



Career adaptability: A meta-analysis of relationships with measures of adaptivity, adapting responses, and adaptation results☆

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ABSTRACT

Career adaptability, a psychosocial resource for managing career-related tasks, transitions, and traumas, is a central construct in career construction theory and the field of vocational psychology. Based on the career construction model of adaptation, we conducted a meta-analysis to examine relationships of career adaptability with measures of adaptivity, adapting responses, adaptation results, and demographic covariates. Results based on a total of 90 studies show that career adaptability is significantly associated with measures of adaptivity (i.e., cognitive ability, big five traits, self-esteem, core self-evaluations, proactive personality, future orientation, hope, and optimism), adapting responses (i.e., career planning, career exploration, occupational self-efficacy, and career decision-making self-efficacy), adaptation results (i.e., career identity, calling, career/job/school satisfaction, affective organizational commitment, job stress, employability, promotability, turnover intentions, income, engagement, self-reported work performance, entrepreneurial outcomes, life satisfaction, and positive and negative affect), as well as certain demographic characteristics (i.e., age, education). Multiple regression analyses based on meta-analytic correlations demonstrated the incremental predictive validity of career adaptability, above and beyond other individual difference characteristics, for a variety of career, work, and subjective well-being outcomes. Overall, the findings from this meta-analysis support the career construction model of adaptation.

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1. Introduction

Career adaptability is a central concept in career construction theory (Savickas, 1997, 2002, 2005, 2013) and in the field of vocational psychology more broadly (Brown & Lent, 2016). It has been defined as “a psychosocial construct that denotes an individual's resources for coping with current and anticipated tasks, transitions, traumas in their occupational roles” (Savickas & Porfeli, 2012, p. 662). Career adaptability constitutes a self-regulatory, transactional, and malleable competency that enables workers to successfully solve unfamiliar, complex, and ill-defined problems throughout their careers (Savickas & Porfeli, 2012). Workers with high levels of career adaptability prepare for future career tasks (concern), take responsibility for their career

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development (control), explore possible future selves and career opportunities (curiosity), and believe in their ability to succeed in solving career-related problems (confidence; for further details on the theoretical underpinnings of career adaptability, see Savickas, 1997, 2002, 2005, 2013; Savickas & Porfeli, 2012).

Career adaptability was introduced into the vocational psychology literature as an alternative to the concept of vocational maturity more than 35 years ago (Super & Knasel, 1981). However, only recently have scholars agreed on a parsimonious way of operationalizing career adaptability. The development and validation of the Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012) in more than a dozen countries has led to a rapid increase in the volume of empirical research on career adaptability over the past four years (see Fig. 1). So far however, the empirical literature on career adaptability has not been systematically reviewed and integrated. The goal of this article, therefore, is to report the findings of a meta-analysis based on the career construction model of adaptation (Savickas & Porfeli, 2012) that examines relationships of career adaptability with measures of adaptivity, adapting responses, and adaptation results (Hirschi, Herrmann, & Keller, 2015; Savickas & Porfeli, 2012).

We focused our analysis on composite career adaptability, aggregated across the four career adaptability dimensions (concern, control, curiosity, and confidence). While a great deal of evidence suggests that these dimensions are theoretically and empirically distinguishable, they are also highly correlated (Hirschi et al., 2015; Konstam, Celen-Demirtas, Tomek, & Sweeney, 2015). Moreover, composite correlations are more reliable than their individual components, and are likely to have stronger relationships with relevant criteria (Hunter & Schmidt, 2004). In the following sections, we first describe the career construction model of adaptation as a guiding theoretical framework for our meta-analysis. Second, we consider specific variables that have been proposed as operational indicators of adaptivity, adapting responses, and adaptation results. Subsequently, we report and discuss the methods and results of our meta-analysis. Fig. 2 presents a conceptual model of higher-level associations among adaptivity, adaptability resources, adapting responses, and adaptation results implied by the career construction model of adaptation, as well as summary of the specific operationalizations of each construct that are considered in our meta-analysis. We note pathways in this model that represent relationships that we address in our meta-analysis (e.g., between adaptability resources and adapting responses). For the sake of completeness, this model also outlines relationships that are implied by the career construction model of adaptation, but that we do not address in our meta-analysis (e.g., between adaptivity and adapting responses).

2. Career construction model of adaptation

People craft their careers by dealing with social expectations regarding the preparation for, entrance into, participation in, and exit from different work roles (Savickas et al., 2009). According to career construction theory, career development is the product of people's integration of their personal needs with these social expectations and, thus, their adaptation to the environment (Savickas, 2002, 2005). People differ in the extent to which they are willing (i.e., adaptivity or adaptive readiness) and able (i.e., adaptability resources or career adaptability) to develop beliefs and show behaviors (i.e., adapting responses) that address changing environmental conditions and, thus, lead to a positive integration and fit with their work role (i.e., adaptation results; Savickas, 2013; Savickas & Porfeli, 2012). The career construction model of adaptation (Savickas, 2013; Savickas & Porfeli, 2012; see also Hirschi et al., 2015; Tolentino et al., 2014) proposes that people's adaptivity positively influences their career adaptability which, in turn, positively influences adapting responses and adaptation results (see Fig. 2).

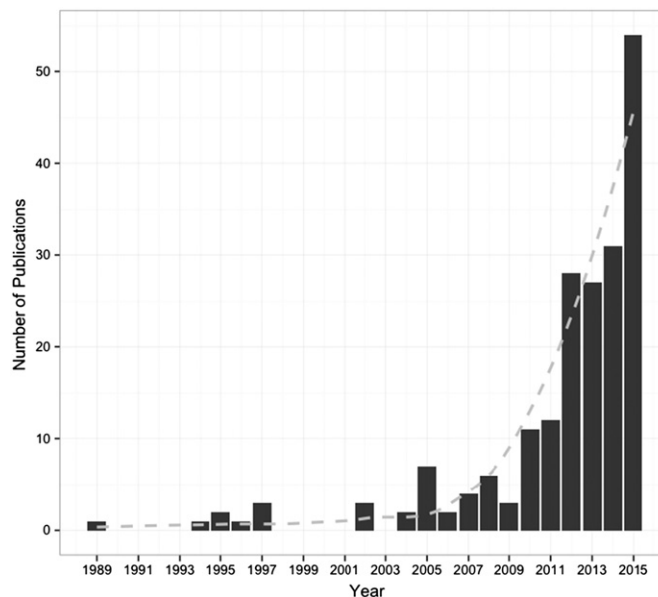


Fig. 1. Publications on career adaptability (in Title, Abstract, or Keywords) per year (1989–2015) according to Thompson Reuters' Web of Knowledge.

