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Internal career orientations guidance for emerging adults in a university of technology

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Background: Schein's career orientations inventory (COI) is known to help undergraduate emerging adults develop deeper insight into the master career values that drive study and career choices.

Objectives: The study's objective was to assess the inner career orientations of young emerging adults in a university of technology setting.

Method: The study had a cross-sectional design and involved a random sample (N = 368) of black African university of technology students (mean age = 20.76 years) enrolled for further studies at the Faculty of Humanities. An exploratory factor analysis of the COI was applied.

Results: Four inner career orientations emerged labelled as security and stability (highest mean score), specialised creativity and problem solving (second highest mean score), entrepreneurship (third highest mean score), and general managerial autonomy (lowest mean score).

Conclusion: The findings of this study highlight the importance of uncovering the inner career orientations denoted by the career anchor factor structure of the COI for young emerging adults in a specific setting to ensure relevant and useful career guidance.

Contribution: The study contributed to career guidance in the African context by providing new insights into the inner career orientations of black African emerging adults.

Keywords: career anchors; career orientations; career guidance; emerging young adults; university of technology students.

Introduction

University of technology students are young emerging adults confronted with the critical vocational development task of identity exploration through study and career decision-making (Arnett, 2015; Doyle & O'Donnell, 2022). As such, young emerging adults (approximate age of 18 to 29 years: Arnett, 2015) inevitably engage in the exploration of study and career options that will promote their chances of pursuing a meaningful future working life and career path (Arnett, 2015; Arnett & Mitra, 2020; Doyle & O'Donnell, 2022; Ludwikowski et al., 2020). Furthermore, post-matric studies help emerging adults gain knowledge about the work world and occupational choices; they generally exhibit enough autonomy in deciding on future life paths. By valuing their independence, they seek out help and guidance to translate their self-concept into viable study and career interest preferences and choices (Arnett, 2015; Doyle & O'Donnell, 2022; Savickas, 2013).

Career interest assessments are generally used to support emerging adults who are actively engaged in the process of career-related decisions (Ludwikowski et al., 2020). Schein's (1990, 1996) career orientations inventory (COI) is known to help undergraduate emerging adults develop deeper insight into the master career values that drive potential career interest preferences and choices (Coetzee, 2012; Coetzee & Schreuder, 2009; Matjie & Coetzee, 2018). The COI (Schein, 1990, 1996) identifies individuals' master career values in the form of career anchors that depict individuals' inner career orientations (Abessolo et al., 2017, 2021). Generally, work and life experiences throughout the lifespan help to crystallise the career self-concept with dominant career anchors starting to stabilise by the age of 30 years (Barclay et al., 2013). Individual career anchors continue to evolve over time depending upon the career stage, career transitions, and work-life context (Costigan et al., 2018; Rodrigues et al., 2013). The predominant inner career orientations reflected by individuals' career anchors are characterised by master career values that pull them towards specific career choices and career path interests (Abessolo et al., 2021).

Emerging adults are at a life-stage during which they may be willing to accept responsibility for their choices and independently decide on their beliefs and values, which they optimistically express in their personal life choices (Doyle & O'Donnell, 2022). Being at an age of possibilities (Arnett, 2015), emerging adults' inner career orientations and concomitant master career values may evolve over time; however, introspection on these by means of a COI assessment exercise may raise initial awareness of such master career values to help foster the crystallisation of the career self-concept (Coetzee et al., 2022).

However, before applying the COI (Schein, 1990) in career guidance, it is important to first assess whether the COI factor structure postulated by Schein (1990, 1996) holds true for the target audience. Empirical factor analyses on the COI have shown that the COI items may load on different career anchor factors yielding either more than eight career anchors or combinations of the career anchor factors resulting in fewer (or more) than eight career anchors in diverse sample-specific contexts (Coetzee & Schreuder, 2009; Costigan et al., 2018; Danziger et al., 2008; Erdoğmus, 2004; Lambert et al., 2020; Leong et al., 2014; Marshall & Bonner, 2003). Therefore, the study's objective was, through an exploratory factor analysis (EFA) of the COI (Schein, 1990), to explore the inner career orientations that emerge for the sample of university of technology students who were identified for career guidance support. Uncovering the factor structure that emerged for the sample may not only extend research on the COI but also ensure a more reliable application of the COI in career guidance support interventions for university of technology students. Effective career guidance for emerging adults generally relies on psychometrically sound and target-audience relevant assessment instruments (Costigan et al., 2018).

