

# Comparing two career adaptability measures for career construction theory : relations with boundaryless mindset and protean career attitudes

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**Comparing two career adaptability measures for career construction theory:****Relations with boundaryless mindset and protean career attitudes****Abstract**

We examined the constructs underlying the Career Maturity Inventory-Adaptability Form (CMI-C) and the Career Adapt-Abilities Scale (CAAS). Data from 852 university students indicated that the second-order factors for both scales correlate .43, suggesting that they measure different yet related constructs. All three subscales of the CMI-C correlate most with the “concern” subscale of the CAAS rather than with the corresponding subscale. It appears that the CMI-C is a measure of particular career adaptability for choosing a career whereas the CAAS is a global measure of career adaptability for dealing with all of the tasks of vocational development across the life span. Regression analyses show that the CMI-C does not add to the prediction of boundaryless mindset and protean career attitudes over the CAAS. Relationships between the CMI-C and CAAS with entrepreneurial, professional, and leadership career motivation profiles showed that the CAAS is more strongly related to boundaryless mindset and protean career attitudes, while the CMI-C appears to relate to more traditional (professional and leadership) career motivations.

*Keywords:* Career maturity; Career adaptability; Boundaryless mindset; Protean career attitude; Career construction theory; Career motivation profiles

## INTRODUCTION

The fields of career development, assessment and counseling are undergoing a paradigmatic change with “career adaptability” fast replacing “career maturity” as a central construct in both research and practice (Goodman, 1994, Savickas, 1997, 2005, 2013). The focus of career development in the past century was to help individuals to be more ready to decide on a job, occupation, or vocation. This attention to career maturity or choice readiness has shifted toward career adaptability (Savickas, 1997), that is, “helping a client to look ahead and to look around, to develop the self, and, in due course, to choose suitable and viable opportunities to become the person she or he wants to be” (p. 257).

Super initiated interest in the construct of career adaptability when he asserted that career maturation was more suitable for adolescent career development and career adaptability was more relevant for adults. Super and Knasel (1981) wrote that career choice readiness or maturity, although central to adolescent career development, should not be extended to adults because career decision-making readiness was unlikely to increase with age, and, adults face a greater variety of developmental tasks than youth. Instead of maturity, they proposed adaptability as the central process in adult career development. Subsequently, Super, Thompson, & Lindemann (1988) revised and published an adult version of their *Career Development Inventory*—a measure of adult career maturity which worked poorly. The new inventory — called the *Adult Career Concern Inventory* (freely available on [www.Vocopher.com](http://www.Vocopher.com)) — measured the first dimension of career adaptability, namely career concern or planfulness.

Following Super’s important conceptual distinction between adolescent maturity and adult adaptability, there have been numerous additional attempts at operationally defining the career adaptability construct, including measures by Hirschi (2009), Kenny and Bledsoe (2005),

Klehe et al. (2011), Rottinghaus et al. (2005) and Nota et al. (2012). McArdle et al. (2007) have even operationally defined career adaptability in terms of a boundaryless mindset and proactive personality.

Today, research interest seems to focus on the self-report measures developed by Savickas and Porfeli (2011, 2012) which aimed to operationally define career adaptability as conceptualized in Savickas' (2005, 2013) career construction theory. In 1997, Savickas called for vocational maturity to be replaced with career adaptability, which he defined as “the readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustments prompted by changes in work and working conditions” (p. 254). He argued that it would better integrate the individual differences, development, self, and context approaches to the study of careers from a life-span, life-role perspective, and that “The cultural climate for switching from maturity to adaptability seems right. The construct of career adaptability coincides with the increased interest in adult development as well as our more rapidly changing technology and economy” (p. 255).

Initially, Savickas and Porfeli (2011) developed a measure of career adaptability for students in grades six through twelve by applying Savickas' (2005) career construction theory to Crites' (1978) well-established Career Maturity Inventory (CMI) Form B1. From the pool of 75 items, they were able to use 18 items to empirically derive a measure of career choice readiness and produce three 6-item content scales corresponding to the three career construction theory dimensions of adaptability: (1) a *concern* for one's future, (2) the *curiosity* to explore social opportunities while also experimenting with possible selves, and (3) having the *confidence* to design and implement one's future career. Statistical analysis indicated that the six additional items intended to measure the construct of control did not load as well on the general factor of

career choice readiness. They attributed the latter to the fact that the control items in the CMI-B1 were worded to measure lack of social independence or “consultation” rather than an intrapersonal sense of control. They retained these six items as a scale measuring attitudes toward consultation, thereby producing a 24-item inventory that “reflected” adaptability attitudes. The 24-item *attitudinal* measure was named the revised CMI-C or “Adaptability Form” (Crites & Savickas, 2012). The CMI-C measures readiness to cope with the vocational development task of specifying an occupational choice, one of three tasks of the exploration stage in a career.

Subsequently, noting that career construction theory represents career adaptability resources as an aggregate construct comprising “a multidimensional matrix of specific attitudes, behaviors, and competencies – the ABCs of career construction”, Savickas led an international research team to construct a self-report measure of career adaptability in terms of global “*strengths*” or “*psycho-social resources*” directed particularly toward career choice among school students and adults.