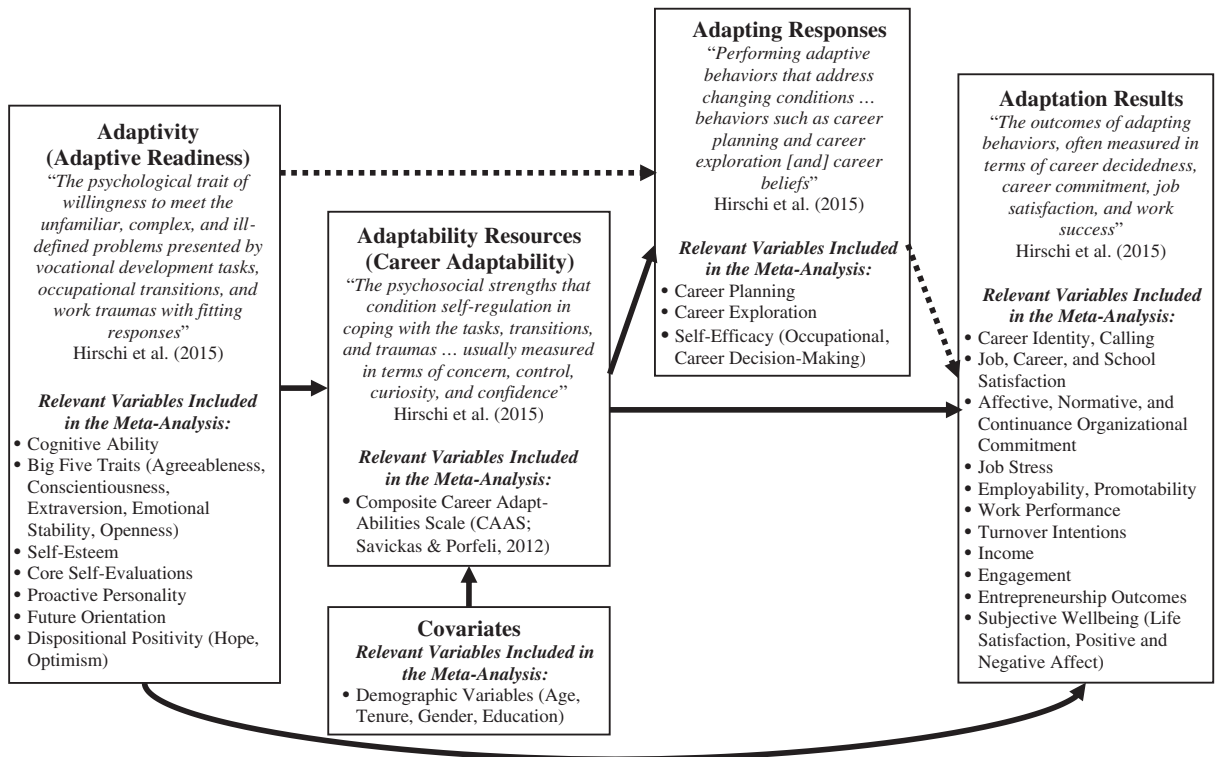


Fig. 2. Conceptual framework for meta-analysis based on the career construction model of adaptation (Savickas, 2005, 2013; Savickas & Porfeli, 2012; Savickas et al., 2009). Note. Solid arrows represent relationships (partially) examined in the meta-analysis; the dashed arrows represents relationships not examined in the meta-analysis.

2.1. Adaptivity

According to career construction theory, adaptivity is a stable, context-general, and trait-like psychological characteristic that involves the readiness and willingness to adapt to career changes. It influences the development and use of career adaptability resources (Savickas, 2013). Savickas and Porfeli (2012) argued that adaptivity can be measured in various ways, including indicators of cognitive flexibility, proactivity, and the big five personality characteristics. For instance, Tolentino et al. (2014) operationalized adaptivity as learning goal orientation, proactive personality, and career optimism, finding that adaptivity was positively related to career adaptability among undergraduate university students. Hirschi et al. (2015) assessed core self-evaluations and proactive personality as indicators of adaptivity and showed that these traits also related positively to career adaptability. In our meta-analysis, we consider two sets of individual difference characteristics, cognitive ability and personality traits, as indicators of adaptivity and, thus, as antecedents of career adaptability (see Fig. 2).

2.1.1. Cognitive ability

While cognitive ability can be conceived as a measure of cognitive flexibility (e.g., Schmidt & Hunter, 2004) and may thus be an indicator of people's readiness to adapt to career changes (i.e., adaptivity), previous research to this end is somewhat equivocal. On the one hand, researchers have argued for a weak and non-significant relationship between cognitive ability and career adaptability based on the assumption that cognitive ability is largely unrelated to self-regulation processes such as goal setting and pursuit (van Vianen, Klehe, Koen, & Dries, 2012). In contrast, other researchers have argued that cognitive ability positively influences the acquisition of knowledge and skills (and thus, human capital) in new and changing work contexts (Schmidt, Hunter, & Outerbridge, 1986) which, in turn, should enhance workers' career adaptability. Using meta-analytic methods, we aim to clarify the relationship between cognitive ability and career adaptability in this study.

2.1.2. Personality traits

We examine relationships between career adaptability and four clusters of personality traits that can be considered indicators of adaptivity. First, consistent with Savickas and Porfeli (2012), we expect that career adaptability is associated with traits that form the five factor model of personality (i.e., the big five: extraversion, conscientiousness, emotional stability, agreeableness, and openness to experience; Digman, 1990). While Zacher (2014b, 2016) argued that particularly conscientiousness and openness should be positively related to career adaptability, other studies have found associations between all five personality traits and career adaptability (e.g., Teixeira, Bardagi, Lassance, de Oliveira Magalhães, & Duarte, 2012; van Vianen et al., 2012; Zacher,

2014a). Second, we propose that self-esteem and the higher-order construct of core self-evaluations (Judge, Erez, Bono, & Thoresen, 2002), are indicators of adaptivity that relate positively to career adaptability because they increase workers' confidence that they can successfully manage career-related tasks and challenges (Guan et al., 2013; Pouyaud, Vignoli, Dosnon, & Lallemand, 2012; van Vianen et al., 2012).

Third, we posit that proactive personality and future orientation (Bateman & Crant, 1993; Hoyle & Sherrill, 2006), as well as two forms of psychological capital, hope and optimism (Youssef & Luthans, 2007), are indicators of adaptivity and thus should relate positively to career adaptability. Proactive individuals successfully change their environment to better fit their needs and preferences (Bateman & Crant, 1993) and, thus, they should also be better prepared to manage career tasks and transitions than less proactive individuals. Similarly, vocational psychologists have argued that a future orientation is necessary to proactively shape one's career and to adapt to career-related challenges (Ebberwein, Krieschok, Ulven, & Prosser, 2004; Super & Knasel, 1981). Hope and optimism involve a future-oriented positive mindset which should enhance career adaptability (Santilli, Nota, Ginevra, & Soresi, 2014; Tolentino et al., 2014).

2.2. Adapting responses

Adapting responses involve adaptive behaviors and beliefs that people use to deal with career development tasks and changing work and career conditions (Hirschi et al., 2015; Savickas, 2013; Savickas & Porfeli, 2012). The career construction model of adaptation assumes that career adaptability is positively related to such adapting responses and mediates the association between adaptivity and adapting responses (see Fig. 2; Savickas & Porfeli, 2012). Indeed, Hirschi et al. (2015) showed that career adaptability was positively related to, but distinct from measures of career planning, career exploration, career decision-making difficulties, and occupational self-efficacy beliefs. Furthermore, this study found that career adaptability partially mediated the effects of two indicators of adaptivity (i.e., core self-evaluations and proactive personality) on the adapting responses. In our meta-analysis, consistent with Hirschi et al. (2015), we investigate relationships between career adaptability and career planning (Hirschi et al., 2015; Taber & Blankemeyer, 2015), career exploration (Li et al., 2015; Porfeli & Savickas, 2012), occupational self-efficacy (Hirschi et al., 2015), and career decision-making self-efficacy (Duffy, Douglass, & Autin, 2015; Guan et al., 2016b). We expected that career adaptability would be positively related to these indicators of adapting responses.

2.3. Adaptation results

The goal of career adaptation is the alignment of workers' personal needs with environmental demands and opportunities. Thus, adaptation results are indicated by the goodness of fit between the person and the environment, as well as indicators such of development, satisfaction, commitment, and work success (Savickas, 2013; Savickas & Porfeli, 2012). In our meta-analysis, we focus on the association between career adaptability and adaptation results (see Fig. 2); given our central focus on career adaptability, we do not examine the association between adapting responses and adaptation results that is also proposed by the career construction model of adaptation (Savickas, 2013). Career construction theory proposes that workers with high career adaptability possess greater transactional competencies and more psychosocial resources that enable them to adapt to and deal successfully with career tasks, transitions, and traumas (Savickas, 1997). Successful adaptation, in turn, should positively influence both career and life outcomes (i.e., due to spillover effects from work to non-work roles). In our meta-analysis, we consider outcome variables that can be more broadly classified as either work and career success or subjective wellbeing.

