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Crafting careers through theory-driven interventions: a scoping review of the utility of social cognitive career theory and career maturity inventory

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ABSTRACT

In the intricate tapestry of the exploration stage (14–25 years), students grapple with the challenges of self-discovery, career ambiguity, and the quest for purpose. Over the last few decades, a vast body of research evidence on the utility of 'Social Cognitive Career Theory' (SCCT) and 'Career Maturity Inventory' (CMI) in designing career interventions has emerged. This framework and instrument can potentially assist students in navigating the critical exploration stage. As espoused by Arksey and O'Malley, our scoping review outlines the utility of SCCT and CMI in designing early career intervention. In addition, we identify and document the facilitators and barriers to utilizing SCCT and CMI. It presents the nuanced application of the framework and the instrument in rural and urban settings. The findings affirm the robust utility of SCCT and CMI, thereby informing academicians and practitioners in designing and implementing effective early career interventions.

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Career intervention; career development; career maturity inventory; exploration stage; social cognitive career theory

Background

The contemporary landscape demands that young individuals make informed career decisions that align with their interests, abilities, strengths, and values. Donald Super's Life Space Theory posits that the exploration stage, from mid-adolescence to young adulthood (14–25 years), entails the emergence of individuals' inclination towards interests, the establishment of identity, and the exploration of potential career avenues (Super, 1980). As the students embark on this expedition of self-awareness, career awareness, experimentation, and crystallizing their career trajectory, they encounter many obstacles (T. Li et al., 2023; Nurlela & Surtiyoni, 2020). Students often experience confusion and indecisiveness in choosing their academic pursuits and career paths. A lack of clarity can impede the transition from education to the labour market (Lee & Jung, 2022). The rapidly evolving work requisites, competitive job market, and escalating educational expenses compound the challenge (Habets et al., 2020; Sowa et al., 2023). Moreover, the distinctive social, economic, and occupational landscapes of rural and urban settings present unique challenges (Van Maarseveen, 2021), especially for students at this crucial stage of their career advancement.

Rural students lack exposure to diverse career options and encounter a restricted job market during their exploration stage. The prevalence of traditional industries and lack of motivation can

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limit students' awareness of potential career opportunities (Corbett, 2021; Gibbons et al., 2019). Rural students are marginalized from quality education and have inadequate access to career development (J. Li et al., 2020; Silva-Laya et al., 2020). Conversely, urban environments offer diverse career options, educational institutions, and professional networks. This abundance of opportunities can be overwhelming for students in the exploration stage, making it challenging to navigate and make informed decisions (Van Maarseveen, 2021).

Scholarly works have reiterated the need to align career choices that reflect personal aspirations to attain career ambitions (Garrison et al., 2021; Olson, 2014; Soares et al., 2022). A corpus of literature has evinced the pivotal role of self-efficacy and confidence in career planning (Lee & Jung, 2022; Ozlem, 2019; Wujema et al., 2022) and that a certain level of maturity is requisite for conscious decision-making, self-discovery, and alignment with the workplace (T. Li et al., 2023).

The significance of providing diverse avenues for students to cultivate their career planning competencies cannot be overstated. Career support, such as interventions, can be instrumental in expanding self-efficacy (Ozlem, 2019), career maturity, and career planning skills (Xie et al., 2023). It can help to confidently navigate career uncertainties and make informed decisions (Kaliris et al., 2023; Whiston et al., 2017).

A holistic and interactive theoretical framework and an assessment tool must be integrated for early career interventions to locate and deliver its new role (Crites & Savickas, 1996; Gibbons et al., 2019; Maree & Magere, 2023; Maree et al., 2018). Considering this, 'Social Cognitive Career Theory' (SCCT) (Lent & Brown, 1996; Lent et al., 2002) and the 'Career Maturity Inventory' (CMI) (Crites & Savickas, 1996; Savickas & Porfeli, 2011) are invaluable in designing career interventions that guide students at their pivotal exploration stage.

SCCT

The literature supports the substantial potential of SCCT to contribute to advancing our knowledge of diverse groups' career development. The systematic review established SCCT as the predominant theoretical framework for guiding effective career interventions (Soares et al., 2022). SCCT explicitly focuses on culture and how it influences belief systems, interests, and career choices (Gibbons et al., 2020; Lent et al., 2002; R. J. Wang & Lent, 2022). It places a high value on self-efficacy beliefs, outcome expectations, interests, and personal goals in shaping professional development. It posits that students are likely to form an enduring interest in activities where they view themselves as efficacious and anticipate positive outcomes. By recognizing the influence of social support and contextual factors on career outcomes (Lent et al., 2002), SCCT addresses disadvantaged individuals' career challenges and needs (Gibbons et al., 2020; McWhirter et al., 2019). The framework equips students to explore their interests, values, and capabilities, thus fostering self-awareness and self-efficacy in career decision-making (R. J. Wang & Lent, 2022).

CMI

Career maturity has traditionally been associated with adolescent career development, focusing on the readiness to make career decisions (Chan et al., 2015). Drawing upon career development theories, the crucial exploration stage hinges on advancing a strong and realistic self-concept. Super's Life Space theory recognized a greater understanding of life span career development, with career maturity as one of the most critical determinants (Gerhardus Du Toit, 2010). While the traditional concept of career maturity has faced criticism for its limited applicability in modern contexts (Watson, 2019), the framework provides a profound understanding of supporting career development during exploration (Chan et al., 2015). Career maturity places significant emphasis on self-concept (Lau et al., 2021), offering a comprehensive framework for self-discovery and career discovery. This equips individuals in the exploration stage with the tools to make informed career choices.