The development of the CAAS involved careful analysis and clarification of the concepts of adaptivity, adaptability, adapting, and adaptation. Savickas and Porfeli (2012) argued that career adaptability should be viewed as human capital “defined as accumulated competencies and knowledge gained through education and experience (Sullivan & Sheffrin, 2003)”, which, in contrast to the personality traits of flexibility or willingness to adapt, “develop through interactions within the inner and outer worlds of the person” and are thus more “changeable than traits” (p. 663). They therefore sought to operationally define career adaptability in terms of “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. 663). The CAAS therefore measures adaptability in terms of “psycho-social resources.” The Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012) consists of a second-order general factor labelled “adaptability” and four first-order factors labeled concern, control, curiosity and confidence.

The CAAS is intended as a measure of global career adaptability for coping with each of the vocational development tasks from adolescence through retirement as well as the challenges involved in occupational transitions and work traumas. Conceptually, to the extent that the CMI-C and CAAS both purport to measure career adaptability with identically-labeled subscales corresponding with career adaptability factors as conceptualized in career construction theory, it is useful to know how the CAAS as a measure of *global* career adaptability relates to the CMI-C as measure of *particular* career adaptability for career choice readiness. It is also important to determine whether the CMI-C adaptability scales make any further contribution to assessing adolescent career adaptability beyond simply measuring career adaptability particularly for specifying an occupational preference.

Beyond mere construct validation of both measures, we also sought to examine a key assumption underlying the current shift in the research and practice fields of career development, assessment and counseling where career adaptability is rapidly replacing career maturity as a central construct – that career maturity is related to having more traditional careers (e.g., professional and leader/manager) while career adaptability is related to having more post-modern, boundaryless mindset or protean career attitudes.

The 1970s-90s witnessed various calls for fundamental changes in the ways that we study and view careers, work and organization life in the new century (Sullivan, 1999). Hall (1976) introduced the “Protean career” metaphor, Arthur and Rousseau (1996) described the

“boundaryless” career, and Richardson (1993) called for psychologists to embrace social constructionism alongside epistemological approaches in career counseling. Likewise, noting that previous career theories were “rooted in assumptions of stability of personal characteristics and secure jobs in bounded organizations”, Savickas et al. (2009) called for career theories and concepts to be “reformulated to fit the postmodern economy” (p. 240). New theories like “career construction” (Savickas, 2002, 2005, 2013) and “life-designing” (Savickas et al., 2009) thus emerged to guide career development research and practice.

### **The Present Study**

This study empirically examined the nature and extent of the conceptual overlap across the measures of the attitudinal and psychosocial resource-based career adaptability constructs underlying the CMI-C and CAAS. Specifically, we examined the correlations between the two measures at the first- and second-order factor levels of the CMI-C and CAAS to determine whether the attitudinal measure of adaptability in the CMI-C is a subset of the “multi-dimensional matrix” of specific attitudes, behaviors and career construction competencies as measured by the CAAS.

In addition to examining internal properties of the two measures, we also investigated their relations with other key contemporary career constructs, in particular, boundaryless mindset and protean career attitudes. Complementing “career construction” and “life-designing” which address the processes involved in contemporary career development, other new frameworks have also emerged to help conceptualize subjective careers in an increasingly boundaryless work context. An example is Chan et al. (2012) who argued that entrepreneurship, professionalism, and leadership (EPL) can serve as three key dimensions of subjective career space; and showed that boundaryless and protean career concepts can be operationalized using the high/low EPL

motivation profiles. They reported that individuals concurrently high in entrepreneurial, professional, and leadership career motivations, and those high in entrepreneurial and leadership motivations had the highest scores on boundaryless and protean career attitudes, while individuals who were primarily motivated for professional work seemed to hold more traditional career attitudes.

Creed, Macpherson, and Hood, (2011) recently argued that career adaptability should be related to “new economy career orientations” measured in terms of boundaryless career attitudes and presented empirical evidence to show that self-regulation (a proxy for adaptability in their study) is related to boundaryless career attitudes. To date, we know of no study that has examined the relationships between either or both the attitudinal CMI-C and psychosocial resource-based CAAS with boundaryless or protean career attitudes. If the CMI-C is in fact a measure of particular adaptability or career choice readiness, then one would expect it to relate more with traditional (e.g., hierarchical/leadership and specialized-vocational or “professional” career motivations) rather than contemporary, “entrepreneurial” or boundaryless career mindsets. In contrast, if the CAAS is indeed a measure of global career adaptability for the contemporary career context, then it should relate more strongly to boundaryless or protean mindsets and motivations than the CMI-C. Hence, we also aimed to determine the extent of conceptual overlap or uniqueness across the measures by examining the relative contribution of both measures of career adaptability (particular and global) with measures of boundaryless career attitudes (Briscoe et al., 2006), and with entrepreneurial, professional, and leadership career motivation profiles (Chan et al., 2012).