2.3.1. Measures of work and career success

We first expect that career adaptability relates positively to two indicators of adaptation results, career or vocational identity (McArdle, Waters, Briscoe, & Hall, 2007; Negru-Subtirica, Pop, & Crocetti, 2015; Porfeli & Savickas, 2012) and a sense of calling in one's career (Douglass & Duffy, 2015; Guo et al., 2014). Workers with greater adaptability resources should be able to attain greater subjective career success as indicated by a positive sense of career identity and calling. Second, we assume that career adaptability is positively associated with individuals' satisfaction regarding their careers, jobs, and school experiences (Chan & Mai, 2015; Zacher & Griffin, 2015), as well as with affective, normative, and continuance commitment toward their organization (Ito & Brotheridge, 2005). Given the well-established finding that coping with change is positively associated with various job attitudes (e.g., Judge, Thoresen, Pucik, & Welbourne, 1999), we expected that individuals who adapt more successfully to their environment should feel more satisfied and committed. As such, we also expect career adaptability to be associated with higher levels of work engagement (Merino-Tejedor, Hontangas, & Boada-Grau, 2016; Rossier, Zecca, Stauffer, Maggiori, & Dauwalder, 2012). Third, we expect that career adaptability is negatively related to the experience of job stress (Johnston, Luciano, Maggiori, Ruch, & Rossier, 2013; Maggiori, Johnston, Krings, Massoudi, & Rossier, 2013) because career adaptability helps employees deal with stressors that may otherwise result in negative work-related well-being.

Fourth, we assume that career adaptability is positively related to workers' employability (McArdle et al., 2007), promotability (Chan, Mai, Kuok, & Kong, 2016; Tolentino, Garcia, Restubog, Bordia, & Tang, 2013), and work performance (Ohme & Zacher, 2015), and negatively related to turnover intentions (Chan & Mai, 2015; Ito & Brotheridge, 2005; Klehe, Zikic, Van Vianen, & De Pater, 2011). Fifth, given links to career success (e.g., Ng, Eby, Sorensen, & Feldman, 2005), we assume that career adaptability is also positively associated with income (e.g., Guan et al., 2015; Johnston, Maggiori, & Rossier, 2016). Finally, we expect that career adaptability is positively related to entrepreneurial intentions and mindsets, which are considered to be positive career

developmental outcomes (McKenna, Zacher, Ardabili, & Mohebbi, 2016; Obschonka, Silbereisen, & Schmitt-Rodermund, 2010; Tolentino, Sedoglavich, Lu, Garcia, & Restubog, 2014).

2.3.2. Subjective well-being

Due to well-established spillover effects from the work domain to other spheres of life (Erdogan, Bauer, Truxillo, & Mansfield, 2012; Staines, 1980), we expect that successful adaptation to career tasks and transitions not only positively influences work and career outcomes, but also impacts individuals' subjective well-being as an indicator of adaptation results (Maggiori et al., 2013). Subjective well-being is defined by high levels of life satisfaction and positive affect, and low levels of negative affect (Diener, 2000). We expect that career adaptability is positively associated with life satisfaction and positive affect, whereas it should be negatively associated with negative affect.

2.4. Demographic covariates

Finally, we examined age, tenure, gender, and education as demographic covariates in our meta-analysis. While the career construction theory does explicitly propose associations between career adaptability and demographic characteristics, age and tenure may be related to career adaptability for two reasons: On the one hand, older workers (and those with longer tenure) are likely to have more work and career-related experience than younger workers (or those with shorter tenure). As human capital (Becker, 1975) has been proposed to be an important predictor of career adaptability (Zacher, 2014a), older workers may therefore possess greater career adaptability than young workers. On the other hand, older workers (and those with longer tenure) may have lower career adaptability due to declines in perceived remaining time at work and work-related opportunities across the working life span (Zacher & Frese, 2009).

With regard to gender, a study among Chinese students suggested that men have higher career adaptability than women (Hou, Leung, Li, Li, & Xu, 2012), whereas other studies do not find gender differences (Hirschi, 2009). Based on our quantitative review of this literature, we aim to provide a more conclusive answer to the question of gender differences in career adaptability. Finally, as a form of human capital, we expect to find that workers' highest level of education achieved is positively related to career adaptability, as education helps workers acquire and use new resources to master career-related tasks and transitions (Zacher, 2014a).

3. Method

3.1. Inclusion criteria

We set six inclusion/exclusion criteria prior to conducting our literature search. First, to qualify for inclusion, articles must have measured career adaptability with the instrument developed by Savickas and Porfeli (2012) or an international version or translation thereof. This inclusion criterion led to the exclusion of review articles (e.g., Brown & Lent, 2016) and articles that adopted exclusively qualitative methodologies (e.g., Maree & Gerryts, 2014). Of note, given the number of international versions of this instrument, we included studies published in multiple languages, which were translated either by software (e.g., *Simplicio*, 2014, is reported in Portuguese) or via native speakers (e.g., Li, Hou, & Feng, 2013, is reported in Chinese). For the sake of measurement consistency, we excluded studies that assessed career adaptability-like constructs with instruments or collections of measures other than the Savickas and Porfeli (2012) scale (e.g., Gunkel, Schlaegel, Langella, & Peluchette, 2010; Hirschi, 2010; Ito & Brotheridge, 2005), unless evidence was provided for the equivalence or convergence of such indices with the CAAS (Zacher & Griffin, 2015). Second, in addition to measuring career adaptability, at least one relevant indicator of adaptivity, adapting responses, or adaptation results must also have been measured. Thus, studies that only considered the psychometric qualities of adaptability resources (i.e., the Career Adapt-Abilities Scale or an adapted version – e.g., Hou et al., 2012; Johnston et al., 2013) were excluded.

Third, to avoid double counting, we excluded studies in which authors clearly used the same dataset and reported the same correlations in more than one published study (e.g., Coetzee & Harry, 2014, 2015) unless different outcomes were clearly considered in both studies. Related to this, to maintain independence among effect size estimates, only one effect size for each possible relationship was coded from each sample. Specifically, while each study may have contributed multiple effect size estimates (i.e., representing unique relationships), independence was maintained by only coding one relationship between career adaptability and a given measure of a construct representing adaptivity, adapting responses, or adaptation results for each study, and by considering separate meta-analytic models for each of these relationships. In one case, two measures of entrepreneurial outcomes were measured in one study (i.e., Tolentino, Sedoglavich, Lu, Garcia, & Restubog, 2014, measured both entrepreneurial intentions and entrepreneurial self-efficacy). To maintain independence, a single composite of these two measures was computed and included in our analyses (Hunter & Schmidt, 2004).

Fourth, whenever longitudinal analyses were reported, we included relationships based on only time-one data for complete panel designs (e.g., Negru-Subtirica et al., 2015), and between career adaptability and relevant measures at either the same or at a single other time point for incomplete panel designs (e.g., Guan et al., 2016b). Fifth, we adopted a between-person approach by considering only aggregated (i.e., between-person) data from the few available experience sampling studies (i.e., Zacher, 2015, 2016). Finally, when an article reported results obtained from multiple independent samples, each sample was included

separately in the meta-analysis (i.e., Santilli, Marcionetti, Rochat, Rossier, & Nota, 2016, and Zacher, 2015, each report two independent samples).

3.2. Literature search

All primary literature searching was done between December 15, 2015 and March 1, 2016, with supplementary literature searches conducted in May 2016 to support a revision effort. We searched the electronic databases EBSCOHost, Emerald, Google Scholar, JSTOR, ProQuest, PsycINFO, ScienceDirect, and Web of Science, using the keywords “career adaptability,” “career adaptabilities,” and “career adapt-abilities.” Additionally, we conducted forward searches to find studies citing the original Savickas and Porfeli (2012) scale development paper. To locate additional literature, we examined the reference lists of all retrieved articles, and conducted a backward search of all studies that cited each retrieved article. This search process yielded an initial set of over 300 references. In a second step, based on our inclusion criteria, we selected all quantitative-empirical studies concerning career adaptability from this initial set of articles by carefully examining the abstract of each article. This screening process yielded a total of 174 articles. Additionally, to obtain unpublished data and any articles in-press, we contacted researchers who have published previously on career adaptability (i.e., 121 emails were sent, resulting in 6 responses). We also requested articles using professional mailing lists and website postings. Finally, we searched for pre-press “online first” articles via various relevant journal websites (e.g., *Journal of Vocational Behavior*, *Career Development International*, *Journal of Career Development*). Given our focus on the Savickas and Porfeli (2012) career adaptability scale, all analyses focused on research produced since 2012.