Inner career orientations

The basic premise of Schein's (1990, 1996) career anchors concept is that they reflect individuals' inner (subjective) career orientations as a significant component of the career self-concept (Abessolo et al., 2017, 2021; Coetzee & Schreuder, 2009). Inner career orientations are supported by master career values that guide individuals' career interest preferences and choices (Abessolo et al., 2017, 2021). Schein (1990, 1996) describes eight career anchors that each reflect a unique inner career orientation with its characteristic master career values: (1) technical and functional competence (TF), (2) general management (GM), (3) security and stability (SEC), (4) entrepreneurial creativity (EC), (5) pure challenge (PC), (6) autonomy and independence (AU), (7) service and dedication to a cause (SV), and (8) lifestyle (LS).

A TF career anchor reflects an orientation towards careers that allow the development of functional and expert skills. The core master values that drive the TF inner career orientation pertain to the need for expressing one's talents and achieving expert status among peers (Coetzee, 2012; Feldman & Bolino, 2000). The inner career orientation of the GM career anchor reflects an aspiration for a position that facilitates the utilisation of managerial skills. The master values of the GM career orientation pertain to a self-perceived talent for solving organisation-wide problems and an aspiration for managerial authority in decision-making (Coetzee, 2012; Feldman & Bolino, 2000). Identifying new businesses, products or services and opportunities for creativity are predominant master values of the EC career orientation (i.e. expressing one's talent in personal projects involving the creation of something new: Coetzee, 2012; Feldman & Bolino, 2000).

Needs-based master values pertain to the SEC, AU and LS career anchors. The SEC inner career orientation towards job security is driven by the valuing of the financial security and benefits offered by long-term employment. The AU career orientation is a need to be free of organisational constraints in the pursuit of professional competence. Exercising personal freedom in choices of job content and settings are some of the master values reflected in the AU career orientation (Coetzee, 2012; Feldman & Bolino, 2000). The master values of the LS career anchor are reflected in the desire for careers that promote the coherent balancing of work commitments with personal and family welfare (Coetzee, 2012; Feldman & Bolino, 2000).

The pure-challenge (PC) and service and dedication to a cause (SV) career anchors relate to the expression of personal (intrinsic) skills and values (Feldman & Bolino, 2000). The PC career orientation reflects the aspiration for a career that allows the testing of one's abilities in solving single-handedly a variety of challenging, complex problems. The master values of the PC career orientation are reflected in the desire for risky, challenging and competitive work projects that test one's personal endurance and problem-solving capability (Coetzee, 2012; Feldman & Bolino, 2000). The SV career orientation reflects the desire for jobs in which personal skills and values can be applied towards helping society and make the world a better place to live in. The SV career orientation is supported by the master value of working for the greater good of organisations and communities (Coetzee, 2012; Feldman & Bolino, 2000).

Empirical research on the commonality of master values embedded within the COI career anchors highlights values of achievement reflected within the AU, PC and LS career orientations; values of power within the AU, PC, EC, SEC and TF career orientations; values of conformity within the SEC and SV career orientations, values of hedonism within the AU, PC, EC, GM and TF career orientations; and values of tradition within the SEC career orientation. The AU, PC, EC and TF career orientations were also associated with values of self-directedness (Abessolo et al., 2017). Exploratory factor analyses on the COI (Schein, 1990) provide evidence of the EC career anchor including two separate career orientations, namely that of creativity (i.e. enjoyment of creating new products or services) and entrepreneurship (i.e. setting up a new business: Costigan et al., 2018; Danziger et al., 2008; Marshall & Bonner, 2003).

