated through conversations about their meanings and applications, through activities assigned during and outside of sessions, and through role-plays. For adolescents, career guidance lessons can be used to inspire students’ curiosity in the world of work, concern for their future careers in a global sense, control by helping students search for more specific careers
information in line with their interests and abilities, and building confidence in their abilities to 
problem solve and make career decisions.

For adults, given that career adapt-abilities are at their highest within a four to ten-month 
period after job loss (Maggiori et al., 2012), a real window of opportunity exists for helping 
clients to activate their personal resources and career adapt-abilities in the career counseling 
setting. In addressing the meaning of the four adapt-abilities through conversation, clients can 
become more aware of their own strategies for enhancing their natural inclinations towards 
career concern, control, curiosity, and their own confidence in making career decisions. Then, 
career counselors can design activities that fit with the client’s cultural and individual context in 
order to bolster areas of adapt-abilities that present the greatest concerns. For instance, various 
Internet and government-issued programs can be explored during or outside of sessions in order 
to increase clients’ curiosity about the ever-changing world of work in a highly global economy. 
For career transitioners, career concern may be addressed by considering the meaning that clients 
wish to realize in their new roles, contexts, or careers as they explore new career options. A 
greater sense of control and confidence can be inspired and bolstered through the use of role-
plays in the career counseling setting. Additionally, homework activities given to clients can 
further reinforce in-session discussions and role-plays to help clients interact with others in the 
real world-of-work context. These activities may include making cold calls to potential 
employers, asking for pre-interviews to learn more about a company’s philosophy and 
management style, and contacting others within their professional and personal networks to learn 
about job openings or the skills needed to compete in current job markets within the sectors that 
interest them.

Conclusion
Researchers and practitioners have the opportunity to use the items from the CAAS international form 2.0, as well as the CAAS French-language form, resulting in a 31-item scale. Using both sets of items would allow for agreement with measurement of adaptabilities in different countries that use the international form 2.0, but also would contribute to more accurate measurement of adaptabilities in Francophone countries. Measurement of adaptabilities is definitely interesting and useful, but even more interesting is the possibility that adaptabilities may be developed and activated through various interventions. Career adaptabilities are important resources for navigating the ever-changing world of work throughout the professional trajectory and at the intersection of various life roles.
References


Table 1

Descriptives of the CAAS French-language Form and CAAS international form 2.0

<table>
<thead>
<tr>
<th></th>
<th>CAAS French-language form</th>
<th></th>
<th>CAAS international form 2.0</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>α</td>
<td>Mean</td>
<td>SD</td>
<td>K</td>
</tr>
<tr>
<td>Concern</td>
<td>.81</td>
<td>21.36</td>
<td>4.05</td>
<td>-.135</td>
</tr>
<tr>
<td>Control</td>
<td>.74</td>
<td>21.33</td>
<td>3.93</td>
<td>-.113</td>
</tr>
<tr>
<td>Curiosity</td>
<td>.77</td>
<td>20.70</td>
<td>3.87</td>
<td>-.072</td>
</tr>
<tr>
<td>Confidence</td>
<td>.83</td>
<td>22.15</td>
<td>3.87</td>
<td>-.261</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.90</td>
<td>85.54</td>
<td>12.54</td>
<td>.077</td>
</tr>
</tbody>
</table>