Applying our inclusion criteria, our literature search resulted in a final set of 75 published and in-press articles. Our efforts to contact researchers via professional mailing lists and directly via e-mail to obtain unpublished data and manuscripts, conference presentations, and conference posters, along with efforts to identify relevant unpublished theses/dissertations led to the inclusion of 15 additional studies. We coded a total of 296 independent effect sizes from these $K = 90$ studies (i.e., those marked with an asterisk in the reference list). Note that because two studies reported results from two independent samples (i.e., Santilli et al., 2016 and Zacher, 2015), the $K = 90$ studies considered here yielded 92 independent samples.

3.3. Measures of constructs

We meta-analyzed relationships between overall (i.e., composite) career adaptability and those measures of adaptivity, adapting responses, and adaptation results that were included in at least three ($K \geq 3$) independent samples. Initially, we coded for additional variables that eventually did not meet our minimum $K \geq 3$ criterion (i.e., emotional intelligence, locus of control, anxiety, composite organizational commitment, trait happiness, quality of life, subjective health, trait resilience, trait hardiness, work volition, and a variety of other career-related variables, such as career optimism, aspirations, decidedness, and entrenchment).

We focused on overall career adaptability, as most studies reported an overall score reflecting a global index (i.e., mean or sum) of the four component scores. When studies did not report an overall career adaptability score but only reported relationships for the four career adaptability components and a given measure of adaptivity, adapting responses, or adaptation results, we combined effect sizes into a composite estimate using formulae from Hunter and Schmidt (2004). Such composite estimates represent the relationship between overall career adaptability and the associated variables. In such cases, composite reliabilities for overall career adaptability were estimated using the Spearman-Brown formula (Hunter & Schmidt, 2004).

When overlapping outcome variables were not available in at least three samples, conscious efforts were made to rationally combine relevant independent measures of adaptivity, adapting responses, and adaptation results into a typology of synthetic construct groupings. Table 1 summarizes these efforts in terms of the specific operationalizations of the variables that were combined to create each synthetic construct grouping. It should also be noted that when coding effect sizes for demographic characteristics, age and tenure were conceptualized chronologically (i.e., in years). Gender was operationalized as a dummy coded variable, such that higher values were indicative of females (i.e., 0 = Male, 1 = Female). Education was operationalized in terms attainment, such that higher scores indicate higher levels of education. Additionally, both job (e.g., Zacher & Griffin, 2015) and organizational (e.g., Yang, Guan, Lai, She, & Lockwood, 2015) tenure were considered. Except where noted in Table 1 (i.e., for job stress), all variables were coded such that a positive relationship with career adaptability would indicate “higher” levels for a given measure of adaptivity, adapting responses, and adaptation results.

3.4. Meta-analytical procedures

We corrected observed correlations for sampling and measurement error, and estimated meta-analytic effect size estimates using Hunter and Schmidt's (2004) random effects procedure. First, we corrected for sampling error by calculating sample size-weighted correlations. Second, where possible (i.e., for multi-item scales), we corrected for the lack of perfect reliability. Specifically, following the suggestions of Hunter and Schmidt (2004), artifact distributions were used to estimate reliabilities for cases where a study did not report the reliability estimate for a given construct. In addition to the sample-size weighted correlation (r) and the sample size-weighted and reliability-corrected correlation (r_c), we report the 95% confidence interval and the 80% credibility interval for r_c , as well as the variance attributable to statistical artifacts (%Var). A sample size-weighted and reliability-corrected correlation is considered statistically significant when its associated confidence interval does not include zero. If a credibility interval includes zero, moderators are likely present (Geyskens, Krishnan, Steenkamp, & Cunha, 2009). Alternatively,

Table 1

Summary of synthetic construct groupings.

<i>Measures of Adaptivity</i>	
Synthetic Construct	Included Variables
Cognitive Ability	ACT Score GMA GPA
Future Orientation	Future Orientation Future Temporal Focus Future Temporal Orientation Future Time Perspective Future Work Self
<i>Measures of Adapting Responses</i>	
Synthetic Construct	Included Variables
Occupational Self-Efficacy	General Self-Efficacy Job Search Self-Efficacy Occupational Self-Efficacy Self-Efficacy Regarding the Transition to Work
<i>Measures of Adaptation Results</i>	
Synthetic Construct	Included Variables
Career Identity	Career Identity Professional Identification Vocational Identity
School Satisfaction	Academic Satisfaction College Major Satisfaction School Satisfaction
Job Stress	Perceived Stress (Higher = Higher Stress) Burnout (Higher = Higher Burnout) Job Strain (Higher = Higher Strain)
Employability	Employability Employability Skills
Work Performance	Self-Rated Career Performance Self-Rated Task Performance
Engagement	Utrecht Work Engagement Scale (UWES) Modified UWES (i.e., Academic Engagement)
Entrepreneurship Outcomes	Entrepreneurial Alertness Entrepreneurial Intentions Entrepreneurial Self-Efficacy

the 75% rule offered by [Hunter and Schmidt \(2004\)](#) can be applied (i.e., a moderator is likely to be present when the percentage variance accounted for by statistical artifacts is <75%). It was not our goal to search for moderators because the career construction model of adaptation does not explicitly propose moderators and because of the relatively diffuse nature of the literature at this point in time. Therefore, we offer these tests as evidence for future research to consider conditional effects that may influence the strength of relationships between career adaptability and the variables considered here. All analyses were carried out using formulae from [Hunter and Schmidt \(2004\)](#) via the ‘psychometric’ package ([Fletcher, 2010](#)) for the R statistical computing environment ([R Core Team, 2016](#)).

3.5. Tests of incremental effects using meta-analytic multiple regression models

In addition to the summary effects for each measure of adaptivity, adapting responses, and adaptation results, we also conducted several hierarchical meta-analytic multiple regression models to test for incremental effects ([Viswesvaran & Ones, 1995](#)). Given their prevalence and significance in prior research on career adaptability, the central predictors considered in these multiple regression analyses were derived from the five-factor model of personality. Based on the career construction

model of adaptation and based on meta-analytic correlations available in the literature that overlap with the variables considered here, we ran two types of models that considered both adaptivity antecedents and adaptation results of career adaptability.

First, for measures of adaptivity, we considered the joint influence of big five personality traits on career adaptability. Additionally, we considered several models that included big five personality traits along with other dispositional and individual difference characteristics. Specifically, we considered the influence of dispositional optimism (Alarcon, Bowling, & Khazon, 2013), cognitive ability (Judge, Jackson, Shaw, Scott, & Rich, 2007), and proactive personality (Tornau & Frese, 2013) on career adaptability. In such models we noted cases where these dispositional and individual difference characteristics accounted for unique variance in career adaptability that is *not* attributable to the big five. Such evidence is important for demonstrating that career adaptability is not simply an aggregate construct of common personality markers.

Second, for adaptation results, we considered several models to test for the incremental predictive validity of career adaptability above and beyond big five personality traits. Consistent with the career construction model of adaptation, we considered job satisfaction (Judge, Heller, & Mount, 2002), life satisfaction (Steel, Schmidt, & Shultz, 2008), and career satisfaction and salary (Ng et al., 2005) as outcomes. Additionally, because the relevant data is readily available in the literature, we considered a more complex model to address the possibility of incremental effects of career adaptability on self-reported work performance above and beyond big five traits, cognitive ability, and work experience (Judge et al., 2007). In each case, meta-analytic estimates of correlations among the big five traits were taken from Ones, Viswesvaran, and Reiss (1996). Moreover, as suggested by Viswesvaran and Ones (1995), the sample size for each multiple regression model was the harmonic mean of the sample size across the relevant correlations considered.