Other exploratory factor analyses studies revealed combinations of COI career anchors into a new type of career orientation. For example, Erdoğmus (2004) and Coetzee and Schreuder (2009) discovered a combination of GM and PC items loading onto a single factor. Coetzee and Schreuder (2009) found a combination of GM and EC items loading onto a single career anchor factor. Lifestyle and autonomy items also loaded onto a single career anchor factor (Coetzee & Schreuder, 2009). The divergent research findings on the factor structure of the COI (Schein, 1990) suggest that the meanings attached to career orientations may be sample-specific and context dependent. People's master career values may further combine to form a combination of career orientations denoted by Schein's (1990) career anchors (Coetzee & Schreuder, 2009; Cortés-Sanchez & Grueso-Hinestroza, 2017; Costigan et al., 2018). This phenomenon led to the following research question:

What are the inner career orientations of university of technology students as denoted by the EFA of the COI?

Research methods and design

Participants

The study involved a random sample of (N = 368) university of technology black African students who were enrolled for post-matric studies at the Faculty of Humanities. The sample comprised 35% male and 65% female South African students with a mean (M) age of 20.76 years (standard deviation [SD] = 2.47). The participants were enrolled for qualifications such as Bachelor of Education (Maths, Science & Business Education: 32%; Intermediate Phase Teaching: 7%; Technology & Vocational Studies: 6%; Foundation Phase Teaching: 5%) and National Diplomas (Local Government Management: 30%; Correctional Services Management: 11%; Policing: 2%; Road Traffic & Municipal Police Management: 2%; Language Practice: 3%; Integrated Communication Design: 1%; Legal Assistance: 1%). Seventy-two per cent (72%) of the participants indicated that their choice of qualification was based on their career and job interests, while 28% declared little alignment between their choice of qualification and their career and job interests.

Measure

The 40-item COI (Schein, 1990) was applied to measure participants' career anchors as an expression of their dominant career values and motivations (Abessolo et al., 2017; Igbaria et al., 1991; Lambert et al., 2020; Yarnall, 1998). The COI measures eight career anchors on a six-point Likert-type response scale (1: not true of me at all; 6: always true of me):

- *Security and stability* (5 items: e.g. 'I seek jobs in organisations that will give me a sense of security and stability').
- *Technical and functional competence* (5 items: e.g. 'I dream of being so good at what I do that my expert advice will be sought after continually').

- *General management* (5 items: e.g. 'I dream of being in charge of a complex organisation and making decisions that affect many people').
- *Autonomy and independence* (5 items: e.g. 'I dream of having a career that will allow me the freedom to do a job my own way and on my own schedule').
- *Entrepreneurial creativity* (5 items: e.g. 'Building my own business is more important to me than achieving a high-level managerial position in someone else's organisation').
- *Service and dedication to a cause* (5 items: e.g. 'I am most fulfilled in my career when I have been able to use my talents in the service of others').
- *Pure challenge* (5 items: e.g. 'I dream of a career in which I can solve problems or win out in situations that are extremely challenging').
- *Lifestyle* (5 items: e.g. 'I dream of a career that will permit me to integrate my personal, family, and work needs').

The COI (Schein, 1990) has proven construct validity and reliability (Cronbach's alpha coefficients above 0.70) for black Africans in the South African higher education context (*see* Coetzee, 2012; Coetzee & Schreuder, 2009).

Procedure

Participants received a URL link to the research questionnaire via a no-reply email, which invited them to participate voluntarily in the research.

Data analysis

Exploratory factor analysis with principal component analysis (PCA) was performed to uncover the underlying COI factor structure relevant to the participants. Varimax with Kaiser normalisation was used to calculate the rotated component matrix. Descriptive statistics and bivariate correlations were then calculated. Data analysis was performed with the IBM Corp. (2021) SPSS Statistics version 28.0 software package. The JASP software version 0.16.3 (JASP, 2022) was used to test the discriminant and convergent validity of the factor structure.

Ethical considerations

The study obtained ethical clearance from the research institution (ERC Ref: 2021/CEMS/IOP/012) and permission from the university of technology. Participants were informed that completion of the questionnaire was anonymous, voluntary, and confidential. Furthermore, they provided informed consent that the data may be used for group-based research purposes.

