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Unlocking happiness: how crafting your career path boosts life satisfaction through forward thinking and self-confidence in career choices

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Career construction theory (CCT) asserts that a substantial degree of career adaptability (CA) correlates with favorable outcomes when individuals undergo different environments. Building upon the theoretical framework of the CCT, our study hypothesized that the nexus between CA and life satisfaction (LS) as an outcome of adaptation is mediated by future orientation (FO) and career decision-making self-efficacy (CDMSE). We gathered data from 317 graduates in Greater Cairo, Egypt. The data was collected through a self-administered questionnaire and analyzed using partial least square structural equation modeling (PLS-SEM) via WarpPls 7.0 software. Our findings indicate a positive correlation between CA and LS and a positive link between CA and FO and CDMSE. Additionally, FO and CDMSE were found to be positively related to LS. However, contrary to the expectations, FO was not identified as a mediating factor between CA and LS, while CDMSE did serve as a mediator between CA and LS. Based on these results, managers can provide workshops and training opportunities to enhance graduates' confidence and assist them in developing plans, ultimately leading them to increased satisfaction in life.

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Background

As the work environment becomes increasingly dynamic, the significance of adaptability is steadily growing (Jiang et al., 2023). The progression from academic learning to professional employment represents a pivotal milestone in an individual's career journey (Kayyali, 2024). Graduates encounter a distinct shift in their surroundings as they transition from the educational setting to the workplace, posing potential challenges due to constrained expertize and competencies in their chosen fields and a deficiency in practical work experience (Nyström, 2009). Among the major challenges faced by graduates are a lack of familiarity with workplace norms, insufficient soft skills such as communication and teamwork, and difficulty in matching academic knowledge to real-world job requirements (Al-Worafi, 2023; Doargajudhur et al., 2024; Goulart et al., 2021). Our investigation responds to this need, as it has been argued that there exists a literature gap when it comes to the concept of career adaptability (CA) within diverse cultural and institutional frameworks—mainly in non-Western settings (van Rensburg et al., 2024; Zhang et al., 2024) such as Egyptian public universities (Abubaker and Adam-Bagley, 2025; Mostafa, 2024). Filling this gap could enable specific actions that enhance graduate outcomes within the non-Western context, especially in Egypt.

CA refers to a set of psychological resources that enable an individual to cope effectively with career-related activities and transitions (Cort W Rudolph et al., 2017). It is an antecedent factor to career agility and embeddedness (Ferreira, 2022), job search self-efficacy and career perspective (AL-Jubari et al., 2021), and success (Gaile et al., 2024), which empowers individuals with the ability to take proactive action against uncertainties they may find on their career paths (Gati and Kulcsár, 2021). Studies have shown that CA significantly supports the individual in dealing with professional contexts and leads to positive life outcomes, such as increased life satisfaction (LS) (Magnano et al., 2021; Marcionetti and Rossier, 2021). LS, described as an individual's evaluation of one's overall quality of life (Felce and Perry, 1995), is important in indicating how well individuals adapt and thrive in their career-related endeavors (Hlaďo et al., 2022). The integration of LS as a central output of CA helps to link career success to more general aspects of well-being (Rossier et al., 2017).

Earlier studies predominantly concentrate on Western contexts (e.g., Krause et al., (2021), Mert-Karadas et al., (2024), and Russo et al., (2024)), which may not be entirely applicable to the Egyptian context as a result of cultural and educational disparities. Such disparities profoundly affect career advancement, thereby underscoring the need for localized research to address the obstacles graduates encounter in their transition to professional environments. For example, Egyptian graduates in Egypt often face institutional barriers, like limited access to resources for career development and training opportunities (Rana et al., 2024). Additionally, mismatches between academic programs and the demands of the labor market further exacerbate these challenges (Louay et al., 2020). Addressing these contextual challenges through localized research can help generate knowledge that informs policies and interventions focused on better-preparing graduates for workplaces in Egypt.

Furthermore, an additional significant deficiency exists in linking CA to essential constructs, such as future orientation (FO), career decision-making self-efficacy (CDMSE), and LS. According to Stoddard et al., (2011, p. 239), FO is "an individual's thoughts, plans, motivations, hopes, and feelings about his or her future". In addition, it serves as an indicator of long-term career planning and persistence, as noted by Diaconu-Gherasim et al., (2024). Individuals possessing a robust FO demonstrate a higher propensity to remain dedicated to their objectives and to experience fulfillment from their accomplishments (Cabras and Mondo, 2018). Conversely, CDMSE embodies the assurance in executing well-informed career decisions and plays a crucial role in professional growth (Chen et al., 2021; Chuang et al., 2020). While FO offers insights regarding the direct focus, CDMSE enables people to effectively act on their objectives, suggesting the interlinks between these constructs in CA. Even though CDMSE and FO are launched distinctively in earlier studies, their association with CA and their intermediating roles remain underexplored (Fasbender et al., 2019; Pratama et al., 2024; Wang et al., 2024). FO affects goal-setting and determination, which are central to CA (Tolentino et al., 2014), and CDMSE affects decision-making and goal implementation (Chuang et al., 2020). For example, individuals with high FO and CDMSE will be more prepared to face career challenges, which will affect their LS directly. Examining such mediating relationships can provide a more detailed view of the hows through which CA impacts well-being.

Our study model is grounded in the career construction theory (CCT) (Savickas, 2013). The CCT postulates that CA serves as a set of psychological resources that enables individuals to deal proactively with career-related challenges and to construct meaningful career paths. Further, the CCT distinguishes CA into four distinct dimensions: concern, control, curiosity, and confidence, as identified by Savickas and Porfeli (2012). These dimensions are very closely aligned with both FO and CDMSE, as they bring into focus forward-looking planning, self-efficacy in decision-making, and the ability to adapt to unforeseen changes. For instance, curiosity within CCT highlights the necessity for graduates to be curious about different career and industry options (Ashouripashaki and Kecskemety, 2024), whereas control focuses on being able to make proactive decisions regardless of other pressures (Jiang et al., 2023). By interlinking CA, FO, CDMSE, and LS, our investigation will attempt to extend the CCT theory by empirically testing its applicability in the Egyptian context. The CCT offers a strong base for examining how psychological resources, like CA (Li and Wang, 2024), support successful transitions from university to work while considering socio-cultural factors specific to Egypt.

The present study attempts to fill in the gaps in our understanding of CA, especially regarding public universities in Egypt. In particular, it examines the impact of CA on such factors as FO, CDMSE, and LS. The study's second goal is to develop a comprehensive model that assesses the mediating functions of FO and CDMSE in the relationship between CA and LS within recognized public universities. To achieve this goal, the study is organized into three separate objectives:

1. To explore the influence of CA on FO, CDMSE, and LS.
2. To evaluate how FO and CDMSE influence LS.
3. To analyze the mediating function of FO and CDMSE in the connection between CA and LS.

By pursuing these objectives, the study aims to provide meaningful insight that can aid public universities in Egypt in devising appropriate career strategies that lead to increased graduates' satisfaction and better institutional performance. Moreover, it adds to the existing literature by presenting empirical evidence on the role of CA in facilitating successful adaptation in various cultural settings. The organization of this study begins with an evaluation of the theoretical framework, then the methodology used, and finally presents the results, discussions, and recommendations for future studies.

Literature review and hypothesis development

Theoretical support. The CCT was first proposed by Savickas (2005); it is an all-inclusive framework for understanding people's

adaptive resources in managing their careers. Under this theoretical perspective, individuals are seen to use adaptability resources in handling career-related challenges and in constructing meaningful career paths (Savickas and Porfeli, 2012). Underneath the theoretical framework of CCT lies the concept of CA, developed by Savickas (1997), which points to psychosocial resources, such as concern, control, curiosity, and confidence, that one would employ in response to career difficulties. Those psychosocial resources help an individual plan for the future, navigate career transitions, and develop meaningful professional life trajectories (Seibert et al., 2016).

The present work hypothesizes the direct effects of CA on FO, CDMSE, and LS. By fostering a forward-thinking mindset, FO enables people with high CA to set long-term career objectives and determination to attain them (Balser and Tafuro, 2025). Likewise, CA increases CDMSE by developing confidence in people's ability to make knowledgeable, proactive career choices (Kvasková et al., 2023; Wang et al., 2024). Lastly, adaptive behaviors lead to LS because people with greater CA are better able to reconcile their personal goals with professional success, creating a more satisfying life overall (Rudolph et al., 2017).