## **METHOD**

### **Participants and Procedure**



Singapore has had a relatively strong tradition of research on vocational behavior with a keen interest in the assessment of career maturity (Tan, 1998). Faced with a rapidly aging workforce competing economically in a globalized world (e.g., Harper, 2006), Singapore is rapidly shifting its workforce development policies to address issues of employability and career adaptability (Billett, 2011; Sung, 2013). It was in this context that we recruited 852 undergraduate students from a large, comprehensive public university in Singapore where English is the primary language of education. Each volunteered as part of a follow-up research survey conducted about 3 months after a university-wide career aspiration survey. 76.6% of the participants were Singaporeans. Males comprised 45.4% of the sample. The mean age was 23.16 years ( $sd = 1.50$ ). The participants came from a range of academic disciplines as follows: 37.0% engineering; 20.2% humanities, social sciences, education; 18.7% science; 23.9% business. 17.2% of the participants were in their second year of studies, 52.2% in the third year, and 30.7% were fourth year students. The volunteers were compensated S\$20 to participate in the research. All research procedures were approved by the Institutional Review Board, and informed consent was obtained prior to their participation. The survey questionnaire was administered via computers in a laboratory with a research assistant physically present to deal with any queries. All participants completed the questionnaire within 40-60 minutes.

### Measures

**CMI-C.** Due to constraints of survey length, 12-items from Savickas & Porfeli's (2011) CMI-C (i.e., 3, 4 and 5 for each sub-scale of concern, curiosity, and confidence; see Appendix for items) were selected on the basis of factor loadings from a pilot study that was previously conducted with Singaporean university students. A 4-point Likert scale (1 = "Strongly disagree"; 2 = "Disagree"; 3 = "Agree"; 4 = "Strongly agree") was adopted instead of the

dichotomous (agree/disagree) format as a precaution against social-desirability responding as well as to increase variability in the responses. The instructions for the scale were: “This section measures the various attitudes that are important in making decisions about your career. The attitude scale, which you are about to take, asks about your attitudes and feelings about making a career choice and entering the world of work at this point in time”. Table 1 presents the means, standard deviations, and the Cronbach alpha for the complete 12-item scale ( $\alpha = .88$ ) including its three sub-scales concern (3-items,  $\alpha = .53$ ), curiosity (4-items,  $\alpha = .78$ ), and confidence (5-items,  $\alpha = .81$ ). Confirmatory factor analyses showed that a measurement model with three first order factors and one second-order, general factor could fit the CMI-C data well (CFI = .94; SRMR = .04; RMSEA = .06; see Results section for more details on this). A check of the inter-item correlations for the “concern” subscale showed that all three items were positively correlated between .24 to .34. This, together with the good model fit in the confirmatory factor analysis assured us that the low Cronbach alpha for the concern subscale was probably an artifact of the small number of item indicators in this subscale.

**CAAS International Version 2.0.** We administered the complete, 24-item CAAS which Savickas and Porfeli (2012) reported to have a good hierarchical factor model with an overall Adaptability score (general factor) and four sub-scores for concern, curiosity, control and confidence. Participants were instructed: “Different people use different strengths to build their careers. No one is good at everything; each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities using the scale below”. A five-point response scale was provided as follows: 1 = “Not strong”, 2 = “Somewhat strong”, 3 = “Strong”, 4 = “Very Strong”, 5 = “Strongest”. Sample items included “Thinking about what my future will be like” (Concern), “Probing deeply into questions I have” (Curiosity),

“Making decisions by myself” (Control), “Overcoming obstacles” (Confidence). Cronbach alpha statistics for the 24-item scale ( $\alpha = .95$ ) and four sub-scales for concern (6-items,  $\alpha = .86$ ), curiosity (6-items,  $\alpha = .86$ ), control (6-items,  $\alpha = .86$ ) and confidence (6-items,  $\alpha = .90$ ) were good; see also Table 1. Confirmatory analyses showed that a measurement model with four first-order and one second-order factor provided very good fit to the CAAS data (CFI = .93; SRMR = .04; RMSEA = .05; see Results section and Table 2 for more details).

**Boundaryless and Protean Career Attitudes.** These were measured using Chan et al.’s (2012) adaptation of Briscoe, Hall and Demuth’s (2006) measure for use among university students. Respondents indicated on a 5-point scale the extent to which they felt the statements were true about them (1 = little or no extent, 5 = to a great extent). A higher score on each of the subscales indicated a greater degree of each attitude. Confirmatory factor analyses showed that a measurement model with two factors provided good fit to the data (CFI = .93; SRMR = .05; RMSEA = .06; see Table 2). Means, standard deviations and Cronbach alpha statistics for the two sub-scales are presented in Table 1. Both seven item scales had good Cronbach alpha reliabilities of .91 and .78 respectively.

**EPL career motivation scales and profiles.** Entrepreneurial, professional, and leadership career motivations were measured using Chan et al.’s (2012) 27-item measure in which participants indicated on a 5-point scale (strongly disagree to strongly agree) whether they want to be an entrepreneur, a professional, or a leader for affective/identity, calculative/non-calculative, or social-normative reasons. Sample items included: “Ever since I was a kid, I have dreamed about opening my own business.” (Entrepreneurial motivation), “I am the kind of person who strives to be highly specialized in my field of study.” (Professional motivation), “I

have always enjoyed leading others and have assumed leadership roles whenever I could.” (Leadership motivation). Cronbach alpha statistics for entrepreneurial motivation (9-items,  $\alpha = .78$ ), professional motivation (9-items,  $\alpha = .76$ ), and leadership motivation (9-items,  $\alpha = .75$ ) scales were good. A measurement model with nine first-order and three second-order factor model is a good fit to the observed data (CFI = .90; SRMR = .06; RMSEA = .05; see Results section). Following the procedure described in Chan et al. (2012), the 852 participants were categorized into eight profile groups on the basis of whether their E, P, and L motivation scores were above or below the mean obtained in Chan et al.’s the sample of 10,326 participants.