Results

Table 1 summarises the final four career anchors that emerged for the sample of participants. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was

0.93 (Bartlett's test of sphericity: $p = 0.000$) and thus above the recommended threshold value of 0.60 for adequate common variance among items in factor analysis (Kaiser, 1970). The PCA revealed the presence of eight components with eigenvalues exceeding one. The scree plot revealed a clear break after the fourth component. The first four factor components accounted for 30.33%, 7.79%, 4.01% and 3.79% of the variance, respectively, cumulatively 45.92%. The remaining four components accounted

TABLE 1: Exploratory factor analysis: Rotated component matrix.

Items	Component			
	Factor 1 (EC, PC and TF)	Factor 2 (AU and GM)	Factor 3 (SEC)	Factor 4 (EC)
Specialised creativity and problem solving				
21: I am most fulfilled in my career when I have been able to build something that is entirely the result of my own ideas and efforts (EC)	0.58	-	-	-
23: I have been most fulfilled in my career when I have solved seemingly unsolvable problems or won out over seemingly impossible odds (PC)	0.59	-	-	-
29: I will feel successful in my career only if I have succeeded in crafting or building something that is entirely my own product or idea (EC)	0.66	-	-	-
31: I seek out work opportunities that strongly challenge my problem solving and/or competitive skills (PC)	0.59	-	-	-
33: I am most fulfilled in my work when I have been able to use my special skills and talents (TF)	0.63	-	-	-
General managerial autonomy				
3: I dream of having a career that will allow me the freedom to do a job my own way and on my own schedule (AU)	-	0.56	-	-
18: I will feel successful in my career only if I become a general manager in some organisation (GM)	-	0.72	-	-
19: I will feel successful in my career only if I achieve complete autonomy and freedom (AU)	-	0.60	-	-
26: Becoming a general manager is more attractive to me than becoming a senior functional manager in my current area of expertise (GM)	-	0.64	-	-
27: The chance to do a job my own way, free of rules and constraints, is more important to me than security (AU)	-	0.72	-	-
Security and stability				
4: Security and stability are more important to me than freedom and autonomy (SEC)	-	-	0.51	-
20: I seek jobs in organisations that will give me a sense of security and stability (SEC)	-	-	0.62	-
28: I am most fulfilled in my work when I feel that I have complete financial and employment security (SEC)	-	-	0.50	-
36: I dream of having a career that will allow me to feel a sense of security and stability (SEC)	-	-	0.71	-
Entrepreneurship				
5: I am always on the lookout for ideas that would permit me to start my own enterprise (EC)	-	-	-	0.67
13: Building my own business is more important to me than achieving a high-level managerial position in someone else's organisation (EC)	-	-	-	0.65
37: I dream of starting up and building my own business (EC)	-	-	-	0.78

EC, entrepreneurial creativity; PC, pure challenge; TF, technical and functional competence; AU, autonomy and independence; GM, general management; SEC, security and stability.

cumulatively for only 11.57% (3.24%; 2.98%; 2.81%; 2.54%) of the variance.

The rotated component matrix was then inspected to retain item loadings of ≥0.50. Items loaded mostly onto the first four components. The remaining four components had numerous item cross-loadings with the first four components with the loadings being lower than 0.50. Each of the four remaining components had only one or two items with loadings more than 0.50. Drawing from the guidelines of Tabachnick and Fidell (2013) and Lambert et al. (2020), the decision was to retain only the first four factors because of the researchers' assessment of their interpretability and utility.

Table 1 shows that factor one (five items) included two EC items, two PC items and one TF competence item from the original COI (Schein, 1990) factor structure. Inspection of the items suggested the use of specialised skills to solve challenging problems in the building of one's own products or ideas. Factor one was labelled as *specialised creativity and problem solving*.

As shown in Table 1, the second factor (labelled as *general managerial autonomy*: five items) included three (AU) items and two GM items from the original COI (Schein, 1990) factor structure. The combination of items suggested autonomy and freedom in a general managerial role. The third factor retained four items of the original COI (Schein, 1990) factor structure for the SEC. The combination of items suggested a strong focus on financial and employment security and stability. The fourth factor (labelled as *entrepreneurship*) retained three items of the original COI (Schein, 1990) EC anchor. The combination of items suggested a strong focus on creating one's own business or enterprise.