The CMI is restored as a reliable and valid instrument to assess career maturity among the students in their exploration stage. It is valuable for assessing an individual's readiness to make informed career decisions. It measures specific dimensions such as concern for the future, curiosity to explore opportunities, and confidence and control in designing and implementing one's career (Savickas & Porfeli, 2011).

Integrating SCCT and CMI

SCCT and career maturity provide complementary perspectives on career development. SCCT offers a robust theoretical foundation explaining the psychological and environmental factors that shape career decisions. CMI translates this theory into a practical tool, assessing an individual's readiness to make informed career choices. SCCT and CMI are particularly relevant to the exploration stage of career development (Lim & Jung, 2023; D. Wang & Liu, 2022), where individuals make critical decisions about their future paths. This combined approach can be leveraged to understand early career development. Moreover, SCCT and CMI are known for their practical application in designing career interventions (Gibbons et al., 2020; Savickas & Porfeli, 2011)

Review objective

In recent years, theory-based interventions have been established as a viable solution to ameliorate informed career decisions (Cadenas et al., 2020; Garrison et al., 2021; Johnson et al., 2018; Maree & Magere, 2023; Maree et al., 2018; Miles & Naidoo, 2017; D. Wang & Liu, 2022). A meta-analysis confirmed the efficacy of career interventions in addressing the paucity of career maturity (Langher et al., 2018; Whiston et al., 2017) and in improving career decision-making competency (Ozlem, 2019). Several recent reviews (Johnston, 2018; Kaliris et al., 2023; Soares et al., 2022) explored the characteristics of career interventions for university students and found that narrative, test-interpretation-based, and mixed approaches all show promise in improving outcomes such as career decision-making, self-efficacy, career planning, and adaptability. The review also urged a shift towards early interventions with students to broaden their career perspectives and assist them in overcoming cognitive and emotional career hurdles (Sowa et al., 2023).

A vast body of work has used SCCT and CMI to design and investigate the efficacy of career interventions for adolescents and young adults (Al-Bahrani et al., 2021; Cadenas et al., 2020; Garrison et al., 2021; Gibbons et al., 2020; Hamzah et al., 2021; Legum et al., 2004; Logue et al., 2019; Lusk & Cook, 2009; Maree & Magere, 2023; Maree et al., 2018; Miles & Naidoo, 2017). mapping these evidentiary sources is essential to illuminate the idea for effective design of early career intervention. Additionally, it allows academicians and practitioners to navigate the main elements that permit or impede its implementation. Moreover, Russell (2005) asserted that high-quality, robust reviews can significantly advance the knowledge pool, policy, research, and practice.

Therefore, we outlined a scoping review (ScR) to understand the utility of the SCCT and CMI in designing early career interventions. 'Utility' in our study refers to the 'practical usefulness' of the elements of the framework and the instrument. Career intervention is a systematic and deliberate action to cultivate essential career skills (Hutchison et al., 2016). In our study, we have narrowed the focus to early career intervention that enhances students' career skills in navigating the critical exploration stage. By honing on the pivotal developmental phase, the review aims to understand how the framework and the instrument are leveraged to guide the development of effective career interventions for individuals navigating this critical phase. Notably, a growing demand exists for context-sensitive interventions catering to individuals' diverse career processes and attributes from various backgrounds (Miles & Naidoo, 2017). Thus, the review outlines the literature on rural and urban areas separately and hopes to inform the current state-of-the-art of theoretically informed and validated career interventions to exploit strategies that consider the context.

Materials and methods

Considering the various knowledge dissemination strategies, we determined that the ScR of studies was suitable for mapping early career interventions (Pollock et al., 2021; Spokane & Oliver, 1983). The ScR approach attempts to systematically locate and map evidence on a specific topic, regardless of the source within/across context (Arksey & O'Malley, 2005; Murthy et al., 2022; Peters et al., 2020). In contrast to other reviews, which tend to answer precise questions, ScR clarifies key concepts, evidence, and theories and identifies research gaps (Peters et al., 2020). We employed the framework of Arksey and O'Malley (Arksey & O'Malley, 2005) to design our ScR. PRISMA- ScR flowchart is used to report the ScR (Page et al., 2021).

Identifying the research question

Recognising the dispersed evidence on interventions designed to support career advancement at the exploration stage and its lack of synthesized evidence, the authors unanimously agreed on the study questions below:

(a) What is the utility of the 'Social Cognitive Career Theory' and 'Career Maturity Inventory' in designing early career interventions?
(b) What are the facilitators and barriers to using SCCT and CMI in designing early career interventions?

Identifying relevant studies

ScR seeks to provide comprehensive answers to broad research topics, and the parameters define the search strategy. The Population, Intervention, Context, Outcome, and Study Design (PICOS) framework (Booth et al., 2019) describes and delineates the criteria for inclusion and exclusion and constructs the review questions.

Population

We included studies on students between the age group of 14 and 25 years who are in the exploration stage (Super, 1980).

Interventions

Studies comprising group career interventions designed to promote students' career advancement at the exploration stage are included. Incorporating SCCT (Lent et al., 2002) as the theoretical framework or CMI (Crites & Savickas, 1996; Savickas & Porfeli, 2011) as an assessment tool is deemed essential for designing these early career interventions. In the case of an identical intervention model in a similar context, the latest study is included to avoid replication of results and ensure that the most up-to-date information is analysed.