## **RESULTS**

### **Preliminary Checks against Common-method Bias**

As the data were based on cross-sectional, self-report surveys, preliminary checks were made for the threat of common method bias. First, a check of the correlation matrices (see Table 1) revealed a mix of positive, negative and non-significant near-zero coefficients, which suggested common method bias is not a significant concern (Spector, 2006). Next, Harman’s single-factor test was conducted to examine the extent to which the variances could be accounted for by method effect. A single method factor with equal factor loadings was added to the CFA model for each of the construct (Model i to iv in Table 2). The average variance explained by the method factor about 8.3%, which was much lower than the average (25%) found in most of published studies (Williams, Cote, & Buckley, 1989). Also, the improvement in all the goodness of fit measures is negligible by adding the method factor. Common method bias was thus unlikely to be a major threat to our findings.

### **Confirmatory Factor Analyses of CMI-C and CAAS relationships**

Confirmatory factor analyses were conducted to examine the relations between the CMI-C and CAAS. First, fitting a single common-factor to the 36 items of both scales generated poor model fit ( $CFI = .65$ ;  $SRMR = .11$ ;  $RMSEA = .07$ ; see Table 2), suggesting that the two scales did not measure the same construct. Next, we compared the fit of a model with two first-order factors (i.e. each representing CMI-C and CAAS factors respectively) versus a model with seven first-order factors and two second-order factors (i.e., second-order factors for both CMI-C and CAAS, and first-order factors for each dimension of each scale) for all 36-items from both scales. From Table 2, the model with two second-order and seven first-order factors with fitted the data much better (model vii;  $CFI = .91$ ;  $SRMR = .05$ ;  $RMSEA = .04$ ) than the model with only two first order factors (model vi;  $CFI = .82$ ;  $SRMR = .06$ ;  $RMSEA = .05$ ; see Table 2). Figure 1 indicates the loadings of model vii. The second-order factors were correlated at  $r = .43$ , suggesting that the CMI-C and the CAAS measured two different yet related constructs. Inter-scale correlations in Table 1 showed that all three subscales of the CMI-C (i.e., concern, curiosity, and confidence) correlated most strongly with the “concern” subscale of the CAAS ( $r = .41, .37$ , and  $.30$  respectively) rather than with the corresponding sub-scales of CAAS. This suggested that attitudinal career adaptability measured in the CMI-C is possibly more related to “concern” in the psychosocial, strengths-based conceptualization of adaptability in the CAAS.

### **Relations with Boundaryless Mindset and Protean Career Attitude**

Inter-scale correlations shown in Table 1 indicated that boundaryless and protean career attitudes related more strongly to the CAAS (boundaryless mindset,  $r = .52$ ; protean career attitude,  $r = .56$ ) than with the CMI-C (boundaryless mindset,  $r = .14$ ; protean career attitude,  $r = .23$ ). To determine if the CMI-C and CAAS explained unique variance in boundaryless and protean career attitudes after controlling one another, hierarchical multiple regression analyses

were conducted where the CMI-C and CAAS scores were added in different sequences to predict these attitudes.

Regression analyses based on the sub-factors of both scales reported in Table 3 showed that psychosocial resource-based career adaptabilities measured by the CAAS, especially CAAS-control and CAAS-curiosity factors — accounted for most of the variance in boundaryless mindset ( $R^2 = .29$ ) and the protean attitude scale ( $R^2 = .33$ ). In contrast, the CMI-C explained limited variance in boundaryless mindset ( $R^2 = .03$ ) and protean career attitude ( $R^2 = .06$ ). This also indicated that the CMI does not measure attitudes toward career types and that the CAAS measures a broader construct of career adaptability that is more relevant to boundaryless and protean attitudes than the CMI-C.

### **Relating CMI-C and CAAS with EPL motivation profiles**

In introducing their EPL framework as a way to operationalize the boundaryless and protean career concepts, Chan et al. (2012) categorized their research participants into eight “profile” groups on the basis of whether their entrepreneurial (E), professional (P), and leadership (L) motivation scores were above or below the mean obtained for the largest sample of 10,326 participants. They observed that individuals concurrently high in E, P, and L career motivations and those high in E and L career motivations were also highest in boundaryless and protean career attitude. In contrast, those with only high P or low EPL career motivations were lowest on these career attitudes.