In Table 2, the four career orientations that emerged from the EFA had, for large group research purposes (Hair et al., 2019), acceptable (entrepreneurship: 0.55) to high internal consistency reliability (>0.70). The composite reliabilities (CR) for construct or factor-level reliability was high for all four factors (>0.70). The bivariate correlations among the four factors were positive and significant ($r ≥ 0.39$ to $r ≤ 0.55$). All four factors correlated positively and significantly with the overall career anchors construct ($r ≥ 0.69$ to $r ≤ 0.82$). Participants scored the highest on security and stability (mean [M] = 4.99; SD = 0.97) and specialised creativity and problem solving (M = 4.97; SD = 0.99). Participants scored the lowest on general managerial autonomy (M = 4.20; SD = 1.29).

Table 2 and Table 3 show evidence of acceptable convergent validity (Hair et al., 2019) with CR coefficients of >0.70 and the average variance extracted (AVE) estimates either close to 0.50 (general managerial autonomy and security and stability) or >0.50 (specialised creativity and problem-solving and entrepreneurship). Table 3 shows acceptable discriminant validity among the factors (except for security

TABLE 2: Descriptive statistics and bivariate correlations.

Variable	Career orientation	Number of items	Cronbach's alpha	Mean	SD	1	2	3	4	5
1	Specialised creativity and problem solving	5	0.80†	4.97	0.99	-	-	-	-	-
2	General managerial autonomy	5	0.78‡	4.20	1.29	0.39*	-	-	-	-
3	Security and stability	4	0.70§	4.99	0.97	0.55*	0.39*	-	-	-
4	Entrepreneurship	3	0.55§	4.60	1.21	0.51*	0.48*	0.42*	-	-
5	Overall scale	17	0.86¶	4.70	0.86	0.74*	0.82*	0.69*	0.71*	-

SD, standard deviation.

*All correlations are significant at the $p \leq 0.001$ level.

†, Composite reliability = 0.86; ‡, Composite reliability = 0.82; §, Composite reliability = 0.78; ¶, Composite reliability = 0.90.

TABLE 3: Average variance extracted and squared inter-construct correlations.

Variable	Factors	AVE	SIC			
			1	2	3	4
1	Specialised creativity and problem solving	0.55	-	-	-	-
2	General managerial autonomy	0.49	0.18	-	-	-
3	Security and stability	0.48	0.57	0.24	-	-
4	Entrepreneurship	0.55	0.38	0.21	0.25	-

AVE, average variance extracted; SIC, squared inter-construct correlations.

and stability [SIC = 0.57] with the AVE estimates being greater than the squared inter-construct correlations [SIC]). All the inter-construct correlations were less than 0.90, which indicated that multicollinearity did not pose a threat to the findings (Hair et al., 2019). The Harman's single factor test further revealed that the four factors explained only 28% of the variance, which indicated that common method variance was not a major problem in the data.

Discussion

Given the importance of career guidance to university of technology students, the study focused on uncovering the inner career orientations relevant to the sample of participants in support of their vocational development. The results corroborated research evidence of the COI (Schein, 1990, 1996) yielding different combinations of career anchors that depict inner career orientations relevant to the sample (Coetzee & Schreuder, 2009; Cortéz-Sanchez & Grueso-Hinestroza, 2017; Costigan et al., 2018; Danziger et al., 2008; Marshall & Bonner, 2003).

The results elicited three main outcomes to consider in the career guidance of the sample of university of technology students. The first of these pertains to the *security and stability* (highest mean score) career orientation that signals a need for long-term, steady employment in organisational settings that offer financial and employment security (Schein, 1990). The security and stability career orientation reflects extrinsic-oriented master career values alluding to jobs that offer long-term job security and financial rewards and benefits (Coetzee, 2021). In this regard, Ackerman and Kanfer (2020) argue that young emerging adults place a high premium on the financial and career rewards associated with steady employment because they are at a stage of establishing an independent, viable livelihood.