Moreover, CCT indicates the dynamic links between adaptive resources and developmental tasks, emphasizing the intermediary functions of FO and CDMSE (Chui et al., 2022). FO acts as a conduit connecting CA and LS by directing adaptive resources toward future-oriented actions, such as planning and goal setting, which are necessary to achieve LS. Likewise, CDMSE intermediates the connection between CA and LS since it helps to make informed career choices that would enable one to successfully deal with certain career problems and thus lead to feelings of achievement. These mediation roles are consistent with CCT's proposition that adaptability resources affect career outcomes through specific adaptive processes (Savickas, 2002).

By investigating the direct influences of CA on FO, CDMSE, and LS, as well as the mediating effects of FO and CDMSE, this study offers a holistic model based on CCT. It explains how people cope with career hurdles and manage to attain LS. In so doing, this approach not only confirms the theoretical foundations of CCT but also generalizes them to the Egyptian environment under a distinctive cultural and institutional context. CCT has been shown to be flexible and relevant across cultures in various settings. For example, studies by Santilli et al., (2017) used CCT to examine CA and its consequences in Switzerland and Italy, providing empirical support for the broad applicability of the CCT.

Context of the study. The public educational institutes in Egypt face unique challenges, such as a lack of resources for career development, a mismatch between academic training and labor market needs, and weak institutional support for students in the process of transition to professional environments (Louay et al., 2020; Rana et al., 2024). These cultural and structural drivers call for an urgent need to explore CA in this context. Although Western research has extensively explored CA, FO, CDMSE, and LS (Krause et al., 2021; Mert-Karadas et al., 2024; Russo et al., 2024), the generalizability of their findings to the Egyptian context is limited due to significant socio-cultural differences. For instance, graduates in Egypt often exhibit a lack of interest in career-related training (Mosbah et al., 2022), which is a prerequisite for the development of adaptability resources. This paper fills this gap by examining these constructs in public universities in Egypt.

Hypothesis development

CA and FO's relationship. CA is a set of psychosocial skills important to successfully navigate and improve occupational roles, engage in career pathways, and adjust to changes in the workplace and work environments (Kvasková et al., 2023; Savickas and Porfeli, 2012). It has been found by Ocampo et al., (2018) that individuals with high CA levels are more likely to gain better job positions, perform career transitions, and secure better quality employment opportunities. However, there is limited dedicated work on how CA affects career outcomes in non-western countries such as Egypt (Abubaker and Adam-Bagley, 2025). Studies by Ginevra et al., (2018), Ginevra et al., (2021), and Ginevra et al., (2016) highlight CA's positive influence on FO, but there remains a gap in understanding its role in Egyptian public universities. This research addresses this gap by proposing:

H1: CA positively affects FO.

CA and CDMSE's relationship. CDMSE and CA have been extensively studied as interrelated factors (Dostanić et al., 2021; Liu et al., 2023; Stead et al., 2022). However, most studies focus on Western or East Asian populations (Chen et al., 2021; Chui et al., 2022), leaving the Middle East unexplored, especially the Egyptian context. The career construction model of adaptation explains how CA functions as an adaptive resource, enabling individuals to respond to development tasks (Savickas, 2005). Recently Wang et al., (2023) found a positive impact of CA on career decision-making among vocational students in China. Similarly, Kvasková et al., (2023) showed that CA positively affects CDMSE among vocational students in Europe. Building on this, our research posits:

H2: CA positively affects CDMSE.

FO and LS's relationship. A critical aspect of human cognition is contemplating and planning for future events (Nurmi and Jaakkola, 2005). FO refers to individuals' capacity to plan for and visualize future events, encompassing desires, objectives, and aspirations (Seginer, 2009). Studies in Italy, Turkey, and China e.g., Cabras and Mondo (2018), Bölükbaşı and Kirdok (2019), and Bi and Wang (2021) consistently found a positive link between FO and LS. However, there is limited research on how this connection manifests in the Egyptian cultural context. Our study contributes by exploring this link in Egyptian universities; hence, we propose the following hypothesis:

H3: FO positively affects LS.

CDMSE and LS's relationship. CDMSE focuses on individuals' confidence in their ability to perform tasks related to career decision-making Taylor and Betz (1983). While Jiang et al., (2017) and Piña-Watson et al., (2014) reported that CDMSE positively affects LS, Kvasková et al., (2023) found contrasting (negative) results. These inconsistencies may arise from differences in cultural context and measurement tools. To address this, our study proposes:

H4: CDMSE positively affects LS.

CA and LS's relationship. The CCT posits that individuals with greater adaptability resources are more likely to achieve positive adaptation outcomes (Mark L Savickas and Porfeli, 2012). Research by Hirschi (2009), Santilli et al., (2015), and Li and Tien (2023) support the positive connection between CA and LS. However, there remains a need to explore this relationship in non-Western contexts, such as Egypt. Based on this, we hypothesize:

H5: CA positively affects LS.

Mediation of FO. According to CCT Savickas (2005), FO is an adaptive mechanism that channels the psychosocial resources of CA (e.g., control and curiosity) toward proactive behaviors such as planning and goal-setting. These behaviors are important for

the creation of a sense of direction and aim in life, which contributes directly to LS. Research conducted by Bölükbaşı and Kirdok (2019) and Cabras and Mondo (2018) has illustrated that the construct of FO serves as a mediator in the relationship between CA and LS, facilitating individuals' ability to foresee potential challenges while harmonizing their career goals with personal ambitions. This mediating mechanism not only diminishes stress associated with career pursuits but also enhances the probability of attaining enduring objectives. Moreover, the motivational aspect of family orientation, characterized by future aspirations and worries (Seginer, 2009), allows individuals to persist in their career trajectories, thus ensuring the effective use of adaptability resources for personal and professional growth. Based on this exploration, we formulate the following hypothesis:

H6: FO positively mediates the connection between CA and LS.

Mediation of CDMSE. According to CCT Savickas (2005), adaptability resources like concern, control, curiosity, and confidence must be activated through adaptive processes like CDMSE to achieve developmental outcomes like LS. Guan et al., (2016) and Hou et al., (2019) have highlighted how CDMSE enhances career decision-making in diverse cultural contexts, showcasing its universal relevance. Furthermore, CDMSE empowers individuals to align their career goals with personal aspirations, promoting higher LS through reduced stress and enhanced goal achievement. While Kvasková et al., (2023) reported contrary findings, the majority of literature supports this mediation e.g., Chen et al., (2021) and Suarez-Bilbao et al., (2023). This study builds on the premise that CDMSE acts as a conduit through which CA's psychosocial resources influence LS by fostering informed decision-making and resilience. Hence, posits:

H7: CDMSE positively mediates the connection between CA and LS.

Figure 1 in our research illustrates the suggested model, where solid lines indicate direct associations and dotted lines represent mediation effects.

Methodology

Participants and procedure. Our investigation employs a comprehensive framework that includes numerous constructs challenging to assess through experiments or case studies. Consequently, we argue that the survey methodology is the most appropriate approach for our study, as confirmed by MacKenzie et al., (2011), who noted its effectiveness in controlling for unmeasured variables (Emerson, 2015). Data were collected from public universities in Greater Cairo, Egypt. The justification for selecting public universities lies in their accessibility, willingness to engage in the study, and their representation of a diverse graduate population navigating similar economic and career challenges. These institutions were easily contacted and facilitated survey dissemination through their web pages and social media accounts. Furthermore, public universities serve a significant segment of graduates facing limited job opportunities in Egypt's saturated job market (Rana et al., 2024). This context adds relevance to studying constructs like CA, FO, CDMSE, and LS in these institutions.

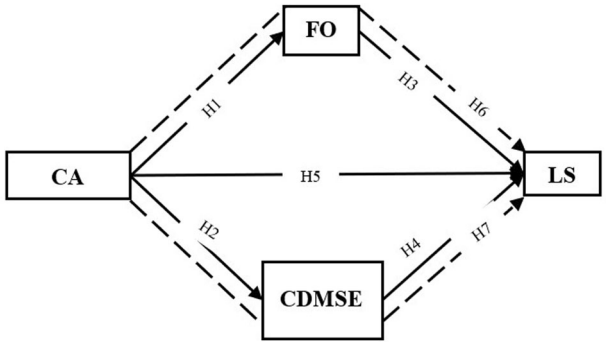

Fig. 1 Proposed study model.