In cases of a single study, where multiple theories are present and various tools are used, including SCCT or CMI, we commit to extracting the data independently. While documenting other theoretical frameworks, our review will synthesize evidence on the utility of SCCT and CMI in designing early career interventions.

Context

Studies conducted in all geographies, irrespective of economic status, are eligible for inclusion. However, studies conducted in urban and rural contexts are reported separately.

Outcomes

The study considers the outcome measures that emphasize building strategies for career planning, self-discovery, and decision-making. It includes interest, personal goals, career barriers, social support, learning experience, career maturity, career concern, career curiosity, career confidence, career control, awareness, self-awareness, motivation, and anxiety. In addition, our review synthesizes evidence on the facilitators and barriers associated with applying SCCT and CMI.

Study design

Interventional (randomized controlled trials, quasi-experiments, non-randomized trials, pre-post designs), observational (cross-sectional studies), action research and review. In the case of mixed methods, the qualitative and quantitative phases are treated independently. We included scholarly articles published between the years 2000 and 2023 with abstracts in English. The decision to start our review from the year 2000 is made strategically to capture the most recent advancements and applications of SCCT and CMI in the contemporary 21st-century academic landscape.

Exclusion.

(a) Studies lacking design or validation of group intervention/SCCT and CMI integration. Studies that fall outside the purview of career interventions defined for this study. Likewise, resume-building, interviewing, job-seeking, and job-specific skills are regularly utilized in adult career education (Gibbons et al., 2019) and hence excluded.
(b) Old version of the replicated intervention.
(c) We excluded study protocols, posters, conference proceedings, thesis, books, and book chapters. The results presented in the study protocols, posters, and conference proceedings may not be as comprehensive as the full paper.
(d) Studies published outside the years 2000- 2023 or written in languages other than English.
(e) Studies targeting the non-student population or participants outside the 14-25 years age range.

Search strategy and searches. We devised a three-step search method based on the Joanna Briggs Institute's (JBI) (Peters et al., 2020) recommendations to operationalize the search strategy for 'Career Interventions.' The terms are identified from the Google Scholar and SCOPUS (Elsevier) databases, pertinent reviews (Johnston, 2018; Prideaux et al., 2000; Soares et al., 2022) and discussions with subject and methodology experts (AS and NG). Articles are examined for title, abstract, and indexed terms. An exhaustive list of search terms and corresponding filters adapted to each database is created. The filters include date range (years: 2000–2023), language (English), article type (Scholarly articles), and a search string to further whittle down the results. A search is conducted across all included databases using the search strings. Search terms were coalesced using Boolean operators (AND, OR) and adapted to the databases.

In addition, a list of criteria-compliant studies was compiled, and all identified articles' reference and citation lists were searched for additional studies. An online supplemental "Appendix A" describes the search strings of individual databases.

Databases. The electronic databases SCOPUS (Elsevier), Web of Science (Clarivate), ProQuest Central, and ERIC were searched.

Study selection

We executed a two-stage sequential study selection approach. The studies identified from the electronic search were exported to Rayyan (Ouzzani et al., 2017) for data management and de-duplication. Two reviewers (PD and MD) independently screened the studies using predefined selection criteria. The first stage included title and abstract screening, with articles classified as

'include', 'exclude', or 'may be'. As a second step, the full-text reading of the studies identified in the previous round was screened by two reviewers (PD and MD). The third reviewer resolved (NG) the disagreement in the first and second stages.

Charting the data

Two researchers (PD and AP) conducted data extraction using Microsoft Excel in a standardized template proposed by the team. Our goal was to compile essential information from the abstracts and further details from the full-text articles to examine the usefulness of the theoretical framework in designing a career intervention and to identify the facilitators and barriers. Data items for charting included: Author, year, objectives, setting, country, theoretical framework, variables, intervention characteristics, evaluation design, facilitators, and barriers. This review did not perform a quality assessment as the quality of the studies reviewed did not influence the studies chosen for final analysis. This review aims to map the evidence, identify the facilitators and barriers, and not estimate the intervention's efficacy.

Collating, summarising, and reporting the results

The extracted data provided summaries of the pertinent study design and outcome. Summary tables separately map the utility of SCCT and CMI in designing career interventions for urban and rural settings. Tables illustrate the evidence detailing the facilitators and implementation challenges attributed to effective intervention delivery. The findings were summarized using narrative synthesis. Identifying research gaps illuminates future research opportunities for specific populations. Additionally, it will facilitate the design of effective career interventions for students at their exploration stage.

Results

A comprehensive search of four databases resulted in 3875 articles. After deleting 1407 duplicates, 2468 articles were screened at the title and abstract screening stage. Full-text screening was performed on 256 records, and 9 full texts could not be retrieved. Of the 247 studies assessed for eligibility, 24 articles were included. Furthermore, 9 articles were identified from a citation search, and 33 studies were considered eligible for the study. The PRISMA flow diagram (Figure 1) provides an overview of the articles at each stage of this ScR. Appendix B details the articles excluded during full-text screening.

General characteristics of the included articles

Appendix C summarizes the general characteristics of the articles included for review.

Year-wise distribution

All included articles were published between the years 2004 and 2023, with 16 (49%) articles published from 2019 to 2023, 11 (33%) articles published from 2014 to 2018, and 6 (18%) articles published from 2004 to 2013, indicating a growing interest in this body of work.