The second outcome pertains to the separate themes of creativity and entrepreneurship associated with the EC career anchor (Costigan et al., 2018; Marshall & Bonner, 2003). Marshall and Bonner (2003) and Danziger et al. (2008) also observed in their COI EFA studies the split between the creativity and entrepreneurship aspects of the EC career anchor. In this study, the career orientation items of *specialised creativity and problem solving* (the second highest mean score) corroborate empirical research pointing to the desire to draw upon the application of specialised skills and talents in order to solve challenging problems in creative, entrepreneurial pursuits. Research by Lambert et al. (2020) shows that some individuals may aspire to careers that support a blend of motives and values associated with EC, pure challenge, and TF competence. In this study, the participants further seemed to embrace *entrepreneurship* (the third highest mean score) as a separate career orientation in the desire to create their own business or enterprise. This finding supports Schein's (1978, 1990) original conception of EC as an aspiration towards self-employment. The technical specialisation, pure challenge and EC career orientations further seem to be prevalent among African emerging adults (17 to 28 years: Arnett, 2015; Matjie & Coetzee, 2018).

The third outcome for career guidance is the career orientation that captured a mix of the autonomy and independence and GM career anchors (Schein, 1990) which, in the present study, appeared to be centred on the need for autonomous working and the personal freedom that a managerial role may bring in terms of job content and position. In the present study, both the career orientations of *specialised creativity and problem solving* and *general managerial autonomy* (lowest mean score) reflect intrinsic-oriented master career values of self-expression (i.e. jobs that require creativity and innovation while giving one the freedom and position of power to set one's own goals and schedule as sources of career satisfaction: Coetzee, 2021).

Implications for career guidance

Schein (1978, 2006) proposed that the notion of career anchors (as measured by the COI) helps individuals to make sense of the master inner career-oriented values that guide their career aspirations and choices. Career guidance interventions should especially consider the need for security and stability in employment and jobs that offer creative self-expression in the solving of challenging problems. The findings

corroborated previous research that multiple career anchors have complementary, congruous master career values depicting an inner career orientation that guides career choices for a specific sample (Barclay et al., 2013). The present study's findings support research on the importance of uncovering the career anchor factor structure of the COI (Schein, 1990) for the target population in which the measure is applied for career guidance purposes. As such, career guidance services may be more relevant and useful to the targeted audience. The findings of the present study should be considered while scoring the COI for the sample of university of technology students to ensure sample-relevant career guidance. The unique master career values that make up the inner career orientations of the sample of students may be keys to successful job search, career decision-making and vocational development activities. Career guidance activities should be supplemented by a career discussion to further uncover the master career values deemed important for the emerging adult. Such a discussion may reveal narratives concerning the career self-concept and deepen insight into the career orientations that manifested for the sample.

Limitations and future research

It is important to interpret the findings in the light of the sample characteristics. The chosen qualifications in the humanities field may have contributed to the career anchors that emerged for the sample. The findings cannot be generalised to all university of technology students. The participants were still in the emerging adult or school-to-work transition phase with no real experience of the work world. Schein (1990) posits that the real career anchor emerges after work experience and approximately at the age of 30 years. In this regard, the sample's mean age of 20 years (age of career exploration for job security and developing specialised skills) could have attributed to the predominant career anchors that emerged in the study. It is acknowledged that the present study findings reflect early career aspirations and that ideally, longitudinal studies should track the career journeys of university of technology students in the humanities field to assess whether the career anchors evolve over time with the gaining of work experience.

Conclusion

Overall, the findings of the study extended research on the COI (Schein, 1990) and provided new insights into the inner career orientations of black African emerging adults. Considering the master career values of inner career orientations is critical for satisfying, congruent career choices and decision-making when providing career guidance to university of technology students. Although the COI (Schein, 1990) is a proven useful, reliable career assessment instrument, the study's findings highlighted the importance of first establishing the underlying factor structure of the COI relevant to the sample context. Such an approach may yield more reliable, congruent, and useful career guidance information to the specific group of emerging adults.

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