Using the same approach, we examined relations of the CMI-C and the CAAS to the eight EPL profiles. Upon creating the eight profile groups, the means for the CAAS and the CMI-C were computed for each profile group and plotted from highest (right) to lowest (left) in Figures 2a and 2b respectively. Interestingly, we observe from Figure 2a that the groups with the

highest and lowest mean values on the CAAS were the high EPL and low EPL groups respectively. More interestingly, when the eight profiles groups' mean scores on boundaryless mindset and protean career attitudes were plotted (see dotted lines in Figure 2a) against the rank-ordered CAAS mean values (bold line in Figure 2a) -- a near-similar pattern was observed between the plots for both boundaryless mindset and protean career attitudes mean values and the rank-ordered CAAS mean values. In fact, the correlation between the means for CAAS and boundaryless mindset across the eight profile-groups was  $r = .97$ , and that for CAAS and protean attitudes was  $r = .98$ . In contrast, Figure 2b shows that students concurrently high in P and L motivations had the highest CMI-C mean score, while those with only high E motivations scored lowest on the CMI-C. The correlation between the means scores for CMI-C and boundaryless mindset, and for CMI-C with protean attitudes across the eight profile groups was much poorer at  $r = .44$  and  $r = .45$  respectively. These findings suggest that the CMI-C differentiates between individuals who hold more traditional notions of career (i.e., with higher professional and leadership motivations) versus those with less traditional career motivations, e.g., towards entrepreneurship. Similarly, we observed from the inter-scale correlations in Table 1 that the CMI-C is significantly positively correlated with P ( $r = .26, p < .001$ ) and L ( $r = .27, p < .001$ ) but not with E career motivation ( $r = -.07, p = \text{n.s.}$ ); while the CAAS concurrently correlates with E ( $r = .31$ ), P ( $r = .18$ ) and L ( $r = .44$ ) career motivations (all at the  $p < .001$  level). This reinforces our earlier conclusion that the CMI-C and the CAAS measure two different but related constructs.

If one considers the CMI-C more of a measure of career choice readiness, this would suggest that individuals who are high in entrepreneurial but low in professional and leadership motivations would be deemed less ready to make (traditional) career choices. That is, they are

less likely to be preparing to make a choice among traditional trajectories and possibly preparing to create their own opportunities. These findings not only reinforce the conclusion from the previous section's regression analyses that the CAAS is more strongly related to contemporary boundaryless mindset, they also suggest that the CMI-C may relate more to traditional career thinking with high motivation for professional and leadership (rather than entrepreneurial) career advancement.

## **DISCUSSION**

With the on-going transition in vocational psychology towards helping individuals cope with more boundaryless and dynamic work contexts, career adaptability has emerged as key construct. It is therefore vital to evaluate different conceptualizations and measures of career adaptability. This research focused on two measures of career adaptability — the CMI-C which measures a particular career adaptability and the CAAS which measures global career adaptability. Our data showed that the two career adaptability scales are each best modeled in terms of a second-order “general” factor and several first-order factors; and, that the second-order factors correlate .43 indicating that the scales measure two different yet related constructs. We also found that that all three (concern, curiosity and confidence) subscales of the attitudinal CMI-C correlated most strongly with the “concern” subscale of the CAAS rather than with the corresponding sub-scale and concluded that career adaptability as measured in the attitudinal, CMI-C is possibly more related to “concern” in the psychosocial, strengths-based conceptualization of adaptability in the CAAS. This would mean that the CMI-C is basically a measure of career concern or planfulness, which is the first and most fundamental factor in adolescent maturity and adult adaptability. The dimension of concern is meant to encompass the



highly related career decision- making attitudes of involvement, anticipation, orientation, future time perspective, and optimism (Savickas, Silling, & Schwartz, 1984).

We also sought to understand the relationship between career choice readiness which was central to career development and vocational guidance in the last century, and career adaptability which is now central to the fields. In this regard, our findings seem to support the assumption underlying the paradigm shift that career choice readiness is more related to traditional career thinking while career adaptability is more related to post-modern, boundaryless mindset and protean career attitudes.

It is important to emphasize that our finding that the CAAS is more strongly related to “new economy”, boundaryless mindset and protean attitudes and that the CMI-C appears to relate more to traditional career thinking and motivations does not mean that career choice readiness should be abandoned as a construct in vocational guidance and career development. The relevance of career maturation as a construct in these fields depends on one’s assumptions, perspectives, paradigms, and the demands of the employment context and the labor-market. Career maturity continues to be relevant for youths in thriving economies with lower unemployment, for possibly for individuals with strong vocational “callings” (Duffy & Sedlacek, 2007; Wrzesniewski, McCauley, Rozin, & Schwartz, 1997), where there may be merit in helping individuals to clarify their career decision/choice as they mature in the transition from youth to adulthood, especially in stable economic contexts. On the other hand, career maturity will not be adequate or appropriate when one thinks of work and careers from a perspective of constant change and uncertainty where the resources for career adaptability are more critical for survival and career “success”.

### **Contributions & further directions**

Measurement-wise, our research provides better overall support for the construct validity of the CAAS as a measure of career adaptability as articulated in Savickas' (2013) career construction theory, than for the CMI-C. While our data replicates the second-order factor measurement model for both the CAAS and CMI-C, the CAAS seems to be a broader and more global measure of career adaptability than the CMI-C, and with a stronger relationship with boundaryless mindset and protean career attitudes. Our regression analyses even indicate that CMI-C is redundant in the presence of CAAS in explaining any common variance with boundaryless career attitudes. The broader concept measured by the CAAS suggests that the CAAS measures a “multidimensional matrix of specific attitudes, behaviors and competencies – the ABCs of career construction” as intended, while the CMI-C may only measure particular aspects of career adaptability as part of career construction theory. From our findings, the CAAS sub-factors also seem to demonstrate more divergent validity than the corresponding CMI-C sub-factors because the latter all seem to relate most strongly with the concern sub-factor in the CAAS. Further research is needed to establish the nomological network for the four CAAS sub-factors of career adaptability in terms of differential relationships with antecedent and outcome variables.