Geographical distribution

This review examined the distribution of research articles across different continents and contexts. They were classified as 'urban', 'rural', 'both', and 'unclear' according to their geographical context. Studies with broader applications, irrespective of the settings, were categorized as 'both', while studies that did not provide sufficient information about the geographical context were classified as 'unclear'. Of the 33 studies reviewed, 15 (46%) were conducted in the American continent (Cadenas

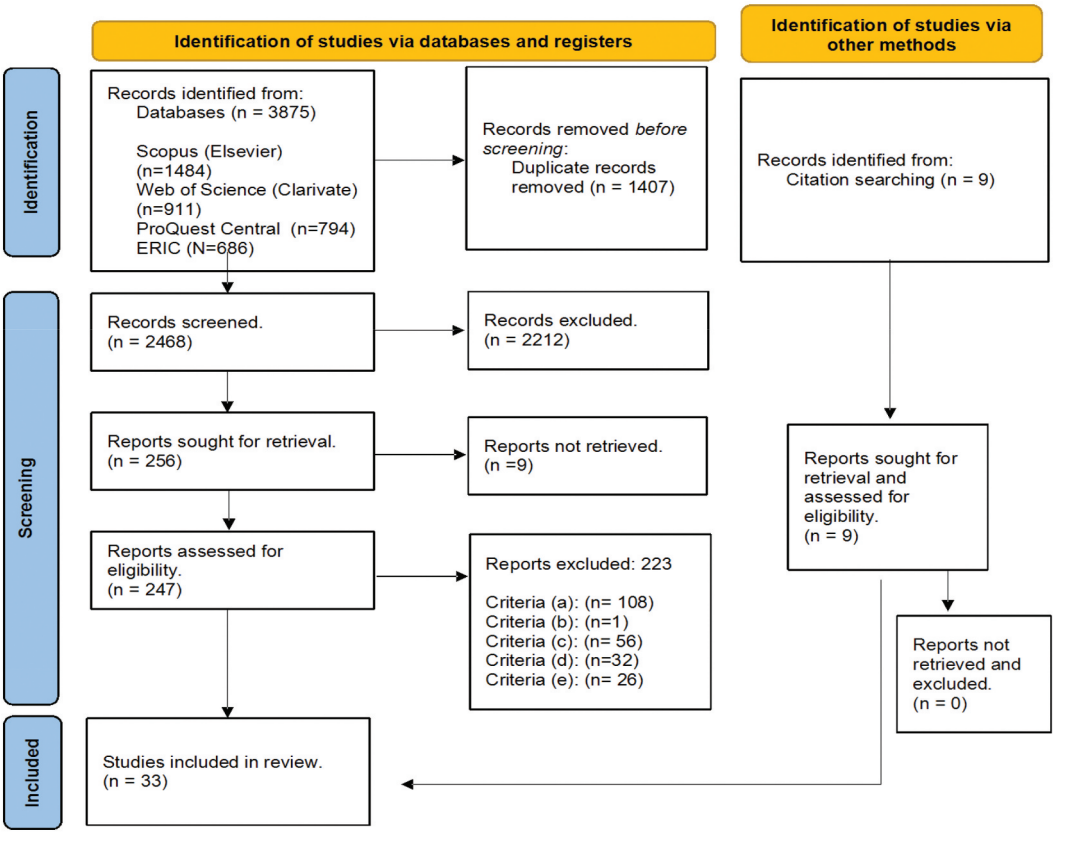


Figure 1. PRISMA flow diagram (Page et al., 2021).

et al., 2020; Deemer & Sharma, 2019; Falco & Shaheed, 2021; Falco & Summers, 2019; Garrison et al., 2021; Gibbons et al., 2019, 2020; Johnson et al., 2018; Legum et al., 2004; Lent & Brown, 2020; Logue et al., 2019; Lusk & Cook, 2009; McWhirter et al., 2019; Savickas & Porfeli, 2011; Waalkes et al., 2019), of which 4 were in an urban context and 5 were rural. Asia accounted for 6 (18%) studies from Malaysia (Talib et al., 2015) and, China (Chen et al., 2022; D. Wang & Liu, 2022), Singapore (Chan et al., 2015), Hong Kong (Wong et al., 2016), and Turkey (Ozlem, 2019). Of these, 3 studies were conducted in urban contexts. African (Chukwuedo & Ogbuanya, 2020; Chukwuedo et al., 2022; Dabula & Makura, 2013; Miles & Naidoo, 2017) and European continents (Andersen et al., 2023; Motlova & Honsova, 2021; Soares et al., 2022; Vaino et al., 2015) each had 4 (12%) studies included in the review, either in urban or mixed contexts. In addition, 4 (12%) reviews (Olson, 2014; Rice, 2014; D. Wang & Liu, 2022; Whiston et al., 2017) included in the analysis addressed the global context. A total of 15 (46%) articles addressed a general context, and 4 (12%) articles classified as 'unclear.'