The study achieved a 68.91% response rate, with 317 valid questionnaires analyzed after excluding 11 due to inaccurate data. While the sample showed some gender skewness, with 63% male and 37% female participants, this distribution aligns with broader trends in Egyptian public university enrollment, where male participation often exceeds female (Krafft et al., 2021). Nonetheless, future studies could aim for a more balanced gender representation to generalize findings more effectively.

Measures. We employed Brislin's (1980) translation-back translation methodology to convert all survey items from English to Egyptian Arabic. Respondents were asked to rate their agreement with each statement based on their work-related experiences, utilizing a 5-scale Likert ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"), unless specified otherwise.

The assessment of CA involved the utilization of the Career Adapt-Abilities Scale-Short Form (CAAS-SF), which comprises 12 items developed and validated by Maggiori et al., (2017) and also utilized by Yang et al., (2019). FO was assessed using 10 items adopted from Corral-Verdugo and Pinheiro (2006) and originally from Metric (1999). CDMSE was measured by using the 13-Item CDMSE–Short Form, adopted from Hampton (2005) and later used by Jiang et al., (2017) and Wang and Hsieh (2022). LS was evaluated using five items from Diener et al., (1985), which were adopted by Li et al., (2023), Maggio et al., (2021), and Santilli et al., (2015).

Our research started with pilot testing that included a sample of 50 respondents for the necessary reliability and validity checks of the translated survey items. This initial evaluation was crucial to ensuring that scale items were culturally appropriate, readable by respondents, and properly reflected the intended constructs. The results from the pilot phase were analyzed in detail, and minor revisions were performed to ensure the items were clearer and relevant as needed. Having confirmed that the scale items used had substantial reliability and validity, the comprehensive survey was distributed to a broader, more representative sample after the pilot test, guided by earlier research by Fan et al., (2024) and Qalati et al., (2024). The phased approach was used so that the final survey instrument was robust and adequately calibrated with the objectives of the study.

Common method bias (CMB). The sufficiency of measuring the CMB has been widely explored in the literature, often using the single-factor Harman test. However, this approach has been criticized for its inherent shortcomings (Qalati et al., 2023). In light of these criticisms, the present study has opted to apply the variance inflation factor (VIF) test to check for full collinearity, as recommended by Hair et al., (2019) and further supported by the recent work of Chen et al., (2024) and Qalati (2025). The VIF values in our study ranged between 1.407 and 2.156, staying well below the threshold value of 3.33 recommended by Hair et al., (2019), indicating that CMB is not a problem with our data (see Table 3).

Data analysis. We utilized the PLS-SEM techniques to test both the measurement and structural model. We chose this method over covariance-based structural equation modeling due to its suitability for predictive analysis and its efficiency with small to moderate sample sizes (Qalati et al., 2023). It is especially suited

Table 1 Respondents' description.

	Item	Frequency	Percent
Gender	Male	225	71
	Female	92	29
Age	Below 25 years	81	25.6
	From 25 to under 30 years	208	65.6
	Above 30 years	28	8.8
Experience	Below 5 years	95	30
	From 5:10 years	144	45.4
	Above 10 years	78	24.6
Education	High schools/Bachelor	259	81.7
	Masters/PHDs	58	18.3

Table 2 Descriptive statistics and correlations amid variables.

Construct	Mean	Std. Dt	1	2	3	4
1. CA	4.34	0.43	1			
2. FO	4.11	0.54	0.575**	1		
3. CDMSE	3.94	0.56	0.555**	0.692**	1	
4. LS	3.79	0.77	0.417**	0.448**	0.504**	1

**$p < 0.01$.

for exploratory research involving complex models with latent constructs, as noted by Hair et al., (2019). While SPSS and Hayes' Process Macro—for example, Model 7 or 8 for parallel mediation—offer alternative ways of conducting mediation analysis, PLS-SEM has the added advantage of simultaneously estimating measurement and structural models, thereby making it more appropriate for this study, as noted by Hair et al., (2019).

The data analysis was conducted using WarpPLS software, version 7.0. Following the recommendation of Anderson and Gerbing (1988), we conducted a comprehensive assessment of the variables' measurement model for the variance before moving on to analyze the proposed conceptual framework. This two-step approach ensured the robustness of our analysis and supported the testing of proposed hypotheses.

Results

Respondents' description. As detailed in Table 1, the respondent profiles show that 71% of the study participants are male, and 29% are female, indicating a male majority. Additionally, 65.6% of the participants are between 25 and 30 years old, suggesting that a significant portion of them are newly graduated. A considerable number of participants, 45.4%, have professional experience ranging from 5 to 10 years, representing nearly half of the respondents. Furthermore, 81.7% of the respondents have completed high school or obtained a bachelor's degree, while the rest have earned Master's or PhD degrees.

Descriptive statistics and correlations. The average scores of CA, FO, CDMSE, and LS, as reported by graduates of public universities, were (4.34 ± 0.43), (4.11 ± 0.54), (3.94 ± 0.56), and (3.79 ± 0.77), respectively (see Table 2). Table 2 also presents the examination of positive correlations between the observed variables, with magnitudes ranging from 0.417 to 0.692 (refer to Table 2).

Measurement model. We have conducted various assessments to ascertain the validity and reliability of the measured items. The findings presented in Table 3 clearly point that factor loading for all items surpasses the established threshold of 0.5 (Hair et al., 2011), as suggested by Hair et al., (2020). Moreover, all constructs demonstrate Cronbach's alpha values that exceed 0.7, aligning with the criteria established by Kock (2022). Furthermore, the composite reliability exceeds the recommended minimum threshold of 0.7, as specified by Manley et al., (2021). Furthermore, the Average Variance Extracted (AVE) exceeds the acceptable limit of 0.5, as Hair et al., (2020) advised.

A test of discriminant validity was too carried out. The outcomes displayed in Table 4 demonstrate that, for each variable, the AVE surpasses the maximum common value. These discoveries validate the validity and reliability of the research model, in accordance with the criterion established by Hair et al., (2020).

Moreover, the heterotrait-monotrait (HTMT) ratio can be utilized to evaluate the discriminant validity of constructs. If the HTMT values fall below the specified threshold of 0.90, it is regarded as indicative of satisfactory validity, in line with the recommendation put forth by Henseler et al., (2016). As denoted in Table 5, all constructs successfully surpassed this threshold, confirming their robust discriminant validity.

Model fit and quality indices (MFQI). The model fit's confirmation has been established before the experimental evaluation of the hypotheses. The conformity of all the findings on the MFQI aligns with the established standards, as delineated in Table 6.

Structural model. To scrutinize the structural model of the study, we utilized R square (R^2), path coefficient (β), and p value. The results acquired from testing of hypotheses (Table 7 and Fig. 2) demonstrate a positive nexus amid CA and FO ($\beta = 0.60$, $p < 0.01$), CDMSE ($\beta = 0.57$, $p < 0.01$), and LS ($\beta = 0.20$, $p < 0.01$). This implies that CA has a beneficial impact on FO, CDMSE, and LS. Hence, *H1*, *H2*, and *H5* receive support. Furthermore, FO and CDMSE are positively linked to LS ($\beta = 0.12$, $p < 0.05$), and ($\beta = 0.32$, $p < 0.01$), respectively. This signifies that FO and CDMSE contribute to the enhancement of LS. Consequently, *H3* and *H4* are upheld.

Furthermore, Fig. 2 demonstrates that CA accounts for 36% of the variation in FO ($R^2 = 0.36$) and 32% in CDMSE ($R^2 = 0.32$). Moreover, the combination of CA, FO, and CDMSE explains 30% of the variation in LS ($R^2 = 0.30$).

Finally, the indirect effects were assessed to understand the mediating functions of FO and CDMSE in the nexus between CA and LS (see Table 7). For FO, the "bootstrapping analysis" indicates that the standard beta of indirect effect = 0.072 (0.60×0.12) is insignificant, with a t-value of 1.412. Additionally, the indirect impact of 0.072, along with its "Bootstrapped 95% CI" of (LL = −0.028, UL = 0.172), encompass zero, thereby confirming the presence of non-mediation. Consequently, the mediation influence of FO in the nexus between CA and LS can be deemed insignificant. Thus, *H6* is not supported. Conversely, for CDMSE, the "bootstrapping analysis" reveals that the Std. Beta of indirect effect = 0.182 (0.57×0.32) is significant, utilizing a t-value of 3.576. Furthermore, the indirect impact of 0.182, along with its "Bootstrapped 95% CI" of (LL = 0.57, UL = 0.32), doesn't encompass zero, thereby approving the presence of mediation. Consequently, the mediating influence of CDMSE in the association between CA and LS can be deemed significant. Thus, *H7* is approved.