4. Results

Meta-analytic results for relationships of career adaptability with measures of adaptivity, adapting responses, and adaptation results are summarized in Table 2. Tables 3 and 4 summarize the results of the meta-analytic multiple regression analyses with career adaptability as an outcome of adaptivity measures as well as career adaptability as a predictor of adaptation results, respectively. All effects summarized below are significant ($p < 0.05$), except where noted explicitly.

4.1. Adaptivity

Cognitive ability was positively related to career adaptability ($r_c = 0.17$). Considering the big five personality traits, all five dimensions – agreeableness ($r_c = 0.15$), conscientiousness ($r_c = 0.49$), extraversion ($r_c = 0.37$), emotional stability ($r_c = 0.35$), and openness ($r_c = 0.37$) – were positively related to career adaptability. Likewise, self-esteem was positively related to career adaptability ($r_c = 0.42$), as were core self-evaluations ($r_c = 0.52$), proactive personality ($r_c = 0.63$), future orientation ($r_c = 0.54$), hope ($r_c = 0.69$), and optimism ($r_c = 0.49$).

4.2. Adapting responses

With respect to adapting responses, career planning ($r_c = 0.41$), career exploration ($r_c = 0.41$), and both occupational self-efficacy ($r_c = 0.60$) and career decision-making self-efficacy ($r_c = 0.65$) were positively related to career adaptability.

4.3. Adaptation results

In terms of adaptation results, career identity ($r_c = 0.43$) and a sense of calling ($r_c = 0.51$) were positively related to career adaptability. Likewise, career adaptability was positively associated with career, job, and school satisfaction ($r_c = 0.46$, $r_c = 0.23$, $r_c = 0.40$, respectively). While career adaptability was positively associated with affective organizational commitment ($r_c = 0.23$), it was not significantly related to normative or continuance organizational commitment. Career adaptability was negatively associated with job stress ($r_c = -0.20$), and positively associated with employability ($r_c = 0.54$), promotability ($r_c = 0.42$), and self-reported work performance ($r_c = 0.47$). Higher career adaptability was also associated with lower turnover intentions ($r_c = -0.30$), as well as higher income ($r_c = 0.16$), engagement ($r_c = 0.49$), and more positive entrepreneurial outcomes ($r_c = 0.47$). In terms of outcomes that are indicative of subjective well-being, career adaptability was positively related to life satisfaction ($r_c = 0.38$), and associated with lower negative affect ($r_c = -0.24$), as well as higher positive affect ($r_c = 0.34$).

4.4. Demographic covariates

Age ($r_c = 0.03$) and education ($r_c = 0.08$) were positively related to career adaptability, whereas the effects of gender and tenure were not statistically significant.

Table 2

Meta-analytic relationships of career adaptability with measures of adaptivity, adapting responses, and adaptation results.

	Adaptivity	K	N	r	r_c	SDr_c	CI_L	CI_U	%Var	CV_L	CV_U
Measure	Cognitive Ability	5	2,143	0.15	0.17	0.09	0.12	0.22	28.68	0.06	0.28
	Big Five Agreeableness	11	10,826	0.13	0.15	0.14	0.13	0.17	6.76	-0.03	0.33
	Big Five Conscientiousness	12	11,038	0.42	0.49	0.13	0.47	0.51	9.22	0.33	0.65
	Big Five Extraversion	12	11,038	0.33	0.37	0.11	0.35	0.39	10.23	0.23	0.51
	Big Five Emotional Stability	13	11,370	0.31	0.35	0.08	0.37	0.33	17.68	0.46	0.25
	Big Five Openness	11	10,826	0.32	0.37	0.10	0.35	0.39	10.46	0.24	0.50
	Self-Esteem	4	1,314	0.38	0.42	0.01	0.37	0.48	93.16	0.41	0.44
	Core Self-Evaluations	5	4,130	0.47	0.52	0.07	0.49	0.55	21.44	0.44	0.60
	Proactive Personality	7	4,993	0.55	0.63	0.09	0.61	0.65	13.22	0.51	0.75
	Future Orientation	7	2,871	0.49	0.54	0.11	0.51	0.57	16.66	0.40	0.68
	Hope	4	1,869	0.58	0.69	0.00	0.65	0.72	100.00	0.69	0.69
	Optimism	3	1,749	0.41	0.49	0.09	0.45	0.54	21.06	0.38	0.60
	Adapting Responses	K	N	r	r_c	SDr_c	CI_L	CI_U	%Var	CV_L	CV_U
Measure	Career Planning	3	1,723	0.37	0.41	0.00	0.37	0.46	100.00	0.41	0.41
	Career Exploration	5	2,630	0.37	0.41	0.10	0.37	0.44	14.93	0.28	0.53
	Occupational Self-Efficacy	7	3,330	0.54	0.60	0.05	0.57	0.62	42.16	0.53	0.66
	Career Decision Making Self-Efficacy	7	3,927	0.61	0.65	0.25	0.63	0.67	1.49	0.33	0.97
	Adaptation Results	K	N	r	r_c	SDr_c	CI_L	CI_U	%Var	CV_L	CV_U
Measure	Career Identity	8	5,252	0.39	0.43	0.06	0.40	0.45	30.79	0.35	0.50
	Calling	5	2,335	0.46	0.51	0.14	0.48	0.55	8.99	0.33	0.69
	Career Satisfaction	8	4,215	0.42	0.46	0.09	0.43	0.49	17.27	0.35	0.57
	Job Satisfaction	5	4,393	0.19	0.23	0.03	0.20	0.26	60.84	0.19	0.27
	School Satisfaction	5	1,675	0.36	0.40	0.09	0.35	0.44	27.26	0.29	0.51
	Affective Organizational Commitment	3	379	0.21	0.23	0.00	0.12	0.33	100.00	0.23	0.23
	Normative Organizational Commitment	3	379	0.07	0.08	0.00	-0.03	0.19	100.00	0.08	0.08
	Continuance Organizational Commitment	3	379	-0.07	-0.08	0.00	-0.20	0.04	100.00	-0.08	-0.08
	Job Stress	6	7,390	-0.17	-0.20	0.00	-0.22	-0.17	100.00	-0.20	-0.20
	Employability	6	1,380	0.49	0.54	0.11	0.51	0.57	16.66	0.40	0.68
	Promotability	3	1,256	0.39	0.42	0.17	0.37	0.47	6.78	0.20	0.64
	Work Performance	4	2,244	0.43	0.47	0.09	0.43	0.50	16.11	0.36	0.58
	Turnover intentions	5	1,829	-0.27	-0.30	0.15	-0.35	-0.25	13.13	-0.49	-0.11
	Income	3	3,332	0.15	0.16	0.04	0.13	0.20	40.47	0.11	0.21
	Engagement	6	2,352	0.45	0.49	0.07	0.45	0.52	30.63	0.40	0.57
	Entrepreneurship Outcomes	4	1,470	0.43	0.47	0.22	0.43	0.52	4.32	0.19	0.76
	Life Satisfaction	11	9,145	0.34	0.38	0.04	0.36	0.40	44.26	0.33	0.44
	Negative Affect	4	2,223	-0.22	-0.24	0.02	-0.28	-0.19	79.06	-0.27	-0.21
Positive Affect	4	2,223	0.31	0.34	0.12	0.30	0.39	13.77	0.20	0.49	
	Demographic Covariates	K	N	r	r_c	SDr_c	CI_L	CI_U	%Var	CV_L	CV_U
Measure	Age	30	18,864	0.03	0.03	0.05	0.01	0.04	45.99	-0.03	0.09
	Tenure	8	2,733	0.02	0.02	0.01	-0.02	0.06	96.42	0.00	0.03
	Gender	31	20,215	0.01	0.01	0.02	-0.01	0.02	73.42	-0.02	0.04
	Education	14	8,863	0.08	0.08	0.05	0.06	0.10	40.83	0.02	0.15

Note. *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample-size weighted and reliability-corrected correlation; *SDr_c* = standard deviation of *r_c*; *CI* = confidence interval for *r_c*; *CV* = credibility interval for *r_c*. %VAR = variance attributable to sampling error.