Type of articles

The review primarily included intervention evaluation studies, which accounted for 64% (21 out of 33) of the total studies (Andersen et al., 2023; Cadenas et al., 2020; Chen et al., 2022; Chukwuedo &

Ogbuanya, 2020; Chukwuedo et al., 2022; Dabula & Makura, 2013; Deemer & Sharma, 2019; Garrison et al., 2021; Gibbons et al., 2020; Johnson et al., 2018; Legum et al., 2004; Logue et al., 2019; Lusk & Cook, 2009; McWhirter et al., 2019; Miles & Naidoo, 2017; Motlova & Honsova, 2021; Talib et al., 2015; Vaino et al., 2015; Waalkes et al., 2019; D. Wang & Liu, 2022; Wong et al., 2016). The remaining studies consisted of 9 (27%) review articles (Falco, 2017; Lent & Brown, 2020; Olson, 2014; Ozlem, 2019; Rice, 2014; Savickas & Porfeli, 2011; Soares et al., 2022; D. Wang & Liu, 2022; Whiston et al., 2017). These review articles reported facilitators and barriers to utilising SCCT and CMI in designing early career intervention very efficiently, which were not reported in individual studies. Two (6%) articles (Falco & Shaheed, 2021; Gibbons et al., 2019) focused on designing intervention modelsand one report validated a scale (Chan et al., 2015), making up 3% of the studies reviewed.

Target population

The ScR focused on mapping the literature on interventions for students aged 14–25 years. The studies included a diverse population group, such as students at-risk (potential drop-outs) (Legum et al., 2004), girls with learning disabilities (Lusk & Cook, 2009), students from community colleges (Cadenas et al., 2020; Talib et al., 2015), high school students (Chen et al., 2022; Dabula & Makura, 2013; Deemer & Sharma, 2019; Garrison et al., 2021; Gibbons et al., 2019; McWhirter et al., 2019; Vaino et al., 2015; Waalkes et al., 2019), pre-university students (Miles & Naidoo, 2017), undergraduate students pursuing college in large/public universities/in agriculture, technology and engineering (Andersen et al., 2023; Chan et al., 2015; Chukwuedo et al., 2022; Johnson et al., 2018; Logue et al., 2019; Motlova & Honsova, 2021; Wong et al., 2016), young adults (Falco & Shaheed, 2021; Gibbons et al., 2019), immigrants (McWhirter et al., 2019), and rural adolescents (Garrison et al., 2021; Gibbons et al., 2019, 2020; Logue et al., 2019; Waalkes et al., 2019).

Methodology utilized by included studies

Of the original articles included in the study, 16 studies (53%) (Andersen et al., 2023; Cadenas et al., 2020; Chan et al., 2015; Chen et al., 2022; Chukwuedo & Ogbuanya, 2020; Chukwuedo et al., 2022; Dabula & Makura, 2013; Deemer & Sharma, 2019; Garrison et al., 2021; Johnson et al., 2018; Logue et al., 2019; Miles & Naidoo, 2017; Motlova & Honsova, 2021; Talib et al., 2015; Vaino et al., 2015; Wong et al., 2016) used quantitative methodology, which involved collecting numerical data that can be analysed using statistical methods. Three studies (9%) (Falco & Shaheed, 2021; Gibbons et al., 2019; Waalkes et al., 2019) explored opinions, experiences, and beliefs using a qualitative approach. Five studies (15%) (Gibbons et al., 2020; Legum et al., 2004; Lusk & Cook, 2009; McWhirter et al., 2019; D. Wang & Liu, 2022) employed a mixed methodology, providing a more comprehensive understanding of the phenomenon being studied.

Intervention characteristics

Table 1 provides individual information on the theoretical framework, intervention structure, variables, and evaluation method for urban, rural, and other contexts, which are detailed in the following sections.

Intervention structure

Various intervention designs emerged from the 23 of 33 included articles. Most interventions in urban settings specify the use of group counselling (Legum et al., 2004; Motlova & Honsova, 2021; D. Wang & Liu, 2022), followed by online career intervention (Chen et al., 2022), classroom-based teaching (Johnson et al., 2018), design-based learning (Vaino et al., 2015), a social entrepreneurship programme (Cadenas et al., 2020), and workshops (Lusk & Cook, 2009). A creative multidimensional intervention was used (Garrison et al., 2021; Gibbons et al., 2019; Waalkes et al., 2019), and two studies in rural settings integrated workshops as the intervention structure (Gibbons et al., 2020; Logue et al., 2019).

Table 1. Intervention characteristics.