Discussion and implications

The primary objective of this research was to explore the influence of CA on LS while also examining the mediating functions of FO and CDMSE. The findings reveal that graduates perceive CA

Table 3 Validity and reliability measurement.

Variables	Items	FL	A	CR	AVE	VIF
Career adaptability (CA)	CA1: I think about my future prospects.	0.561	0.822	0.861	0.540	1.645
	CA2: I Prepare for my future.	0.644				
	CA3: I'm aware of my educational and career choices must be made.	0.652				
	CA4: I make decisions on my own.	0.597				
	CA5: I accept responsibility of my deeds.	0.707				
	CA6: I rely on myself.	I/A				
	CA7: I seek for chances to grow personally.	0.710				
	CA8: I search choices before deciding.	0.499				
	CA9: I observe diverse methods of doing things.	0.589				
	CA10: I try to do things correctly.	0.506				
	CA11: I learn novel skills.	0.570				
	CA12: I do my best effort.	0.551				
Future orientation (FO)	FO1: I think that a person should plan their day ahead.	0.505	0.848	0.881	0.512	2.156
	FO2: I set objectives and think about specific ways to get those objectives whenever I want to achieve anything.	0.675				
	FO3: The event tonight comes first, followed by meeting tomorrow's deadlines and doing others necessary things.	0.741				
	FO4: I feel it annoying when I'm delayed for appointments.	0.672				
	FO5: I fulfill my obligations to authorities and friends on schedule.	0.575				
	FO6: I evaluate the pros and cons of a choice before deciding.	0.771				
	FO7: I work steadily to complete my jobs on time.	0.655				
	FO8: I prepare checklists of tasks to finish.	0.748				
	FO9: When I am aware that I have work to get done, I can resist temptations.	0.560				
	FO10: I persist in accomplishing challenging and boring work if they could allow me to progress.	0.593				
Career decision-making self-efficacy (CDMSE)	CDMSE1: I list my goals for the following five years in a plan.	0.612	0.847	0.878	0.503	2.210
	CDMSE2: I ascertain the procedures needed for you to complete your tasks successfully.	0.586				
	CDMSE3: Regardless of frustration, I never give up on my main goal or professional objective.	0.611				
	CDMSE4: I find out the type of work I really want to do.	0.526				
	CDMSE5: I make a career choice and after doing not fear if it was wrong or right.	0.595				
	CDMSE6: I handle the hiring interview procedure with success.	I/A				
	CDMSE7: I look up information about careers I'm interested in at the library.	0.673				
	CDMSE8: Over the next ten years, identify the employment patterns for a specific job.	0.669				
	CDMSE9: I have a talk with someone who is working in the field you would like to work in.	0.585				
	CDMSE10: I determine the kind of lifestyle you desire.	0.747				
	CDMSE11: I write a strong CV.	0.609				
	CDMSE12: If the initial choice of the job is not appealing to me, I switch.	0.548				
	CDMSE13: If I'm unsatisfied in my present career, I try changing.	0.568				
Life satisfaction (LS)	LS1: For the greatest part, my life is amazing.	0.636	0.728	0.831	0.553	1.407
	LS2: All things in my life is going excellent.	0.790				
	LS3: I'm pleased with my life.	0.763				
	LS4: I have so far fulfilled the main objectives I created for myself.	0.776				
	LS5: There is not much that I would change if I were to begin over in my life.	I/A				

FL factor loading, *A* Cronbach's alpha, *CR* composite reliability.
I/A = Inapplicable as loading < 0.50.

Table 4 Discriminant validity.

Variables	CA	FO	CDMSE	LS
CA	**0.603**			
FO	0.575	**0.655**		
CDMSE	0.555	0.602	**0.613**	
LS	0.417	0.448	0.504	**0.744**

Bold values represents the square root of the AVE.

Table 5 HTMT ratios.

Variables	CA	FO	CDMSE	LS
CA				
FO	0.710			
CDMSE	0.678	0.814		
LS	0.541	0.573	0.649	

behaviors as highly prevalent within their organizations, with an average CA score of 4.34 ± 0.43, encompassing anticipation and preparation for future career challenges, conscientiousness in decision-making, and a proactive approach to skill acquisition and growth. The high CA score underscores the importance of maintaining and further investing in CA practices in public universities.

Furthermore, the mean LS score of 3.79 ± 0.77 indicates a considerable level of satisfaction among graduates with their life quality, suggesting significant room for enhancing overall LS in the sector. Accordingly, the mean score of FO, which is 4.11 ± 0.54 points, shows that FO is a prevalent situation among personnel, and this reflects the need for future planning, goal-setting, and continuous development in organizational settings. Additionally, the mean score of CDMSE was 3.94 ± 0.56, which may be interpreted as showing a fairly high level of confidence among the respondents in completing career decision-making tasks successfully. This highlights the necessity of sustaining and expanding CA practices to bolster both personal and professional development within public universities.

Table 6 Model fit and quality indices.

Metrics	Result	Standard	Confirmed/Not
Path coefficient average (PCA)	0.354, $P < 0.1\%$	$p < 5\%$	Confirmed
R^2 average (RSA)	0.322, $P < 0.1\%$	$p < 5\%$	Confirmed
adjusted R^2 average (ARSA)	0.318, $P < 0.1\%$	$p < 5\%$	Confirmed
block VIF average (VIFA)	1.923	Acceptable if ≤5, ideal ≤3.3	Confirmed
full collinearity average (FCA)	1.858	Acceptable if ≤5, ideal ≤3.3	Confirmed
Tenenhaus GoF	0.357	Small ≥0.1, medium ≥0.25, large ≥0.36	Confirmed
Ratio of sympson's paradox (RSP)	1.000	Acceptable if ≥0.7, ideal = 1	Confirmed
Ratio of R^2 contribution (RRSC)	1.000	Acceptable if ≥0.9, ideal = 1	Confirmed
Ratio of statistical suppression (SSR)	1.000	Confirmed if ≥0.7	Confirmed
SRMR	0.118	Confirmed if ≤0.1	Confirmed
SMAR	0.094	Confirmed if ≤0.1	Confirmed

Table 7 Analysis of direct and indirect effects.

Hypothesis	Beta	*t*-value	Confidence interval		f^2	Decision
Direct effect			5%	95%		
H1: CA→FO	0.600	11.622	0.495	0.696	0.335	Supported
H2: CA→CDMSE	0.570	11.052	0.468	0.670	0.324	Supported
H3: FO→LS	0.120	2.150	0.010	0.227	0·053	Supported
H4: CDMSE→LS	0.320	5.976	0.215	0.424	0.162	Supported
H5: CA→LS	0.200	3.644	0.092	0.305	0.085	Supported
H6: CA→FO→LS	0.072	1.412	−0.028	0.172		Not Supported
H7: CA→CDMSE→LS	0.182	3.576	0.082	0.282		Supported

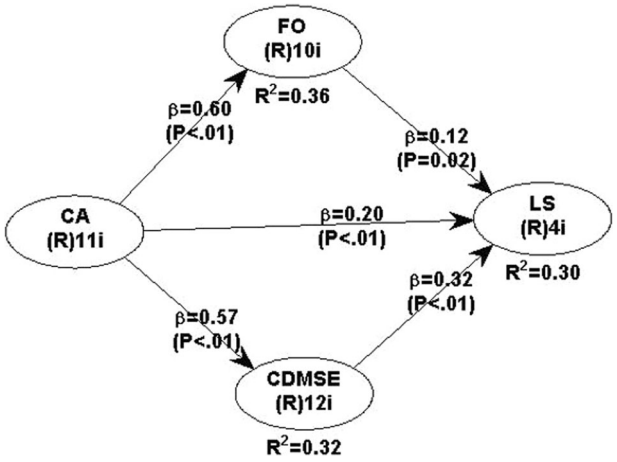

Fig. 2 Hypothesis testing.