Table 3

Results of meta-analytic multiple regression models predicting career adaptability from measures of adaptivity.

	Big Five			Big Five + Optimism			Big Five + Cognitive Ability			Big Five + Proactive Personality		
	<i>N</i> = 12,129			<i>N</i> = 10,789			<i>N</i> = 10,363			<i>N</i> = 2,831		
	$R^2 = .52^*$			$R^2 = .54^*$			$R^2 = .53^*$			$R^2 = .57^*$		
				$\Delta R^2 = .02^*$			$\Delta R^2 = .01^*$			$\Delta R^2 = .05^*$		
DV: Career Adaptability	B	SE _B	t	B	SE _B	t	B	SE _B	t	B	SE _B	t
O	0.34	0.01	51.99	0.31	0.01	43.90	0.32	0.01	44.43	0.25	0.01	18.25
C	0.51	0.01	74.56	0.47	0.01	64.70	0.51	0.01	70.16	0.36	0.02	23.52
E	0.31	0.01	46.55	0.27	0.01	37.92	0.31	0.01	43.85	0.20	0.01	13.80
A	-0.11	0.01	-16.08	-0.13	0.01	-17.88	-0.11	0.01	-14.62	-0.03	0.01	1.90
ES	0.13	0.01	19.57	0.07	0.01	9.68	0.13	0.01	17.13	0.11	0.01	8.13
Optimism				0.18	0.01	20.96						
Cognitive Ability							0.10	0.01	14.83			
Proactive Personality										0.30	0.02	18.34

Note. O = openness, C = conscientiousness, E = extraversion, A = agreeableness, ES = emotional stability. *B* = unstandardized regression coefficient, *SE* = standard error for *B*, *t* = *t*-value. For all effects, *t*-values greater than 1.96 are significant at $p < .05$. Sample sizes for each model were determined by computing harmonic means across the sample sizes reported in meta-analytic correlation tables (See Viswesvaran & Ones, 1995).

* $p < .05$.

4.5. Meta-analytic multiple regression models

Considering first the models with measures of adaptivity as predictors of career adaptability (Table 3), we found that each of the big five personality traits contributes unique variance to the prediction of career adaptability ($R^2 = 0.52$). Moreover, considering incremental effects, dispositional optimism ($B = 0.18$, $SE = 0.01$, $p < 0.05$, $\Delta R^2 = 0.02$), cognitive ability ($B = 0.10$, $SE = 0.01$, $p < 0.05$, $\Delta R^2 = 0.01$), and proactive personality ($B = 0.30$, $SE = 0.02$, $p < 0.05$, $\Delta R^2 = 0.05$) all explain significant and unique variability in career adaptability above and beyond the influence of the big five personality traits.

For the models predicting measures of adaptation results (Table 4), we found that career adaptability possesses incremental validity over and above the big five traits when predicting life satisfaction ($B = 0.17$, $SE = 0.01$, $p < 0.05$, $\Delta R^2 = 0.01$) and career satisfaction ($B = 0.48$, $SE = 0.01$, $p < 0.05$, $\Delta R^2 = 0.11$), but not job satisfaction. Moreover, we found an incremental effect of career adaptability predicting income ($B = 0.12$, $SE = 0.02$, $p < 0.05$, $\Delta R^2 = 0.01$). Finally, our analyses provide evidence for an incremental effect of career adaptability on self-reported work performance above and beyond the big five traits, cognitive ability, and work experience ($B = 0.41$, $SE = 0.01$, $p < 0.05$, $\Delta R^2 = 0.08$).

Based upon these models, we also considered post hoc tests for indirect effects of adaptivity on adaptation results through career adaptability as preliminary evidence in support of the conceptual model depicted in Fig. 2. As acknowledged, we are limited in our ability to fully elaborate on all possible linkages depicted in this model. However, we can offer some evidence for indirect effects of big five personality indicators on several adaptation results through career adaptability based upon the parameters tested in our meta-analytic multiple regression models (see Tables 3 and 4). Table 5 depicts a summary of these indirect effects.

Consistent with best practices (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), for each of these parameters, indirect effects were calculated as the product of the regression weight defining career adaptability regressed onto any given big-five personality indicator (i.e., derived from Table 3) and the regression weight defining any given adaptation result regressed onto career adaptability controlling for all big five personality indicators (i.e., derived from Table 4). Such indirect effects serve as evidence for the process by which adaptivity (i.e., big five personality indicators) indirectly influences adaptation results (i.e., job, career, and life satisfaction, income, and work performance) through career adaptability. In addition to calculating indirect effects as such, we also computed associated Sobel's standard errors to statistically test whether or not each indirect effect was significantly different from zero.

Sobel's method for testing the statistical significance of indirect effect parameters has been criticized for being under-powered in small samples because of abnormalities associated with non-normal sampling distributions of indirect effect product terms (hence, bootstrapping to estimate standard errors is often advocated when sample sizes are small). That said, bootstrapping procedures cannot be applied here, because raw data are necessary to compute such iterative replications (i.e., our meta-analytic multiple regression models are based off of summary data). Moreover, Monte Carlo simulations suggest that the conclusions from Sobel's method and bootstrapping procedures converge (see Fritz & MacKinnon, 2007) when samples are large (i.e., as is the case with our meta-analysis). Thus, we have deemed this the most appropriate method for summarizing these effects here.

Considering the interpretation of these parameters from Table 5, we find evidence for significant indirect effects of all big five personality indicators on most adaptation results (i.e., career and life satisfaction, income, and work performance) through career adaptability, with the exception of job satisfaction. The latter finding is not surprising given that career adaptability was not incrementally predictive of job satisfaction above-and-beyond big five indicators (see Table 4).

Table 4

Results of meta-analytic multiple regression models testing incremental effects of career adaptability.

		DV: Job Satisfaction (Step 1)			DV: Job Satisfaction (Step 2)		
		$N = 14,032$			$N = 11,994$		
		$R^2 = .17$			$R^2 = .17 (\Delta R^2 = .00)$		
Predictor	B	SE _B	t	B	SE _B	t	
O	-0.04	0.01	-4.99	-0.04	0.01	-3.83	
C	0.20	0.01	23.84	0.20	0.01	18.70	
E	0.21	0.01	26.65	0.22	0.01	23.01	
A	0.04	0.01	4.35	0.03	0.01	3.86	
ES	0.20	0.01	23.46	0.20	0.01	21.50	
CA				-0.01	0.01	-0.81	
		DV: Career Satisfaction (Step 1)			DV: Career Satisfaction (Step 2)		
		$N = 10,921$			$N = 10,170$		
		$R^2 = .18$			$R^2 = .29 (\Delta R^2 = .11^*)$		
Predictor	B	SE _B	t	B	SE _B	t	
O	0.04	0.01	4.82	-0.12	0.01	-12.42	
C	0.07	0.01	7.63	-0.17	0.01	-15.69	
E	0.21	0.01	23.25	0.06	0.01	6.75	
A	-0.02	0.01	-2.66	0.03	0.01	3.00	
ES	0.30	0.01	32.06	0.24	0.01	25.79	
CA				0.48	0.01	39.68	
		DV: Life Satisfaction (Step 1)			DV: Life Satisfaction (Step 2)		
		$N = 10,877$			$N = 10,809$		
		$R^2 = .31$			$R^2 = .32 (\Delta R^2 = .01^*)$		
Predictor	B	SE _B	t	B	SE _B	t	
O	-0.06	0.01	-6.97	-0.12	0.01	-12.84	
C	0.17	0.01	19.94	0.08	0.01	8.11	
E	0.29	0.01	34.98	0.24	0.01	26.54	
A	0.01	0.01	1.37	0.03	0.01	3.57	
ES	0.36	0.01	41.36	0.33	0.01	38.36	
CA				0.17	0.01	15.20	
		DV: Income (Step 1)			DV: Income (Step 2)		
		$N = 9,650$			$N = 9,095$		
		$R^2 = .05$			$R^2 = .06 (\Delta R^2 = .01^*)$		
Predictor	B	SE _B	t	B	SE _B	t	
O	0.03	0.01	2.76	-0.01	0.01	-1.10	
C	0.09	0.01	8.29	0.03	0.01	2.05	
E	0.10	0.01	9.94	0.07	0.01	5.70	
A	-0.17	0.01	-16.28	-0.16	0.01	-14.50	
ES	0.12	0.01	10.84	0.10	0.01	8.95	
CA				0.12	0.01	8.27	