N = 1,707
Table 2

ANOVA results for the CAAS French-language form– Age and Gender comparisons

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Males</th>
<th>Females</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>F</td>
<td>df</td>
<td>p</td>
<td>η²</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>F</td>
<td>df</td>
<td>p</td>
<td>η²</td>
</tr>
<tr>
<td>Concern</td>
<td>21.19</td>
<td>4.20</td>
<td>21.47</td>
<td>3.95</td>
<td>2.10*</td>
<td>1,1421</td>
<td>n.s</td>
<td>.001</td>
<td>20.95</td>
<td>4.04</td>
<td>21.98</td>
<td>4.02</td>
<td>25.51</td>
<td>1,1574</td>
<td>&lt;.001</td>
<td>.016</td>
</tr>
<tr>
<td>Control</td>
<td>22.02</td>
<td>3.80</td>
<td>20.83</td>
<td>3.94</td>
<td>38.60</td>
<td>1,1658</td>
<td>&lt;.001</td>
<td>.022</td>
<td>20.63</td>
<td>3.84</td>
<td>22.33</td>
<td>3.81</td>
<td>76.31</td>
<td>1,1574</td>
<td>&lt;.001</td>
<td>.046</td>
</tr>
<tr>
<td>Curiosity</td>
<td>20.88</td>
<td>3.90</td>
<td>20.57</td>
<td>3.85</td>
<td>2.51</td>
<td>1,1658</td>
<td>n.s</td>
<td>.001</td>
<td>19.87</td>
<td>3.62</td>
<td>21.97</td>
<td>3.79</td>
<td>125.15</td>
<td>1,1574</td>
<td>&lt;.001</td>
<td>.073</td>
</tr>
<tr>
<td>Confidence</td>
<td>22.82</td>
<td>3.85</td>
<td>21.64</td>
<td>3.81</td>
<td>37.74</td>
<td>1,1658</td>
<td>&lt;.001</td>
<td>.022</td>
<td>21.68</td>
<td>3.90</td>
<td>22.79</td>
<td>3.71</td>
<td>32.90</td>
<td>1,1574</td>
<td>&lt;.001</td>
<td>.020</td>
</tr>
<tr>
<td>Adapt-abilities</td>
<td>86.91</td>
<td>12.69</td>
<td>84.53</td>
<td>12.36</td>
<td>14.65</td>
<td>1,1640</td>
<td>&lt;.001</td>
<td>.009</td>
<td>83.12</td>
<td>11.70</td>
<td>89.08</td>
<td>12.69</td>
<td>93.03</td>
<td>1,1574</td>
<td>&lt;.001</td>
<td>.055</td>
</tr>
</tbody>
</table>

Note. *Assumption of homogeneity of variance was violated, therefore the Welch statistic is reported
Table 3

*Factor Structure for the CAAS French-language form and CAAS international form 2.0*

<table>
<thead>
<tr>
<th>CAAS French-language form</th>
<th>CAAS international form 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAAS</strong></td>
<td><strong>COF</strong></td>
</tr>
<tr>
<td>COF11</td>
<td>.72</td>
</tr>
<tr>
<td>COF08</td>
<td>.70</td>
</tr>
<tr>
<td>COF09</td>
<td>.68</td>
</tr>
<tr>
<td>COF07</td>
<td>.67</td>
</tr>
<tr>
<td>COF10</td>
<td>.66</td>
</tr>
<tr>
<td>COF01</td>
<td>.54</td>
</tr>
<tr>
<td>CON05</td>
<td>.15</td>
</tr>
<tr>
<td>CON02</td>
<td>.18</td>
</tr>
<tr>
<td>CON06</td>
<td>.10</td>
</tr>
<tr>
<td>CON03</td>
<td>.09</td>
</tr>
<tr>
<td>CON11</td>
<td>.17</td>
</tr>
<tr>
<td>COL11</td>
<td>.21</td>
</tr>
<tr>
<td>CUR05</td>
<td>.13</td>
</tr>
<tr>
<td>CUR04</td>
<td>.03</td>
</tr>
<tr>
<td>CUR06</td>
<td>.21</td>
</tr>
<tr>
<td>CUR07</td>
<td>.15</td>
</tr>
<tr>
<td>CUR09</td>
<td>.30</td>
</tr>
<tr>
<td>CUR08</td>
<td>.40</td>
</tr>
<tr>
<td>CON08</td>
<td>.16</td>
</tr>
<tr>
<td>CON04</td>
<td>.16</td>
</tr>
<tr>
<td>COL12</td>
<td>.21</td>
</tr>
<tr>
<td>COL06</td>
<td>.29</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>COL09</td>
<td>.07</td>
</tr>
</tbody>
</table>
Table 4