Results confirm our initial hypothesis, suggesting that CA has a positive relationship with FO. This revelation is in line with earlier investigations conducted by Ginevra et al., (2018), Ginevra et al., (2021), and Ginevra et al., (2016), which proposed that the enhancement of CA results in an increase in FO. Developing one's CA, which is molded through activities in different settings, positively affects one's FO by developing innovative strategies to improve performance. This involves constructing carefully devised schemes that result in the attainment of set goals. Interestingly, FO is seen to be an integral part of CA, as pointed out by Yan et al., (2024).

Our results help to confirm that CA is a positive correlate to CDMSE. Further, the evidence of the results is supported by preceding empirical studies, such as those by Kvasková et al., (2023), Lee and Jung (2022), and Wang et al., (2023), wherein CA yielded each of those studies, a significant relationship in CDMSE. It is acknowledged that CDMSE is an adaptive response within the context of CA, thereby lending further support to the interrelated constructs.

The results also support our third hypothesis that an FO exhibits a positive relationship with LS among people. This is consistent with earlier research by Bi and Wang (2021), Bölükbaşı and Kirdok (2019), and Cabras and Mondo (2018), that argue a FO mindset influences LS positively. This result suggests that as individuals exhibit higher levels of FO, their LS correspondingly increases. A future-oriented mindset enables graduates to improve their life quality assessment by attaining essential elements in their lives and fulfilling their LS.

Moreover, the findings support our fourth hypothesis that CDMSE is positively associated with LS. This result is consistent with Jiang et al., (2017) and Piña-Watson et al., (2014), which found that CDMSE mediates an increase in LS. CDMSE symbolizes one's perceived ability to complete a task successfully, which subsequently improves one's LS. However, this finding is contrary to the results of Kvasková et al., (2023), who reported a negative impact. One would assume that overconfidence in career decision-making could be one possible explanation for this discrepancy, as it might lead to over-engagement or unrealistic expectations and thus decrease LS. Besides, methodological differences between studies, such as divergences in participant characteristics or measurement tools, could account for the difference found.

Moreover, the study validates the positive correlation between CA and LS, aligning with earlier investigations by Li and Tien (2023), Maggiori et al., (2013), and Santilli et al., (2015). These studies advocate that CA fosters LS, indicating that individuals with higher adaptability tend to experience increased satisfaction in life. This underscores the importance of adaptability skills in achieving desirable life outcomes, such as increased LS.

Our results evidenced that FO does not intermediate the link between CA and LS, which contradicts previous findings by Bölükbaşı and Kirdok (2019) and Cabras and Mondo (2018). One

plausible explanation could be cultural differences regarding how FO functions as a psychological construct. In the Egyptian context, graduates might rely less on FO planning because of economic instability or poor job opportunities, which could reduce the mediating role of FO. This finding thus suggests that while FO is still an important adaptive behavior, its role as a bridge between CA and LS may be context-dependent. Theoretically, such a finding would challenge the universality of the mediating role of FO as proposed in earlier studies and suggest the importance of investigating cultural and structural variations in adaptability research. From a practical perspective, this would mean interventions for enhancing LS should focus more directly on CDMSE and CA rather than solely focusing on FO.

Finally, the study results showed that CDMSE is an intermediator between CA and LS. This means that when alumni exhibit career competencies and are sufficiently confident about their abilities in career decision-making, this positively impacts their life satisfaction. This contradicts the study by Kvasková et al., (2023), which proposed that CDMSE is not a mediator in the relationship between CA and LS.

Theoretical contributions. This study investigates the influence of CA on LS among public universities in Egypt, using FO and CDMSE as the mediating factors. This study is in line with the CCT, which pursues the understanding of how different individuals' readiness, adaptability resources, and adaptive responses vary to lead to different career development outcomes (Nalis et al., 2022; Pong, 2024). The CCT emphasizes that CA is considered an important, crucial resource (Mark L Savickas and Porfeli, 2012) that enables people to solve career challenges and build meaningful professional careers (Seibert et al., 2016). The findings of our study further elaborate on CCT by explaining the specific mechanisms through which CA practices affect decision-making and future planning behaviors, which in turn affect LS. By incorporating FO and CDMSE as mediators, this research examines an essential void in the theoretical framework, thereby enhancing comprehension of the mechanisms by which CA resources are mobilized to attain adaptive results.

Furthermore, this research contributes to understanding the role of FO, which is defined as the intentional anticipation of future situations and, according to CCT, is an essential element of CA (Camussi et al., 2023; Jiang et al., 2023). The results indicate that although CA directly influences LS, it is also partially mediated by CDMSE, highlighting how confidence in decision-making contributes to the crystallization of CA resources into tangible LS outcomes (Chui et al., 2022). These contributions advance CCT in that the role of intermediary psychological processes is stressed, thereby advancing theoretical discussions around the adaptability-response-outcome framework.

This study also contributes to the development of CCT by investigating its applicability in a non-Western setting. Given that CCT has been theorized and tested predominantly in Western contexts, the Egyptian case offers a unique perspective on how cultural and institutional factors shape the interpretation and application of the theory. For example, the findings show that in Egypt, economic challenges and limited job opportunities strongly shape how people use their adaptability resources. The mediating role of the FO is especially less salient, which can be ascribed to a cultural emphasis on short-term job security over long-term strategic planning. Conversely, Western settings often place the FO at the center of adaptive actions, suggesting that cultural and economic conditions may impact the routes drawn by CCT.

Moreover, the study highlights how public universities in Egypt serve as critical environments for fostering CA, FO, and CDMSE among graduates. The institutional role in developing adaptability resources is particularly salient in this context, where external career support structures are less robust than Western ones. By demonstrating how institutional and cultural variables interact with adaptability constructs, this research enhances the global relevance of CCT, offering insights into how its principles can be adapted and applied across diverse cultural settings. This contribution strengthens the theoretical framework and underscores the need for localized strategies to support career adaptability in varying contexts.

Practical contributions

Actionable recommendation. This paper investigates the impact of CA on LS within public universities in Egypt, with a special emphasis on the intermediary role of FO and CDMSE. The findings provide specific, actionable recommendations for organizations in this context to nurture adaptability and increase LS among graduates. One of the most important initiatives entails developing adaptability training programs that focus on building psychosocial resources (e.g., concern and control), which are the major dimensions of CA. Such initiatives could include practical workshops to develop graduates' competencies in dealing with career change and making informed decisions about their future. In addition, organizations could create career development workshops that include FO and CDMSE as part of their learning curriculums, thus helping students to cultivate a forward-thinking mindset and develop self-confidence in their career decision-making processes.

One of the most important milestones is the establishment of the graduate mentoring programs. These initiatives pair graduates with experienced professionals, which can provide guidance, adaptability skills, and practical insights into overcoming professional obstacles. Such programs would allow the creation of an overall career strategy for the graduate and linking it with the industrial standard, thereby increasing lifelong learning skills. Additionally, higher education institutions might consider partnering with employers to formulate internships and work-based learning programs to ensure that graduates have hands-on competencies that supplement their academic achievements.

Recommendations for the Egyptian context. The following suggestions must be adapted to the specific challenges faced by Egyptian public universities, ensuring their feasibility and effectiveness. The prevailing resource constraints in these institutions mean that applying cheap alternatives, including joint training or online adaptability workshops, will be essential to decrease logistical costs while increasing access. To address administrative support issues, universities could create career development offices with professionally trained staff who could coordinate adaptability-focused programs and provide continuing guidance to graduates. That would ensure there is always consistent institutional support for such initiatives.

With the diverse student demographics of Egyptian public universities in mind, programs should be inclusive and accessible. For example, adaptability training should include modules on gender-specific challenges since female students constitute a huge percentage of the student population in these institutions. The universities could also use existing digital platforms, including social media and learning management systems, to share resources and provide virtual mentorship opportunities. Such approaches ensure that initiatives are scalable and adaptable to the constraints of public universities in Egypt.

Limitations and upcoming directions. While the research is very important in its findings, it is important to acknowledge its limitations and recommend further scholarly research.

Firstly, the sample was predominantly male (71%), and this could contribute to gender bias and may reduce the generalizability of the findings. Literature proposed that gender could deeply influence experiences and outcomes related to CA, as men and women may face different challenges and opportunities in their professional development. This imbalance should be considered a limitation, and future studies are encouraged to seek more balanced samples in order to better understand how gender dynamics shape the relationships between CA, FO, CDMSE, and LS. It would also be important for future research to consider these constructs within more diverse contexts, such as private universities or other sectors, in order to further enhance the external validity of the findings.