Our research also provides clues to the nature of the construct underlying the CMI-C. The latent factor underlying the CMI-C relates moderately ( $r = .43$ ) with career adaptability in the CAAS, but, in contrast to the CAAS which clearly relates to boundarylessness as operationally defined by both the boundaryless career attitude and by the EPL motivation profiles, the CMI-C seems to relate more to traditional career motivations. Those with high PL motivation are highest in CMI-C, while those with high E motivation are lowest in CMI-C. Further research comparing the CAAS and CMI-C's relationships with expected/known antecedents and outcomes relevant to

both measures of career adaptability such as career decidedness, vocational identity, and career decision-making difficulties is needed before conclusive statements can be made about the comparative usefulness of the two inventories. As expected, the CAAS related more strongly to career motivations than did the CMI-C. However, the CMI-C does not claim to measure these motivations. Instead it measures attitudes toward career choice. If the CMI-C relates more than the CAAS to variables such as decidedness, then the CMI-C it may be useful for school counselors to use with students. However, if the CAAS shows the same or better relationships to adolescent decisional variables, then it may be time to retire the CMI.

Finally, our research also validates and demonstrates the value of Chan et al.'s (2012) EPL framework not only for conceptualizing careers in a boundaryless work context, but also in unraveling the key differences between CMI-C and CAAS. Of particular interest is the framework's inclusion of the entrepreneurial dimension of careers, which seems to differentiate contemporary, boundaryless or protean versus traditional career mindsets. Future research can extend this line of inquiry by directly examining the relevance of entrepreneurial competencies such as risk taking, creativity, alertness to opportunities, to name a few, in shaping contemporary career mindsets.

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Table 1

## Descriptive Statistics, Correlations, and Reliabilities of Measures

Scale	no. items	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Attitudinal career maturity (CMI-C)	12	2.77	.51	<b>(.88)</b>													
2. CMI-C: Concern	3	3.02	.53	.74***	<b>(.53)</b>												
3. CMI-C: Curiosity	4	2.75	.59	.88***	.54***	<b>(.78)</b>											
4. CMI-C: Confidence	5	2.64	.51	.92***	.53***	.71***	<b>(.81)</b>										
5. Career adapt-abilities (CAAS)	24	3.47	.63	.37***	.34***	.36***	.28***	<b>(.95)</b>									
6. CAAS: Concern	6	3.33	.75	.41***	.41***	.37***	.30***	.85***	<b>(.86)</b>								
7. CAAS: Control	6	3.57	.69	.32***	.26***	.33***	.25***	.87***	.65***	<b>(.86)</b>							
8. CAAS: Curiosity	6	3.45	.74	.21***	.20***	.21***	.16***	.86***	.61***	.67***	<b>(.86)</b>						
9. CAAS: Confidence	6	3.52	.73	.33***	.29***	.34***	.25***	.88***	.65***	.71***	.70***	<b>(.90)</b>					
10. Boundaryless mindset	7	3.70	.73	.14***	.17***	.11***	.11**	.52***	.41***	.45***	.52***	.42***	<b>(.91)</b>				
11. Protean career attitude	7	3.70	.57	.23***	.22***	.20***	.19***	.56***	.46***	.54***	.49***	.45***	.56***	<b>(.78)</b>			
12. Entrepreneurial motivation	9	2.95	.64	-.07	-.06	-.05	-.06	.31***	.24***	.25***	.35***	.24***	.36***	.30***	<b>(.78)</b>		
13. Professional motivation	9	3.74	.51	.26***	.26***	.26***	.18***	.18***	.23***	.13***	.09	.17***	.03	.08	-.10**	<b>(.76)</b>	
14. Leadership motivation	9	3.54	.52	.27***	.21***	.24***	.23***	.44***	.34***	.41***	.37***	.39***	.41***	.33***	.25***	.04	<b>(.75)</b>

Note. Numbers on the diagonal represent alpha coefficients. \*\*\*  $p \leq .001$ . \*\*  $p \leq .01$ .