Sl. No	Author	Model	Intervention Structure	Theoretical framework	Evaluation design
URBAN					
1	R. J. Wang and Lent (2022)	No specific model reported	Group Counselling- (8 sessions/ group)	SCCT (Lent & Brown, 1996), 'Cognitive Information Processing.'	True Experimental; Pre-Post Test (Longitudinal – 3 Waves), Group Feedback
2	Chen et al. (2022)	'Preparing for My Future Selection'	Online Career Intervention- (5 Weeks)	'Cognitive information processing' (CIP) (Sampson et al., 2011).	True Experimental; Pre-Post Test
3	Motlova and Honsova (2021)	'Career Development Program'	Career Guidance Counselling- (13 sessions of 4 hrs/week)	No sufficient information	Quasi- Experimental; Pre-Post Test
4	Johnston (2018)	No specific model reported	Classroom-Based Instructions- (14 hrs)	SCCT (Lent et al.,1994)	Quasi- Experimental; Pre-Post Test (Longitudinal with Control Group)
5	Vaino et al. (2015)	No specific model reported	Design-based science learning	SCCT (Lent et al., 1994)	Single arm Study, Pre – Post Test
6	Cadenas et al. (2020)	'PODER'	Social Entrepreneurship Program- (5 weeks: 3 Hours Per Week)	SCCT (Lent et al., 1994); 'Critical consciousness theory' Watts, Diemer, & Voight, 2011)	Quasi- Experimental; Pre-Post Test
7	Lusk and Cook (2009)	No specific model reported	Workshop- (8 sessions)	No sufficient information	True Experimental; Pre-Post Test
8	Legum et al. (2004)	No specific model reported	Career Counselling Program-(9 Weeks)	No sufficient information	True Experimental; Pre-Post Test, Interview
RURAL					
9	Garrison et al. (2021)	'Project HOPE (Healthcare Occupations Preparation and Exploration)'	Creative multi-model career intervention- (5 sessions)	SCCT (Lent et al., 2000)	Quasi- Experimental; Pre-Post Test
10	Gibbons et al. (2019)	No specific model reported	Workshop- (6 hrs)	SCCT (Lent et al., 1994, 2000)	Qualitative
11	Logue et al. (2019)	No specific model reported	Workshop – (5 weeks)	SCCT (Lent et al., 1994)	Quasi- Experimental; Pre-Post Test
12	Gibbons et al. (2019)	'Possibilities in Postsecondary Education and Science (PiPES)'	Multifaceted Program- classroom-based career education – (6 weeks: 60 min/ week)	SCCT (Lent et al., 1994);	Post Survey, Interview, Qualitative Questionnaire
13	Waalkes et al. (2019)	'Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP)'	Vision Board- (3 days)	SCCT (Lent et al., 1994)	Photo Voice
UNCLEAR					
14	Chukwuedo et al. (2022)	No specific model reported	Career Guidance	SCCT (Lent et al., 1994); Holland's 'Theory of personality or interest type' 'Direct learning instructional theory'	Quasi- Experimental; Pre-Post Test (Longitudinal – 3 Waves with Control Group)

(*Continued*)

Table 1. (Continued).

Sl. No	Author	Model	Intervention Structure	Theoretical framework	Evaluation design
15	McWhirter et al. (2019)	'ALAS: Advocating for Latina/o Achievement in School'	Workshop- (46 sessions-2hrs/ session)	SCCT (Lent et al., 1994, 2000); Watts, Williams, and Jagers's (2003) 'Socio-political development theory' (SPDT)	Quasi- Experimental; Pre-Post Test, Focus Group Discussion
16	Chukwuedo and Ogbuanya (2020),	No specific model reported	Skill Career training support	SCCT (Lent et al., 1994); 'Theory of planned behaviour' (Ajzen, 1991).	Quasi- Experimental; Pre-Post Test (Longitudinal – 3 Waves Control Group)
17	Wong et al. (2016)	No specific model reported	Centralised Peer Career Counselling Training – (3.5 hrs)	SCCT (Lent et al., 1994, 2013)	Quasi- Experimental; Pre-Post Test (Longitudinal – 3 Waves with Control Group)
BOTH					
18	Andersen et al. (2023)	'Career Guidance and Skills Profile (CGSP)'	Workshop- (6 sessions: 50 min/session)	SCCT (Lent et al., 1994); 'Inquiry-based science learning.'	True Experimental; Pre-Post Test (Longitudinal – 3 Waves)
19	Falco and Shaheed (2021)	No specific model reported	Career Group Counselling- (8 sessions)	SCCT (Lent et al., 1994)	Qualitative
20	Deemer and Sharma (2019)	'The Duke Energy Academy at Purdue University (DEAP)'	Summer Immersive Program- (1 week)	SCCT (Lent et al., 1994)	Single Arm Study, Pre-Post-test (Longitudinal 4 waves)
21	Miles and Naidoo (2017)	'The Game Plan: You can be the captain of your team.'	Workshop- (9 hrs: 1.5 hrs/ week)	SCCT (Lent et al., 1994)	Quasi- Experimental; Pre-Post Test (Longitudinal with Control Group)
22	Talib et al. (2015)	'The Community College Exploration Module'(CCEM))	Career Education- (18 hours: 2hrs/ week)	'Holland's typology model'	Quasi- Experimental; Pre-Post Test
23	Dabula and Makura (2013)	No specific model reported	Career Development Programme workshop	SCCT (Lent & Brown, 1996), 'Cognitive Information Processing.'	Questa view

(Source: Self-generated).

We discovered that workshops was the most prevalent mode of intervention in either -an unspecified as well as mixed settings (Andersen et al., 2023; Dabula & Makura, 2013; McWhirter et al., 2019; Miles & Naidoo, 2017). Other formats include career education (Chukwuedo et al., 2022; Deemer & Sharma, 2019), Skill Career Training Support (Chukwuedo & Ogbuanya, 2020), career group counselling (Falco & Shaheed, 2021; Wong et al., 2016), and a summer intensive programme (Deemer & Sharma, 2019). The intervention durations documented in 19 studies ranged from 5 to 46 sessions or 3.5 to 18 hours.

Theoretical framework

This literature search yielded eight theoretical perspectives besides Lent, Brown, and Hackett's SCCT. In the urban environment, 'Cognitive information processing' (CIP) (Sampson 2011) (Chen et al., 2022) and 'Critical consciousness theory' (Watts et al., 2011) (Cadenas et al., 2020) were utilized. Intervention in rural settings implemented SCCT through a culturally informed lens (Garrison et al., 2021; Gibbons et al., 2019, 2020; Logue et al., 2019; Waalkes et al., 2019).