Secondly, this study analyzed the roles of FO and CDMSE as mediators in the relationship between CA and LS. There is, however, room to continue the investigation with other variables like career optimism, psychological resilience, or technological adaptability, which may act as mediators or moderators. For example, career optimism, as characterized by Hirschi (2014), signifies a favorable perspective regarding an individual's career opportunities and is closely related to the tenets of CCT. Furthermore, psychological resilience, an essential adaptive ability, may affect how individuals confront career obstacles, thereby enhancing our comprehension of career adaptability outcomes (Masten, 2001). Technological adaptation capacity, particularly in the context of digital transformation, will probably strongly impact career trajectories and learning strategies in today's labor market. Future research should analyze these variables to better understand the mechanisms that link technological adaptability with learning strategies.

Thirdly, the geographical constraints of targeting only public universities within a selected area will likely reduce the findings' external validity. Future research will need to engage in studies with samples dispersed geographically, representing a wide range of regions and types of institutions to facilitate the generalizability of the findings. This study has also measured CA, FO, and CDMSE at one point. Longitudinal research in this area would bring insight into how these constructs change over time and influence LS in different contexts. This type of study, in turn, helps to establish causal pathways and temporal dynamics, thereby building a stronger knowledge base for such relationships.

Lastly, although the present study focused on direct relationships among CA, FO, CDMSE, and LS, future studies might employ comparative analysis methods in assessing the efficacy of different CA strategies. Research on the influence of various mixtures of CA methods combined with future-oriented interventions on CDMSE and LS may thus offer valuable insight into their interactional consequences. Additionally, methodological models like Hayes' Process Macro or CB-SEM could further validate these findings and enable more complex comparisons between different analytical methods. All these efforts would increase the reliability and validity of the inferences to be made from the research.

Conclusion

The findings of this investigation demonstrate a positive association between CA, FO, CDMSE, and LS. CDMSE was found to mediate the link between CA and LS, whereas the mediating role of FO was not supported. The non-significant mediating role of FO suggests that its influence on LS may depend on specific individual or environmental factors. Graduates in the Egyptian context may prioritize immediate concerns such as job security over long-term planning, diminishing FO's role as a mediator. These results contribute to the growing body of literature on career adaptability and its implications for graduate development in public universities. Future research should further investigate the impact of CA on broader organizational outcomes across different cultural contexts and career phases.

Data availability

Data used for the analysis and generating results is attached to the manuscript, which can be easily accessible by downloading it from the journal website.

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References

Abubaker M, Adam-Bagley C (2025) Arab culture and organisational context in work-life balance practice for men and women: a case study from gaza, palestine. *Societies* 15(1). https://doi.org/10.3390/soc15010003

AL-Jubari I, Shamsol Anuar SNB, Ahmad Suhaimi AAB, Mosbah A (2021) The impact of career adaptability and social support on job search self-efficacy: a case study in Malaysia. J Asian Financ Econ Bus 8(6):515–524. https://doi.org/10.13106/jafeb.2021.vol8.no6.0515

Al-Worafi YM (2023) Nursing education, practice, and research in Egypt. In: YM Al-Worafi (ed.) Handbook of Medical and Health Sciences in Developing Countries: Education, Practice, and Research. Cham, Springer International Publishing, p 1–40

Anderson JC, Gerbing DW (1988) Structural equation modeling in practice: A review and recommended two-step approach. Psychol Bull 103(3):411

Ashouripashaki M, Kecskemety KM (2024) A Review of Career Development Theories and Their Applications in Engineering. Paper presented at the 2024 ASEE Annual Conference & Exposition, Portland, Oregon, 19 June 2024

Balser WF, Tafuro V (2025) Shifting Schools From Strategy to Foresight: Infusing Educational Leadership With Futurist Thinking, Planning, and Action. In: J Bailey Watters, GJ Miller, & R Rhone (eds.), *Reimagining the P-20 Landscape for School Leadership Learning*. Hershey, PA, USA: IGI Global, p 77–114

Bi X, Wang S (2021) Parent-adolescent communication quality and life satisfaction: The mediating roles of autonomy and future orientation. *Psychol Res Behav Manage* 14:1091–1099

Bölükbaşı A, Kirdok O (2019) The Mediating Role of Future Orientation in the Relationship between Career Adaptability and Life Satisfaction in High School Students. *TED EĞİTİM VE BİLİM*. https://doi.org/10.15390/EB.2019.8090

Brislin RW (1980) Translation and content analysis of oral and written materials. Methodology 2:389–444

Cabras C, Mondo M (2018) Future orientation as a mediator between career adaptability and life satisfaction in university students. J Career Dev 45(6):597–609

Camussi E, Meneghetti D, Sbarra ML, Rella R, Grigis P, Annovazzi C (2023) What future are you talking about? Efficacy of Life Design Psy-Lab, as career guidance intervention, to support university students' needs during COVID-19 emergency. Front Psychol 13. https://doi.org/10.3389/fpsyg.2022.1023738

Chen L, Qalati SA, Fan M (2024) Effects of sustainable innovation on stakeholder engagement and societal impacts: The mediating role of stakeholder engagement and the moderating role of anticipatory governance. Sustain Dev n/a(n/a) https://doi.org/10.1002/sd.3247

Chen S, Chen H, Ling H, Gu X (2021) How do students become good workers? Investigating the impact of gender and school on the relationship between career decision-making self-efficacy and career exploration. Sustainability 13(14):7876

Chen S, Xue Y, Chen H, Ling H, Wu J, Gu X (2021) Making a commitment to your future: investigating the effect of career exploration and career decision-making self-efficacy on the relationship between career concern and career commitment. Sustainability 13(22). https://doi.org/10.3390/su132212816

Chuang N-K, Lee PC, Kwok L (2020) Assisting students with career decision-making difficulties: Can career decision-making self-efficacy and career decision-making profile help? J Hospitality Leisure Sport Tourism Educ 26:100235. https://doi.org/10.1016/j.jhlste.2019.100235

Chui H, Li H, Ngo H-y (2022) Linking protean career orientation with career optimism: Career adaptability and career decision self-efficacy as mediators. J Career Dev 49(1):161–173. https://doi.org/10.1177/0894845320912526

Corral-Verdugo V, Pinheiro J (2006) Sustainability, future orientation and water conservation. Eur Rev Appl Psychol 56(3):191–198

Diaconu-Gherasim LR, Țepordei A-M, Labăr AV, Vîrgă D, Măirean C (2024) University students' future time perspective and career adaptability: the