*Confirmatory Factor Analyses of the CAAS French-language form and CAAS international form 2.0*

<table>
<thead>
<tr>
<th>Career Adapt-Abilities Scale</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\chi^2$/df</th>
<th>$p$</th>
<th>GFI</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAAS French-language form</td>
<td>2148.663</td>
<td>248</td>
<td>8.664</td>
<td>&lt;.001</td>
<td>.897</td>
<td>.861</td>
<td>.846</td>
<td>.067</td>
</tr>
<tr>
<td>CAAS international form 2.0</td>
<td>1575.305</td>
<td>248</td>
<td>6.3522</td>
<td>&lt;.001</td>
<td>.924</td>
<td>.888</td>
<td>.875</td>
<td>.056</td>
</tr>
<tr>
<td>CAAS French-language (parcels)</td>
<td>433.919</td>
<td>50</td>
<td>8.6783</td>
<td>&lt;.001</td>
<td>.957</td>
<td>.948</td>
<td>.932</td>
<td>.067</td>
</tr>
<tr>
<td>CAAS international form 2.0 (parcels)</td>
<td>208.660</td>
<td>50</td>
<td>4.1732</td>
<td>&lt;.001</td>
<td>.980</td>
<td>.976</td>
<td>.968</td>
<td>.043</td>
</tr>
</tbody>
</table>
Table 5

Multigroup Analysis – CAAS French-language form

<table>
<thead>
<tr>
<th>Career Adapt-Abilities Scale – Item Parcels</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>( \chi^2/df )</th>
<th>p</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>( \Delta \chi^2(\Delta , df) )</th>
<th>( \Delta \text{CFI} )</th>
<th>( \Delta \text{RMSEA} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Unconstrained (Configural Invariance)</td>
<td>706.35</td>
<td>200</td>
<td>3.532</td>
<td>&lt;.001</td>
<td>.933</td>
<td>.912</td>
<td>.039</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2a Measurement Weights (Metric Invariance)</td>
<td>751.94</td>
<td>224</td>
<td>3.357</td>
<td>&lt;.001</td>
<td>.931</td>
<td>.918</td>
<td>.037</td>
<td>45.58(24)</td>
<td>-.002*</td>
<td>-.002*</td>
</tr>
<tr>
<td>Model 2b Structural Weights (Metric Invariance)</td>
<td>773.33</td>
<td>233</td>
<td>3.319</td>
<td>&lt;.001</td>
<td>.929</td>
<td>.920</td>
<td>.037</td>
<td>21.39(9)</td>
<td>-.002*</td>
<td>-.002*</td>
</tr>
<tr>
<td>Model 3a Measurement Intercepts (Scalar Invariance)</td>
<td>969.09</td>
<td>257</td>
<td>3.771</td>
<td>&lt;.001</td>
<td>.906</td>
<td>.904</td>
<td>.040</td>
<td>195.76(26)</td>
<td>-.023</td>
<td>.003*</td>
</tr>
<tr>
<td>Model 3b Structural Intercepts (Scalar Invariance)</td>
<td>1150.29</td>
<td>269</td>
<td>4.276</td>
<td>&lt;.001</td>
<td>.884</td>
<td>.886</td>
<td>.044</td>
<td>181.20(12)</td>
<td>-.022</td>
<td>.004</td>
</tr>
</tbody>
</table>

* \( \Delta \text{CFI} < 0.01 \) and \( \Delta \text{RMSEA} < 0.05 \)
## Appendix