Besides, interventions were drawn on 'Inquiry-based science learning' (Andersen et al., 2023), 'Holland's typology model' (Chukwuedo et al., 2022; Talib et al., 2015), 'Theory of planned behaviour'

(Ajzen, 1991) (Chukwuedo & Ogbuanya, 2020), Watts, Williams, and Jagers's 'Socio-political development' (2003) (McWhirter et al., 2019), and 'Direct learning instructional theory' (Becker & Engelimann, 1977; Kenny, 1980) (Chukwuedo et al., 2022). Three studies do not detail the theoretical perspectives guiding career interventions.

Evaluation system

Overall, the interventions in urban settings were evaluated using the True Experiment Pre-Post Test (Chen et al., 2022; Legum et al., 2004; Lusk & Cook, 2009; D. Wang & Liu, 2022) with a longitudinal design (D. Wang & Liu, 2022). The quasi-experimental pre-post-test (Cadenas et al., 2020; Johnson et al., 2018; Motlova & Honsova, 2021) was used with the control group and longitudinal design (Johnson et al., 2018). We also reported a single-arm study (Vaino et al., 2015) and a qualitative assessment using in-depth interviews (Legum et al., 2004) and group feedback (D. Wang & Liu, 2022). Studies in rural contexts extensively employed qualitative evaluations such as interviews and photovoice (Garrison et al., 2021; Gibbons et al., 2019; Waalkes et al., 2019). Furthermore, studies used a quasi-experiment pre-post-test (Garrison et al., 2021; Logue et al., 2019) and a post-survey (Gibbons et al., 2020). The studies, which were conducted regardless of context and did not explicitly mention the study setting, used quasi-experimental pre-post (Chukwuedo & Ogbuanya, 2020; Chukwuedo et al., 2022; McWhirter et al., 2019; Miles & Naidoo, 2017; Talib et al., 2015; Wong et al., 2016). Of these, 4 studies used longitudinal design. This was followed by the True Experiment, Longitudinal (Andersen et al., 2023), and Single arm, Longitudinal study (Deemer & Sharma, 2019). Two studies evaluated using a qualitative questionnaire (Dabula & Makura, 2013; Falco & Shaheed, 2021).

Utility of the SCCT

The SCCT, proposed by Robert D. Lent, Steven D. Brown, and Gail Hackett (1994), is a comprehensive framework for understanding how individuals develop and pursue their careers. The theory acknowledges the reciprocity of an individual's cognitive-personal variables, such as self-efficacy and outcome expectations, in forming career interests and goals. Learning experiences are a direct antecedent of self-efficacy and recognize the impact of external environmental factors, such as socialization, systemic oppression, perceived support, and overt behaviours, on an individual's career development.

Table 2 outlines the usefulness of SCCT in designing career interventions across contexts. This ScR identified 18 articles utilizing SCCT in designing career interventions to foster early career development. Of the included articles, the first 4 (23%) were conducted in an urban context, followed by 5 (27%) in a rural context, 4 (23%) in an unspecified setting, and the remaining 5 (27%) in a mixed setting.

The interventions targeted several socio-cognitive characteristics, with self-efficacy being the significant component of all interventions, regardless of context. One study (Garrison et al., 2021) in rural settings and one study (McWhirter et al., 2019) in unspecified settings did not achieve the expected outcome. Two studies (Gibbons et al., 2019; Johnson et al., 2018) reported modest results.

Interventions aimed at elevating career outcome expectations (Andersen et al., 2023; Cadenas et al., 2020; Garrison et al., 2021; Gibbons et al., 2020; McWhirter et al., 2019; Vaino et al., 2015; Waalkes et al., 2019; D. Wang & Liu, 2022; Wong et al., 2016) were conducted in urban, rural, and mixed settings, respectively, and (Andersen et al., 2023; Garrison et al., 2021; Wong et al., 2016) failed to achieve the target. The interventions that targeted interest alone (Andersen et al., 2023) or interest in tandem with personal goals (Andersen et al., 2023; Garrison et al., 2021; Gibbons et al., 2020; Johnson et al., 2018; Vaino et al., 2015; Waalkes et al., 2019) across urban, rural, and combined settings did not present any barriers to achieving the desired outcome measures.

One intervention (D. Wang & Liu, 2022) from urban, two (Gibbons et al., 2019; Waalkes et al., 2019) from rural, and four from mixed (Andersen et al., 2023; Chukwuedo et al., 2022;

Table 2. Usefulness of SCCT in designing career interventions.