**Table 2****Fit Statistics for Measurement Models Tested**

<b>Model tested</b>	<b><math>\chi^2</math></b>	<b><i>df</i></b>	<b><math>\chi^2/df</math></b>	<b>CFI</b>	<b>SRMR</b>	<b>RMSEA</b>	<b>AIC</b>	<b>BIC</b>
<b>Confirmatory factor analyses of measures</b>								
i. CMI-C three 1 <sup>st</sup> order & one 2 <sup>nd</sup> order factor model	209.07	51	4.10	.94	.04	.06	20,409.60	20,594.75
ii. CAAS four 1 <sup>st</sup> order & one 2 <sup>nd</sup> order factor model	708.67	248	2.86	.93	.04	.05	44,574.80	44,935.62
iii. Boundaryless and protean career attitudes two 1 <sup>st</sup> order factor model	270.89	76	3.56	.95	.05	.06	25,742.30	25,946.45
iv. EPL motivation nine 1 <sup>st</sup> order & three 2 <sup>nd</sup> order factor model	679.74	313	2.17	.90	.06	.04	53,003.44	53,435.22
<b>Measurement models of CMI-C and CAAS</b>								
v. One common factor model	3,380.17	594	5.69	.65	.11	.07	68,861.28	69,374.02
vi. Two general 1 <sup>st</sup> order factor model	2,069.98	593	3.49	.82	.06	.05	66,314.22	66,831.71
vii. CMI-C three 1 <sup>st</sup> order & one 2 <sup>nd</sup> order, and CAAS four 1 <sup>st</sup> order & one 2 <sup>nd</sup> order factor model	1,314.87	586	2.24	.91	.05	.04	64,860.29	65,411.01

**Table 3****Hierarchical regression of the Boundaryless Mindset and Protean Career Attitude by CMI-C and CAAS**

	Boundaryless Mindset				Protean Career Attitude			
	Model A	Model B	Model C	Model D	Model A	Model B	Model C	Model D
<b>CMI-C</b>								
Concern	.16***	.07	—	.07	.14***	.05	—	.05
Control	.02	-.10	—	-.10	.09	-.05	—	-.05
Confidence	.01	.02	—	.02	.04	.05	—	.05
<b>CAAS</b>								
Concern	—	.07	.08	.07	—	.11**	.13**	.11**
Curiosity	—	.37***	.37***	.37***	—	.19***	.19***	.19***
Confidence	—	.02	.02	.02	—	.01	.01	.01
Control	—	.15***	.13**	.15***	—	.32***	.32***	.32***
$R^2$	.03	.30	.29	.30	.06	.30	.33	.33
$\Delta R^2$		.27***		.01		.27***		.00

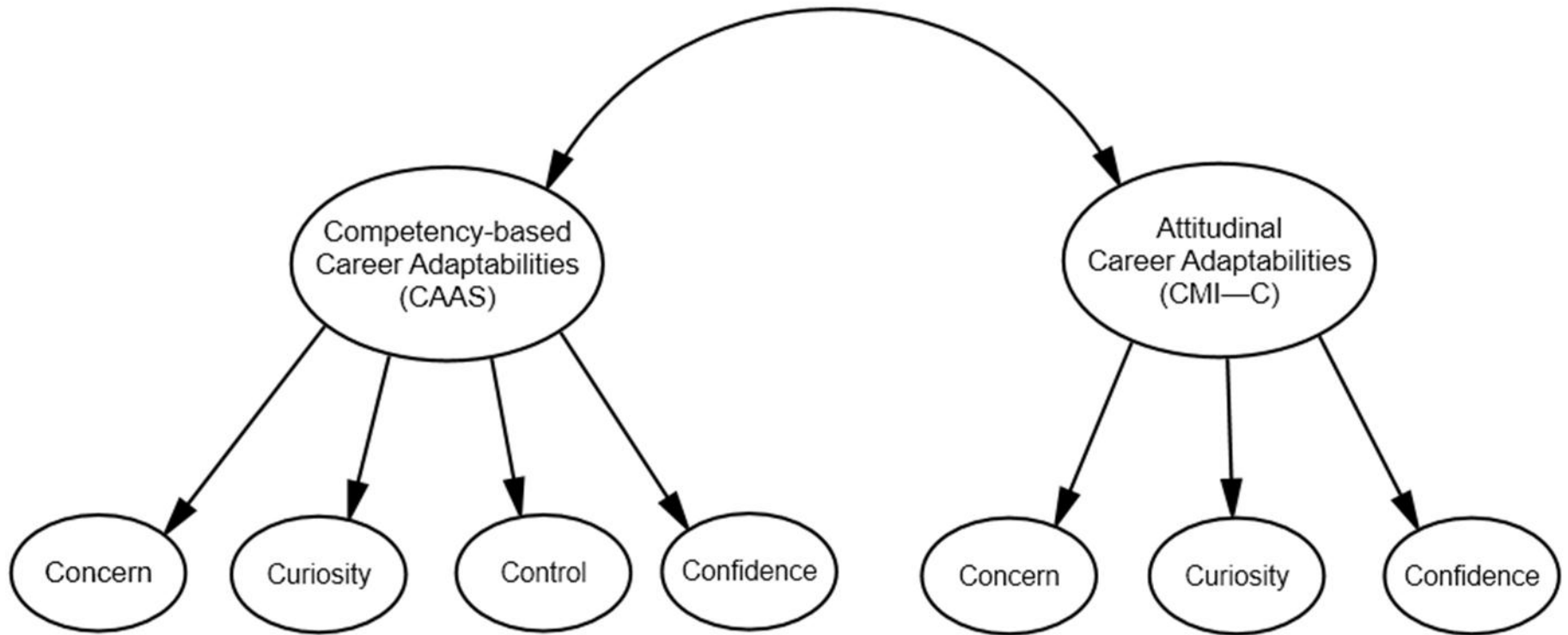
Note. Standardized regression coefficients are reported. \*\*\* $p < .001$ . \*\* $p < .01$ .

Model A: CMI-C was added as the first block of the predictors.