(continued on next page)

Table 4 (continued)

Predictor	DV: Work Performance (Step 1)			DV: Work Performance (Step 2)		
	B	SE _B	t	B	SE _B	t
	<i>N</i> = 8,532 <i>R</i> ² = .45			<i>N</i> = 6,957 <i>R</i> ² = .53 ($\Delta R^2 = .08^*$)		
O	-0.03	0.01	-3.42	-0.16	0.01	-16.00
C	0.29	0.01	33.30	0.08	0.01	7.06
E	0.13	0.01	15.42	0.00	0.01	0.20
A	0.05	0.01	5.62	0.09	0.01	9.71
ES	-0.01	0.01	-1.11	-0.06	0.01	-6.22
GMA	0.54	0.01	65.26	0.50	0.01	55.36
WE	0.30	0.01	36.96	0.28	0.01	32.00
CA				0.41	0.01	32.45

Note. O = openness, C = conscientiousness, E = extraversion, A = agreeableness, ES = emotional stability. CA = career adaptability, GMA = cognitive ability, WE = work experience, *B* = unstandardized regression coefficient, *SE* = standard error for *B*, *t* = *t*-value. For all effects, *t*-values greater than 1.96 are significant at $p < 0.05$. Sample sizes for each model were determined by computing harmonic means across the sample sizes reported in meta-analytic correlation tables (See Viswesvaran & Ones, 1995).

* $p < .05$.

5. Discussion

Using the career construction model of adaptation as theoretical framework (Fig. 2; Savickas, 2013; Savickas & Porfeli, 2012), the aim of this meta-analytic review was to synthesize extant empirical findings on relationships of career adaptability with measures of adaptivity, adapting responses, and adaptation results to guide future research. In the following, we summarize and interpret our findings, discuss limits to the generalizability of these findings, and outline directions for future research.

5.1. Summary and interpretation of findings

In terms of indicators of adaptivity, the positive relationship between cognitive ability and career adaptability is consistent with the assumption of the career construction model of adaptation that cognitive flexibility contributes to career adaptability (i.e., career adaptability is a transactional competency that is developed based on experiences over time, shaped by learning, and augmented by other capabilities; Savickas & Porfeli, 2012). Considering the other measures of adaptivity, the positive and moderate relationships with various personality traits are not surprising given previous research utilizing large samples (e.g., Zacher, 2014a,b). This evidence along with that from the meta-analytic multiple regression models predicting career adaptability suggests that established personality traits are related to, but distinct from career adaptability, and together explain approximately 50–60% of variance in career adaptability.

Of note, it is important to stress the “distinctiveness” of the predictors in such models. While approximately half (i.e., 52%) of the variance in career adaptability is attributable to the combined influence of big five traits in our regression models, this should be tempered against other evidence suggesting that each trait in isolation exhibited unique influences on career adaptability, and that unique patterns in the (relative) magnitude of such relationships emerged when considering both zero-order and partial

Table 5

Indirect effects of adaptivity (i.e., big five) on adaptation results through career adaptability.

Adaptation Results	O	C	E	A	ES
Job Satisfaction	-0.003	-0.005	-0.003	0.001	-0.001
Career Satisfaction	0.163 *	0.245 *	0.149 *	-0.053 *	0.062 *
Life Satisfaction	0.058 *	0.087 *	0.053 *	-0.019 *	0.022 *
Income	0.041 *	0.061 *	0.037 *	-0.013 *	0.016 *
Work Performance	0.139 *	0.209 *	0.127 *	-0.045 *	0.053 *

Note. O = openness, C = conscientiousness, E = extraversion, A = agreeableness, ES = emotional stability.

* $p < .05$.

relationships (see Tables 2 and 3). Moreover, there are incremental predictive effects of additional personality indicators (i.e., optimism, proactivity) and individual differences (i.e., cognitive ability) above and beyond the big five traits. Consistent with primary studies demonstrating evidence for discriminant validity (e.g., Porfeli & Savickas, 2012; Savickas & Porfeli, 2012), we interpret this evidence in support of the distinctiveness of career adaptability from related personality and other individual differences constructs.

With regard to adapting responses, and consistent with previous work concerning the career construction model of adaptation (Hirschi et al., 2015), we found that career adaptability is positively related to career planning, career exploration, and both occupational and career decision-making self-efficacy. Thus, career adaptability resources appear to facilitate adapting responses to changing conditions. In terms of adaptation results, the associations of career adaptability with satisfaction variables are generally consistent with expectations based on career construction theory (Savickas, 1997, 2013). However, the non-significant incremental effect of career adaptability on job satisfaction is surprising and bears further attention. The positive association of career adaptability with affective commitment, but non-significant associations with continuance or normative commitment is also somewhat surprising. We suspect that this finding is largely an artifact of the studies considered herein. Specifically, the $K = 3$ studies that have measured these commitment dimensions (i.e., Esteves, 2014; Simplício, 2014; Vieira, 2014) were all unpublished dissertations from the same laboratory in Portugal. Additionally, all three studies used (relatively small) convenience samples. Two of these studies (i.e., Simplício, 2014; Vieira, 2014) also considered composite organizational commitment (i.e., an aggregate construct representing multiple commitment dimensions). An ancillary analysis of these data suggests that there was a significant, albeit small relationship between career adaptability and composite organizational commitment ($K = 2$, $N = 288$, $r_c = 0.06$, $p < 0.05$). Given this, additional evidence is needed before more definitive conclusions regarding the relationships of career adaptability with continuance and normative commitment can be drawn. Recent research on differentiated associations of career adaptability with dimensions of career entrenchment may be relevant in this regard (see Zacher, Ambiel, & Noronha, 2015).

The findings for job stress, self-reported work performance, employability, promotability, turnover intentions, income, engagement, and entrepreneurship outcomes are consistent with expectations based on career construction theory (Savickas, 1997, 2013) and previous empirical research. It should also be pointed out that career adaptability is associated with not only subjectively rated career success outcomes, but also more objective measures, such as income.

Beyond work and career-specific outcomes, we found that career adaptability has positive implications for subjective well-being (life satisfaction, positive affect, and low levels of negative affect). Thus, it appears as though career adaptability can contribute to well-being and positive life functioning more generally (e.g., Johnston et al., 2013). While not included in our analyses because of our minimum study criterion, evidence from primary studies suggests that career adaptability also relates positively to happiness (Johnston et al., 2013), subjective health (Johnston, Krings, & Bollmann, 2015; Maggiori et al., 2013), quality of life (Soresi, Nota, & Ferrari, 2012), hardiness (Santilli et al., 2015), and resilience (Coetzee & Harry, 2015). These latter points are important to note, because they suggest that career adaptability is an important resource for bolstering well-being across work and non-work contexts. A potential explanation may be that career adaptability frees up personal resources in the work context that are necessary for positive functioning and well-being in other roles. For example, if people have high career adaptability resources, not only their own well-being, but also potentially the well-being of others (e.g., family, colleagues) may benefit in indirect ways. These ideas suggest an important avenue for future research concerning the spillover and/or crossover effects of career adaptability.

These findings have implications for the continued development of the career construction model of adaptation (see Fig. 2) and for the design of future research based on this theoretical framework. It is clear from our regression analyses that certain indicators of adaptation results (i.e., career and life satisfaction, income, and work performance) are, on the one hand, related to distally-construed indicators of adaptivity (e.g., big five personality). On the other hand, these indicators of adaptation results are related to more proximal indicators of career adaptability while controlling for the more distal adaptivity indicators. Moreover, the analysis of the indirect effects of such adaptivity indicators on adaptation results through career adaptability provides initial evidence for the tenability of the process implied in Fig. 2. The results of this analysis suggest that it is important to properly account for distal adaptivity indicators to understand the unique in transitu role that career adaptability plays in explaining linkages between adaptivity and adaptation results. Of note, this may be especially true when construing work performance as an indicator of adaptation results, where career adaptability was found to be incrementally predictive above and beyond not only big five personality traits, but also cognitive ability and work experience.