mediating role of grit. Career Dev Q 72(2):121–134. https://doi.org/10.1002/cdq.12348
Diener E, Emmons RA, Larsen RJ, Griffin S (1985) The satisfaction with life scale. J Personal Assess 49(1):71–75
Doargajudhur M, Naraidoo S, Zaung N (2024) Assessment authenticity: bridging the gap between academia and the workplace for diverse learners - evolution and examples. In: L Marron (ed) Cases on Authentic Assessment in Higher Education Hershey, PA, USA: IGI Global, p 37–65
Dostanić J, Suvajdžić K, Krpović–Bojanić Ž (2021) Decision-making styles, career decision self-efficacy, and career adaptability among high school students. Career Dev Q 69(1):63–77. https://doi.org/10.1002/cdq.12249
Emerson RW (2015) Convenience sampling, random sampling, and snowball sampling: how does sampling affect the validity of research? J Vis Impairment Blindness 109(2):164–168
Fan M, Ezeudoka BC, Qalati SA (2024) Exploring the resistance to e-health services in Nigeria: an integrative model based upon the theory of planned behavior and stimulus-organism-response. Humanit Soc Sci Commun 11(1):571. https://doi.org/10.1057/s41599-024-03090-6
Fasbender U, Wöhrmann AM, Wang M, Klehe U-C (2019) Is the future still open? The mediating role of occupational future time perspective in the effects of career adaptability and aging experience on late career planning. J Vocat Behav 111:24–38. https://doi.org/10.1016/j.jvb.2018.10.006
Felce D, Perry J (1995) Quality of life: its definition and measurement. Res Dev Disab 16(1):51–74. https://doi.org/10.1016/0891-4222(94)00028-8
Ferreira N (2022) Career adaptability as a predictor of employees' career agility and career embeddedness. In: IL Potgieter & N Ferreira (eds), Managing Human Resources: The New Normal. Cham: Springer International Publishing, p 229–248
Gaile A, Baumane Vitolina I, Stibe A, Kivipõld K (2024) Expanding career adaptability: connections as a critical component of career success. Eur J Manag Bus Econ 33(4):411–428. https://doi.org/10.1108/EJMBE-06-2023-0185
Gati I, Kulcsár V (2021) Making better career decisions: from challenges to opportunities. J Vocat Behav 126:103545. https://doi.org/10.1016/j.jvb.2021.103545
Ginevra MC, Annovazzi C, Santilli S, Di Maggio I, Camussi E (2018) Breadth of vocational interests: The role of career adaptability and future orientation. Career Dev Q 66(3):233–245
Ginevra MC, Di Maggio I, Santilli S, Nota L (2021) The role of career adaptability and future orientation on future goals in refugees. Br J Guid Couns 49(2):272–286
Ginevra MC, Pallini S, Vecchio GM, Nota L, Soresi S (2016) Future orientation and attitudes mediate career adaptability and decidedness. J Vocat Behav 95:102–110
Goulart AR, Liboni LB, Cezarino LO (2021) Qualification as a societal challenge and the role of higher education from a system approach. High Educ Skills Work Based Learn 11(5):1002–1019. https://doi.org/10.1108/HESWBL-06-2020-0118
Guan P, Capezio A, Restubog SLD, Read S, Lajom JAL, Li M (2016) The role of traditionality in the relationships among parental support, career decision-making self-efficacy and career adaptability. J Vocat Behav 94:114–123
Hair JF, Howard MC, Nitzl C (2020) Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. J Bus Res 109:101–110
Hair JF, Risher JJ, Sarstedt M, Ringle CM (2019) When to use and how to report the results of PLS-SEM. Eur Bus Rev 31(1):2–24
Hair JF, Ringle CM, Sarstedt M (2011) PLS-SEM: Indeed a Silver Bullet. J Market Theory Pract 19(2):139–152. https://doi.org/10.2753/MTP1069-6679190202
Hampton NZ (2005) Testing for the structure of the career decision self-efficacy scale-short form among Chinese college students. J Career Assess 13(1):98–113
Henseler J, Hubona G, Ray PA (2016) Using PLS path modeling in new technology research: updated guidelines. Ind Manag Data Syst 116(1):2–20
Hirschi A (2009) Career adaptability development in adolescence: multiple predictors and effect on sense of power and life satisfaction. J Vocat Behav 74(2):145–155
Hirschi A (2014) Hope as a Resource for Self-Directed Career Management: Investigating Mediating Effects on Proactive Career Behaviors and Life and Job Satisfaction. J Happiness Stud 15(6):1495–1512. https://doi.org/10.1007/s10902-013-9488-x
Hlaďo P, Juhaňák L, Hloušková L, Lazarová B (2022) Exploring the roles of career adaptability, self-esteem, and work values in life satisfaction among emerging adults during their career transition. Emerg Adulthood 10(1):135–148. https://doi.org/10.1177/21676968211012586
Hou C, Wu Y, Liu Z (2019) Career decision-making self-efficacy mediates the effect of social support on career adaptability: a longitudinal study. Soc Behav Person Int J 47(5):1–13
Jiang Z, Hu X, Wang Z, Jiang X (2017) Career decision self-efficacy and life satisfaction in China: an empirical analysis. Soc Indic Res 132:137–154
Jiang Z, Wang Y, Li W, Peng KZ, Wu C-H (2023) Career proactivity: a bibliometric literature review and a future research agenda. Appl Psychol 72(1):144–184. https://doi.org/10.1111/apps.12442
Kayyali, M (2024) Career development in higher education: best practices and innovations. In: B Christiansen & AM Even (eds) Advancing Student Employability Through Higher Education Hershey, PA, USA: IGI Global, p 1–19
Kock N (2022) WarpPLS User Manual: Version 8.0
Krafft C, Branson Z, Flak T (2021) What's the value of a degree? Evidence from Egypt, Jordan and Tunisia. Comp A J Comp Int Educ 51(1):61–80. https://doi.org/10.1080/03057925.2019.1590801
Krause F, Schmidt SL, Schreyer D (2021) Career adaptability and career success. J Pers Psychol 21(3):115–124. https://doi.org/10.1027/1866-5888/a000292
Kvasková L, Hlado P, Palíšek P, Šašinka V, Hirschi A, Ježek S, Macek P (2023) A longitudinal study of relationships between vocational graduates' career adaptability, career decision-making self-efficacy, vocational identity clarity, and life satisfaction. J Career Assess 31(1):27–49. https://doi.org/10.1177/10690727221084106
Lee A, Jung E (2022) University students' career adaptability as a mediator between cognitive emotion regulation and career decision-making self-efficacy. Front Psychol 13:896492
Li T-T, Tien H-LS (2023) The relationship between time perspective and life satisfaction: career adaptability as an intermediate variable. British Journal of Guidance & Counselling, p 1–9
Li X, Zhang X, Lyu H (2023) The longitudinal relationship between future time perspective and life satisfaction among Chinese adolescents. Personal Individ Differ 202:111998
Li Y, Wang S (2024) The path from overqualification to success: career adaptability perspective. Curr Psychol 43(11):9920–9932. https://doi.org/10.1007/s12144-023-05148-1
Liu X, Zhang X, Dang Y, Gao W (2023) Career education skills and career adaptability among college students in China: the mediating role of career decision-making self-efficacy. Behav Sci 13(9). https://doi.org/10.3390/bs13090780
Louay C, Edochie I, Glick P, Martini J, Garber C (2020) Barriers to Employment That Women Face in Egypt. Retrieved from https://www.rand.org/pubs/research_reports/RR2868.html
MacKenzie SB, Podsakoff PM, Podsakoff NP (2011) Construct measurement and validation procedures in MIS and behavioral research: integrating new and existing techniques. MIS Quarterly 293–334
Maggio ID, Shogren KA, Wehmeyer ML, Nota L, Sgaramella TM (2021) Career adaptability, self-determination, and life satisfaction: a mediational analysis with people with substance use disorder. J Career Dev 48(3):213–228
Maggiori C, Johnston CS, Krings F, Massoudi K, Rossier J (2013) The role of career adaptability and work conditions on general and professional well-being. J Vocat Behav 83(3):437–449
Maggiori C, Rossier J, Savickas ML (2017) Career adapt-abilities scale–short form (CAAS-SF) construction and validation. J Career Assess 25(2):312–325
Magnano P, Lodi E, Zammitti A, Patrizi P (2021) Courage, career adaptability, and readiness as resources to improve well-being during the University-to-Work Transition in Italy. Int J Environ Res Public Health 18(6):2919
Manley SC, Hair JF, Williams RI, McDowell WC (2021) Essential new PLS-SEM analysis methods for your entrepreneurship analytical toolbox. Int Entrepreneur Manag J 17:1805–1825
Marcionetti J, Rossier J (2021) A longitudinal study of relations among adolescents' self-esteem, general self-efficacy, career adaptability, and life satisfaction. J Career Dev 48(4):475–490. https://doi.org/10.1177/0894845319861691
Masten AS (2001) Ordinary magic: Resilience processes in development. Am Psychol 56(3):227–238. https://doi.org/10.1037/0003-066x.56.3.227
Mert-Karadas M, Terzioglu F, Koc G (2024) Effects of personality traits and leadership orientations of Turkish nursing students on their career adaptability: a cross-sectional study. Leadersh Health Serv 37(1):53–68. https://doi.org/10.1108/LHS-11-2022-0114
Metric I-D (1999) Putting time in perspective: a valid, reliable. J Personal Soc Psychol 77:1271–1288
Mosbah AYS, Cowton CJ, Drake JE, Teviotdale WW (2022) Preparing students for the workplace in developing countries: a study of accounting education in Libya. Account Educ 31(2):184–212. https://doi.org/10.1080/09639284.2022.2032220
Mostafa E (2024) Internationalization in Egyptian Higher Education: two Case Studies from Public Universities
Nalis I, Kubicek B, Korunka C (2022) Resources to respond: a career construction theory perspective on demands, adaptability, and career crafting. Career Dev Q 70(2):138–152. https://doi.org/10.1002/cdq.12293
Nurmi S, Jaakkola T (2005) Problems underlying the learning object approach. Inter J Instr Technol Dist Learn 2(11):61–66
Nyström S (2009) The dynamics of professional identity formation: graduates' transitions from higher education to working life. Vocat Learn 2(1):1–18. https://doi.org/10.1007/s12186-008-9014-1