Items in the CAAS French-language form and CAAS International form 2.0

<table>
<thead>
<tr>
<th>French-language Form</th>
<th>International form 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concern</strong></td>
<td></td>
</tr>
<tr>
<td>Me préparer à mon avenir / Preparing for the future</td>
<td>Me préparer à mon avenir / Preparing for the future</td>
</tr>
<tr>
<td>Réfléchir à ce que sera mon avenir / Thinking about what my future will be like</td>
<td>Réfléchir à ce que sera mon avenir / Thinking about what my future will be like</td>
</tr>
<tr>
<td>Devenir conscient des choix de formation et de profession que je dois faire / Becoming aware of the educational and career choices that I must make</td>
<td>Devenir conscient des choix de formation et de profession que je dois faire / Becoming aware of the educational and career choices that I must make</td>
</tr>
<tr>
<td>Me rendre compte que mes choix d’aujourd’hui engagent mon avenir / Realizing that today’s choices shape my future</td>
<td>Me rendre compte que mes choix d’aujourd’hui engagent mon avenir / Realizing that today’s choices shape my future</td>
</tr>
<tr>
<td>Me sentir concerné par mon parcours professionnel / Concerned about my career</td>
<td>Me sentir concerné par mon parcours professionnel / Concerned about my career</td>
</tr>
<tr>
<td><strong>Prendre en charge mon avenir / Taking charge of my future</strong></td>
<td><strong>Planifier la façon d’atteindre mes objectifs / Planning how to achieve my goals</strong></td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
</tr>
<tr>
<td>Rester optimiste / Keeping upbeat</td>
<td>Rester optimiste / Keeping upbeat</td>
</tr>
<tr>
<td>Avoir une vision positive de mon futur / Expecting the future to be good</td>
<td>Prendre moi-même décisions / Making decisions by myself</td>
</tr>
<tr>
<td>Trouver la force de garder le cap / Finding the strength to keep going</td>
<td>Défendre mes convictions / Sticking up for my beliefs</td>
</tr>
<tr>
<td>Compter sur moi-même / Counting on myself</td>
<td>Compter sur moi-même / Counting on myself</td>
</tr>
<tr>
<td>Faire ce qui est bon pour moi / Doing what’s right for me</td>
<td>Faire ce qui est bon pour moi / Doing what’s right for me</td>
</tr>
<tr>
<td><strong>Apprendre à prendre les meilleures décisions possibles / Learning how to make better decisions</strong></td>
<td><strong>Prendre la responsabilité de mes actes / Taking responsibility for my actions</strong></td>
</tr>
<tr>
<td><strong>Curiosity</strong></td>
<td></td>
</tr>
<tr>
<td>A FRENCH-LANGUAGE ADAPTATION OF THE CAAS</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

Observer différentes manières de faire les choses / Observing different ways of doing things  
Explorer les options avant de faire un choix / Investigating options before making a choice  
Aller au fond des questions que je me pose / Probing deeply into questions I have  
Rechercher de l’information à propos des choix que j’ai à faire / Searching for information about choices I must make  
Envisager les alternatives qui s’offrent à moi / Considering my alternatives  
Devenir curieux de nouvelles opportunités / Becoming curious about new opportunities

Observer différentes manières de faire les choses / Observing different ways of doing things  
Explorer les options avant de faire un choix / Investigating options before making a choice  
Aller au fond des questions que je me pose / Probing deeply into questions I have  
Explorer mon environnement / Exploring my surroundings  
Chercher les occasions de progresser en tant que personne / Looking for opportunities to grow as a person  
Devenir curieux de nouvelles opportunités / Becoming curious about new opportunities

**Confidence**

<table>
<thead>
<tr>
<th>Relever des défis / Doing challenging things</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prendre soin de bien faire les choses / Taking care to do things well</td>
</tr>
<tr>
<td>Développer mes capacités / Working up to my ability</td>
</tr>
<tr>
<td>Surmonter les obstacles / Overcoming obstacles</td>
</tr>
<tr>
<td>Acquérir de nouvelles compétences / Learning new skills</td>
</tr>
<tr>
<td>Résoudre des problèmes / Solving problems</td>
</tr>
<tr>
<td>Me montrer performant dans ce que j’ai à faire / Performing tasks efficiently</td>
</tr>
</tbody>
</table>

**Note.** Items in italics are different in the two versions
Highlights
• Describes the development of a new French form of the Career Adapt-Abilities Scale.
• Validation of this French form adopting a cross-national multi-centric approach.
• Of interest for practitioners using interventions based on the life design paradigm.