Model B: CAAS was added to the Model A as the second block of the predictors .

Model C: CAAS was added as the first block of the predictors.

Model D: CMI-C was added to the Model C as the second block of the predictors .

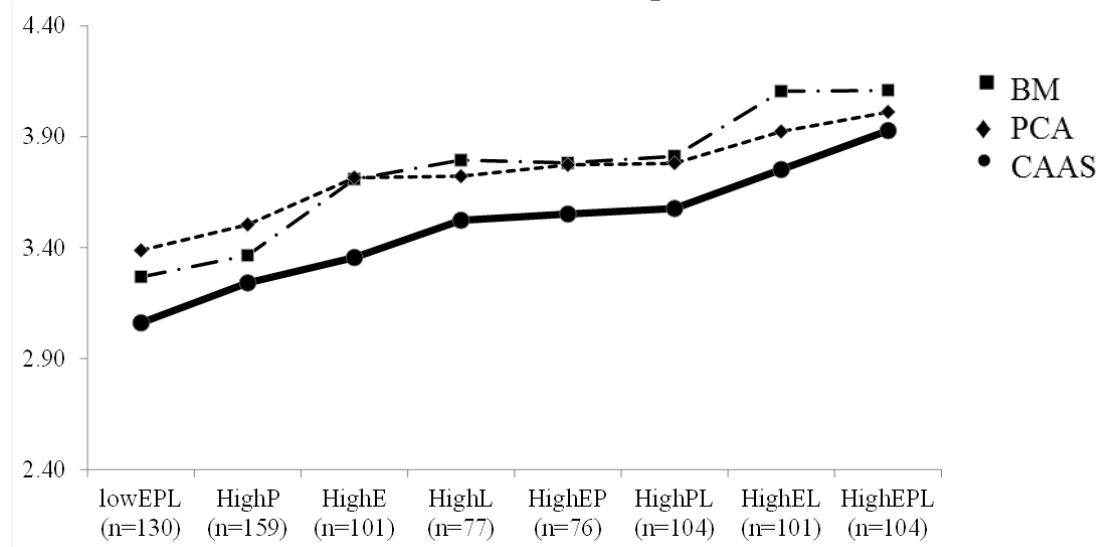
**Figure 1****Measurement Model of Attitudinal (CMI-C) and Psychosocial resource-based (CAAS) Career Adaptabilities**

Note. Standardized factor loadings are reported. \*\*\*  $p \leq .001$ .

**Figure 2**

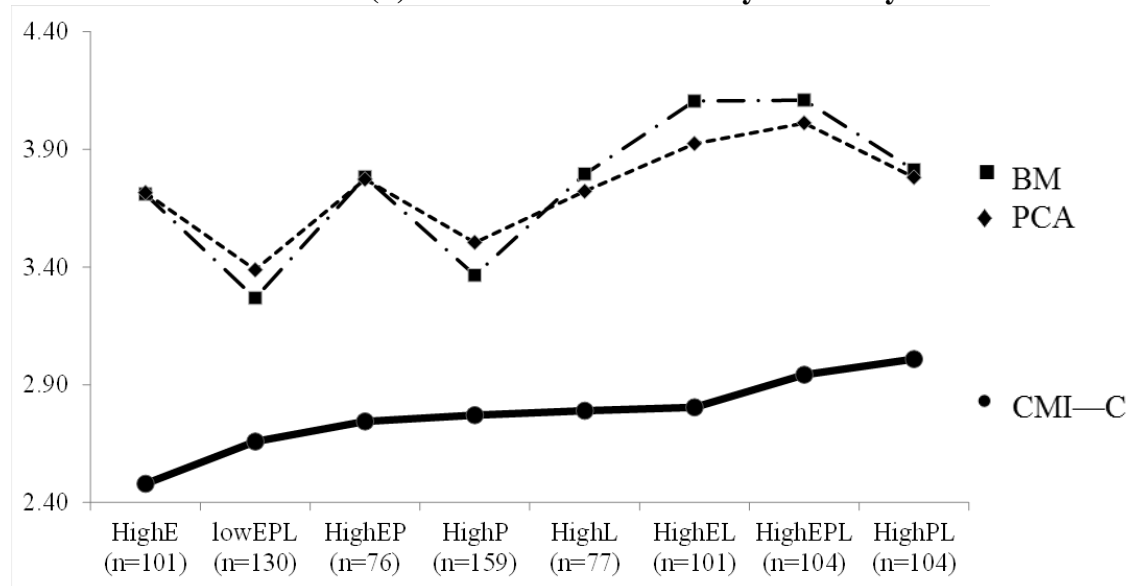
**Mean values of CMI-C and CAAS across eight EPL motivation profile groups plotted from highest to lowest (note: dotted lines represent the means for boundaryless mindset, BM, and protean career attitude, PCA)**

**(a) Career Adapt-abilities Scale**



Note. Correlation coefficient between the mean of BM and the mean of CAAS is .97; correlation coefficient between the mean of PCA and the mean of CAAS is .98.

**(b) Revised Career Maturity Inventory**



Note. Correlation coefficient between the mean of BM and the mean of CMI-C is .44; correlation coefficient between the mean of PCA and the mean of CMI-C is .45.