Finally, considering demographic covariates, the weak association observed for age and the non-significant association of tenure with career adaptability are somewhat surprising, given that work experience is considered an important human capital resource. That said, the finding that education is positively related to career adaptability is consistent with the assumption that human capital contributes to career adaptability (cf. Savickas & Porfeli, 2012).

5.2. Limitations and future research

While the results of our meta-analysis are compelling, there are limitations to the generalizability of the findings presented here. Our synthesis considered mainly cross-sectional (i.e., single time-point) studies. As such, causal conclusions as suggested by the career construction model of adaptation (see Fig. 2; Savickas & Porfeli, 2012) cannot be drawn from this literature at this time. There is emerging scholarship on career adaptability that takes advantage of experimental (Ohme & Zacher, 2015) as well as longitudinal (e.g., Zacher, 2014b) designs to investigate career adaptability, which enhance the tenability of causal

inferences. Additionally, most research in this area has adopted between-person designs, and therefore we also adopted this paradigm in our analysis. However, recent research (Zacher, 2016) suggests that career adaptability can manifest on a daily basis and vary within persons over time.

Moreover, a majority of studies in this area use single-source self-report methodology, which is problematic due to common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Given the limitations of this methodology, we cannot rule out the influence of common method bias in our meta-analysis. One way to partially address this issue is by considering the few studies that have measured objective outcomes, such as income (Guan et al., 2015; Johnston et al., 2015), but also job search success (Koen, Klehe, & Van Vianen, 2012) and employment status (Duarte et al., 2012) that are unlikely to be upwardly biased by method effects. A related remediation of this issue would be to consider the few studies that have used multi-source ratings of work behaviors (e.g., Sibunruang, Garcia, & Tolentino, 2016, obtained supervisor ratings of promotability). Clearly, more research needs to consider other-ratings of such behaviors. For example, while supervisor promotability ratings are indicative of job performance potential, we were unable to locate any studies that considered career adaptability along with supervisory ratings of work performance in terms of role-based or task performance (e.g., Study 3 in Bipp, Kleingeld, & van Dam, 2015, collected peer-rated task, contextual, and creative performance; however, career adaptability was not measured).

The results of our meta-analysis should serve as a guide for future research on career adaptability, and the issues noted above suggest the need to develop, guided by the general framework provided by the career construction model of adaptation, more complex research questions, and address these questions using more sophisticated research designs. For example, based on our meta-analytic multiple regression analyses, we now know that certain individual difference characteristics are additively associated with career adaptability. However, as of yet, we do not know how multiplicative effects among (or profiles of) such characteristics may predict career adaptability. For example, it may be possible that high levels in some characteristics (e.g., openness to experience, proactive personality) compensate for low levels of other characteristics (e.g., extraversion, cognitive ability).

Additionally, the finding that career adaptability is only very weakly associated with age deserves further investigation. For example, it may be possible that some age-related factors contribute to career adaptability (e.g., increases in conscientiousness and agreeableness with age), whereas others detract from it (e.g., decreases in cognitive ability and flexibility with age). Overall, these age-related changes may cancel each other out in the aggregate (i.e., resulting in an overall weak association between age and career adaptability). Perhaps by considering composite career adaptability, as opposed to individual dimensions, we are somewhat occluding the strength of this effect as well. Indeed, some research suggests that certain career adaptability dimensions have positive relationships with age (i.e., control and confidence), whereas others are only weakly (i.e., curiosity) or negatively (i.e., concern) related to age (Zacher, 2014a). A related, so far unanswered question concerns how important career adaptability is for employees at different ages and life stages. From a lifespan perspective (Rudolph, 2016), it could be that high career adaptability is most important during certain career phases (e.g., for newcomers and young adults entering the world of work; for employees facing the transition from work to retirement). More work is needed to explore such interactive effects of age and career adaptability.

Considering consequences, we now know that career adaptability is associated with a range of indicators of adaptation results, including positive work, career, and life outcomes. One interesting observation here was that career adaptability was somewhat weakly related to job satisfaction relative to satisfaction in other domains (e.g., career and life satisfaction), and not related incrementally to job satisfaction above and beyond big five traits. With respect to the former observation, one explanation for this weaker effect may be that people who are highly adaptable can also be constructively dissatisfied with their jobs (Bussing, Bissels, Fuchs, & Ferrari, 1999). In other words, more adaptable people may not need to be as highly satisfied with their current jobs because they are confident that they can move on quickly to another job role, should the need arise. With respect to the latter observation, evidence from experience sampling studies suggests that job satisfaction has both stable and transient qualities (e.g., Rudolph, Clark, Jundt, & Baltes, 2015). Arguably, the cross-sectional designs used here are not well equipped to study dynamics in such attitudes, and career adaptability may possess better explanatory power over personality traits for predicting job satisfaction construed as a momentary or state-like operationalization. There may be some degree of range restriction present here as well. While speculative, it may be that people with particularly low job satisfaction (e.g., because of recently changed work contexts, conditions, or other concerns) may benefit most from career adaptability.

We also do not yet know much about how career adaptability *interacts* with certain job/career tasks and demands, career challenges, transitions, and traumata in predicting work, career, and well-being outcomes. In some sense, research on such interaction effects would be in a better position to test core propositions of career construction theory than research investigating only main effects: career adaptability should be especially important for people facing potential career barriers (see Savickas, 1997, 2013). Despite this, there is very little direct evidence at this point to support this notion (cf. Koen et al., 2012, who focused on school-to-work transitions).

In testing our meta-analytic regression models, we were constrained to meta-analytic data that are available in the literature. As such, we could not fully address all of the relationships or the entire network of pathways that are implied by the career construction model of adaptation and as outlined in our conceptual model in Fig. 2. Two related points should also be considered here: First, this limitation suggests the need for expanded meta-analytical studies of associations among various adaptivity, adaptability, adapting responses, and adaptation results constructs. In particular, it is important to empirically elaborate on linkages between adaptivity and adapting responses and between adapting responses and adaptation results (i.e., as specified by dashed arrows in Fig. 2). Second, while we note that there are some primary studies that have more comprehensively addressed these linkages (e.g., Koen, Klehe, Van Vianen, Zikic, & Nauta, 2010), more research is needed before such a meta-analytic synthesis can be reasonably undertaken.

Finally, we should note here that while the dimensions of the Career-Adapt Abilities Scale are likely to be highly intercorrelated (e.g., Hirschi et al., 2015; Konstam et al., 2015), they are theoretically and empirically distinct (Savickas & Porfeli, 2012). While considering the individual dimensions of career adaptability was beyond the scope of the present study, future meta-analytic and primary empirical work is needed concerning these dimensions. Regarding the latter, more attention should be focused on the interactions among these dimensions and the implications of such interactions for various outcomes. For example, similar research on coping strategies has found that certain adaptive and problem-focused coping strategies (selection, optimization, and compensation) can enhance each other's effects when construed in a multiplicative sense (Zacher, Chan, Bakker, & Demerouti, 2015).

5.3. Conclusions

Guided by propositions of the career construction model of adaptation (Savickas, 2013; Savickas & Porfeli, 2012), our meta-analysis represents the first attempt to systematically review and quantitatively summarize the literature on relationships of career adaptability with measures of adaptivity, adapting responses, and adaptation results, which has grown substantially over the past few years. While the evidence presented here begins to answer several outstanding questions that have been noted in this literature, a number of issues still remain that beg for further empirical elaboration. Our hope is that the results of our meta-analysis will spur further investigations concerning career adaptability, and guide researchers who seek to develop enhanced programs of research concerning the role of adaptive capacities in career development and vocational behavior.

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