Ocampo ACG, Restubog SLD, Liwag ME, Wang L, Petelczyc C (2018) My spouse is my strength: Interactive effects of perceived organizational and spousal support in predicting career adaptability and career outcomes. J Vocat Behav 108:165–177
Piña-Watson B, Jimenez N, Ojeda L (2014) Self-construal, career decision self-efficacy, and perceived barriers predict Mexican American women's life satisfaction. career Dev Q 62(3):210–223
Pong JH-K (2024) Spirituality as predictors of career adaptability among Chinese youths: a cross-sectional study. Int J Children's Spiritual 29:1–23
Pratama MF, Mastuti E, Yoenanto, NH (2024) The impact of future orientation and social support on career adaptability. Jurnal Psikologi Ulayat. https://doi.org/10.24854/jpu1006
Qalati SA (2025) Linking managerial ties and organizations sustainability outcomes via knowledge management and business model innovation: the role of environmental turbulence. International Studies of Management & Organization, ahead of print(ahead of print), 1–27. https://doi.org/10.1080/00208825.2024.2442193
Qalati SA, Barbosa B, Ibrahim B (2023) Factors influencing employees' eco-friendly innovation capabilities and behavior: the role of green culture and employees' motivations. Environ Dev Sustain. https://doi.org/10.1007/s10668-023-03982-8
Qalati SA, Siddiqui F, Wu Q (2024) The effect of environmental ethics and spiritual orientation on firms' outcomes: the role of senior management orientation and stakeholder pressure. Humanit Soc Sci Commun 11(1):1746. https://doi.org/10.1057/s41599-024-04354-x
Rana MQ, Fahim S, Saad M, Lee A, Oladinrin OT, Ojo LD (2024) Exploring the underlying barriers for the successful transition for women from higher education to employment in Egypt: a focus group study. Social Sci 13(4). https://doi.org/10.3390/socsci13040195
Rossier J, Ginevra MC, Bollmann G, Nota L (2017) The Importance of Career Adaptability, Career Resilience, and Employability in Designing a Successful Life. In: K Maree (ed) Psychology of Career Adaptability, Employability and Resilience, Cham: Springer International Publishing, p 65–82
Rudolph CW, Lavigne KN, Katz IM, Zacher H (2017) Linking dimensions of career adaptability to adaptation results: a meta-analysis. J Vocat Behav 102:151–173
Rudolph CW, Lavigne KN, Zacher H (2017) Career adaptability: a meta-analysis of relationships with measures of adaptivity, adapting responses, and adaptation results. J Vocat Behav 98:17–34. https://doi.org/10.1016/j.jvb.2016.09.002
Russo A, Zammitti A, Santisi G, Magnano P (2024) The relationship between psychological flexibility and career adaptability as resources to promote well-being. Br J Guid Couns 52(2):286–295. https://doi.org/10.1080/03069885.2023.2212856
Santilli S, Ginevra MC, Sgaramella TM, Nota L, Ferrari L, Soresi S (2015) Design my future: an instrument to assess future orientation and resilience. J Career Assess 1:15
Santilli S, Marcionetti J, Rochat S, Rossier J, Nota L (2017) Career adaptability, hope, optimism, and life satisfaction in Italian and Swiss adolescents. J Career Dev 44(1):62–76
Savickas M (2005) The theory and practice of career construction. Career development and counseling: putting theory and research to work John Wiley & Sons, Inc
Savickas ML (1997) Career adaptability: an integrative construct for life-span, life-space theory. Career Dev Q 45(3):247–259. https://doi.org/10.1002/j.2161-0045.1997.tb00469.x
Savickas ML (2002) Career construction. Career Choice Dev 149(205):14–38
Savickas ML (2013) Career construction theory and practice. Career Dev Counsel Putt Theory Res Work 2:144–180
Savickas ML, Porfeli EJ (2012) Career adapt-abilities scale: construction, reliability, and measurement equivalence across 13 countries. J Vocat Behav 80(3):661–673
Seginer R (2009) *Future Orientation: Developmental and ecological perspectives*: Springer Science & Business Media
Seibert SE, Kraimer ML, Heslin PA (2016) Developing career resilience and adaptability. Organ Dyn 45(3):245–257. https://doi.org/10.1016/j.orgdyn.2016.07.009
Stead GB, LaVeck LM, Hurtado Rua SM (2022) Career adaptability and career decision self-efficacy: Meta-analysis. J Career Dev 49(4):951–964. https://doi.org/10.1177/08948453211012477
Stoddard SA, Zimmerman MA, Bauermeister JA (2011) Thinking about the future as a way to succeed in the present: a longitudinal study of future orientation and violent behaviors among African American youth. Am J Commun Psychol 48:238–246
Suarez-Bilbao B, Andresen M, Crowley-Henry M, O'Connor EP (2023) The influence of complexity, chance and change on the career crafting strategies of SIEs. Career Dev Int 28(2)
Taylor KM, Betz NE (1983) Applications of self-efficacy theory to the understanding and treatment of career indecision. J Vocat Behav 22(1):63–81
Tolentino LR, Garcia PRJM, Lu VN, Restubog SLD, Bordia P, Plewa C (2014) Career adaptation: the relation of adaptability to goal orientation, proactive personality, and career optimism. J Vocat Behav 84(1):39–48
van Rensburg H, Perera HN, McIlveen P, Asad F, Hoare PN (2024) Measures of career adaptability and employability in Bahasa Indonesia. Int J Educ Vocat Guid 24(3):743–761. https://doi.org/10.1007/s10775-022-09576-6
Wang C-J, Hsieh H-Y (2022) Effect of deep learning approach on career self-efficacy: Using off-campus internships of hospitality college students as an example. Sustainability 14(13):7594
Wang D, Jiao R, Wang H (2024) Perceived overqualification and career indecisiveness: examining the mediating role of career self-efficacy and moderating role of social support. Curr Psychol 43(13):11983–11997. https://doi.org/10.1007/s12144-023-05333-2
Wang T, Zhang Y, Wang J, Miao H, Guo C (2024) Career decision self-efficacy mediates social support and career adaptability and stage differences. J Career Assess 32(2):264–282. https://doi.org/10.1177/10690727231189466
Wang Z, Fan C, Niu, J (2023) Predicting effects of career adaptability and educational identity on the career decision-making of Chinese higher vocational students. Int J Educ Vocat Guid 68(3):222–237
Yan Z, Duan B, Qu Y, Long K, Li G, Xu S (2024) Shaping future workers in China's secondary vocational schools—a person-centered study on professional identity and career adaptability. Curr Psychol 43(18):1–14
Yang X, Feng Y, Meng Y, Qiu Y (2019) Career adaptability, work engagement, and employee well-being among Chinese employees: the role of guanxi. Front Psychol 10:1029
Zhang J, Chen G, Yu Q, Meng Y, lv Z, He J (2024) Longitudinal relations between future time perspective and academic engagement among Chinese college students: the mediating role of career adaptability. Curr Psychol. https://doi.org/10.1007/s12144-024-06951-0

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Author contributions

HEB and MFE composed the conception and design and drafted the article. HEB interpreted data and SAQ revised it critically for important intellectual content. SAQ and MFE collaborated on the study's writing. HEB provided data methodology and analysis help. HEB and SAQ made critical comments and amendments.

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Competing interests

The authors declare no competing interests.

Ethical approval

The study was conducted following the guidelines in the Ethical Principles of Psychologists and the Code of Conduct of the American Psychological Association. Prior to conducting research, a study proposal encompassing objectives, research methodology, and how participants would be chosen went through a thorough critical review process and was approved by the ethics committee of the University of Sadat City, Egypt. Approval was granted in August 2023, having approval number USC-2023-008.

Informed consent

Before conducting the study, informed consent was sought from all the participants by Principal Investigator Hanan Eid Badwy of the University of Sadat City in Egypt. The participants were provided with clear information regarding the research purpose, research methods, risks and benefits, and their right to withdraw from the study at any point without any penalty. Consent was legally obtained on the 21st of August, 2023, prior to data collection. Such consent encompassed participation, data use, and sharing of findings, as well as assurances concerning confidentiality and exclusive research use. The Ethics Committee of the University of Sadat City assessed and cleared the process, hence upholding ethical principles. Since there were no vulnerable populations or children, obtaining additional guardian permission was not necessary. Also, no rewards or financial incentives were offered for taking part.

Additional information

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