SL No	Author and Year	Utility of SCCT 1: Self-efficacy; 2: Outcome expectation; 3: Personal goals; 4: Interest; 5: Learning experience; 6: Contextual Support; 7: Contextual Barriers; 8: Personal Variable		Outcome
URBAN				
1	R. J. Wang and Lent (2022)	1,2,5	Achieved	Career adaptability
2	Johnston (2018)	1,4,6,7,8	Achieved	Self-efficacy and interest had a strong association.
			Not Clear	The outcome could not be determined due to a moderate association between the constructs.
3	Vaino et al. (2015)	1,2,6,8 (gender)	Achieved	Career awareness and Interest. Gender moderated personal interests as well as career choices. Boys' self-efficacy and girls' parental expectations were revealed to be predictors of career ambitions.
4	Cadenas et al. (2020))	1, 8 (Ethnicity, Gender, immigrant status)	Achieved	Self-efficacy, Entrepreneurial Skill perception and Technological readiness, irrespective of personal identity
RURAL				
5	Garrison et al. (2021)	1, 2, 8 (Race)	Achieved	Career Task self-efficacy and interest increased
			Not Achieved	Outcome expectation and career search self-efficacy
6	Gibbons et al. (2019)	1, 5, 6, 7, 8	Achieved	Self-efficacy and result expectation, and there is a corresponding rise in career aspirations
7	Logue et al. (2019)	1, 8 (Family financial resources)	Achieved	The intervention produced positive outcomes irrespective of the predictors.
8	Gibbons et al. (2019)	1, 2, 3, 4, 6, 7	Achieved	Self-efficacy and student perceptions on their postsecondary interests and goal ambitions.
9	Waalkes et al. (2019)	1, 2, 3,4,5,6,7,8	Achieved	Vision boards served the purpose of self-evaluation, and it was discovered that career goals are influenced by predictors as proposed by SCCT.
NOT CLEAR				
10	Chukwuedo et al. (2022)	1, 5	Achieved	Vocational guidance with the direct experience enhanced future career commitments, promoted perceived employability skills, increased career-related self-efficacy, and facilitated increased identification of career commitment.
11	McWhirter et al. (2019)	1, 2	Achieved	Academic achievement and assertiveness post-intervention
			Not Achieved	Self-efficacy on self-regulated behaviour and future expectation
12	Chukwuedo and Ogbuanya (2020)	1	Achieved	Academic satisfaction, Career Curiosity and self-defeating job behaviour were improved, and self-efficacy mediated the relationship
13	Wong et al. (2016)	1, 2	Achieved	Self-efficacy and student perceptions on their post-secondary interests and goal ambitions.
			Not Achieved	Outcome expectation

(*Continued*)

Table 2. (Continued).

SL No	Author and Year	Utility of SCCT 1: Self-efficacy; 2: Outcome expectation; 3: Personal goals; 4: Interest; 5: Learning experience; 6: Contextual Support; 7: Contextual Barriers; 8: Personal Variable	Outcome	
BOTH				
14	Andersen et al. (2023)	1,2,4, 5	Achieved	Self-efficacy and Interest
			Not Achieved	Outcome expectation
15	Falco and Shaheed (2021)	1, 6		
16	Deemer and Sharma (2019)	1,4,5	Achieved	Self-efficacy
			Not Achieved	Career Motivation and Utility Value
			Unclear	The association between interest and self-efficacy was partially observed
17	Miles and Naidoo (2017)	1,7	Achieved	Career decision-making self-efficacy
18	Dabula and Makura (2013)	1,5	Achieved	Self-confidence and a Positive outlook

(Source: Self-generated).

Dabula & Makura, 2013; Deemer & Sharma, 2019) that integrated learning experiences through hands-on training and practical sessions improved socio-cognition and career maturity facilitating an individual's informed career choice. Personal factors, including gender, ethnicity, race, and immigrant status, were considered in urban and rural settings. One intervention (Logue et al., 2019) in rural included family financial resources as a moderating factor.

The SCCT-based interventions primarily aimed to enhance career adaptability, career awareness, and technological readiness in urban settings, along with other outcome measures such as academic achievement and satisfaction, career curiosity, self-defeating job behaviour, and self-confidence. Interventions designed for rural adolescents measured SCCT constructs. The data indicate that the activities based on SCCT focused on exploring one's strengths, weaknesses, and values, identifying potential barriers, and reflecting on role models in both rural and urban settings. The activities in an urban setting also included comprehensive career exploration and strategic career planning. A supportive learner-centred and development-centred approach was employed in mixed settings, emphasizing learning and reflecting on experiences.

Utility of the CMI

The CMI, a notable contribution of Mark Savickas, is a valuable instrument for determining individuals' career readiness and the potential to make informed career decisions. The CMI assesses four aspects of professional maturity: career planning (Concern), career exploration and requirements (Curiosity), and decision-making (Confidence and control).

We uncovered three studies (Legum et al., 2004; Lusk & Cook, 2009; Talib et al., 2015) that utilized the CMI_ R (Savickas & Porfeli, 2011) and four studies (Chan et al., 2015; Chen et al., 2022; Motlova & Honsova, 2021; Savickas & Porfeli, 2011) that reportedly used the CMI_ C Form (Savickas & Porfeli,

Table 3. Facilitators and barriers to SCCT.

Facilitators	Barriers
SCCT made the most significant contribution by integrating cognitive, environmental, and personal characteristics into a cohesive, unified framework for predicting career outcomes.	There is a lack of specific focus on the influence of cultural collectivistic ideas on contextual factors.
It focuses on factors such as self-efficacy beliefs, future outcome expectations, interests, and personal goals that have a direct impact on forming career ambitions.	Empirical evidence partially supported the links stated in the SCCT.
This approach may be useful for analysing how immersive learning experiences affect self-efficacy, result expectation, and interest.	It is uncertain to what extent the variable can predict career performance.
Regardless of pre-existing resources, self-efficacy is a malleable concept that can be readily changed with appropriate intervention.	The present labour market instability adds to the difficulties.
Encourages the use of proactive approaches for overcoming obstacles and seeking support for career development	Designing intriguing and economical intervention strategies is challenging.
Engaging content can be designed.	Requires tutors with a high degree of expertise
SCCT appears to be increasingly relevant in today's boundaryless world.	SCCT does not account for unplanned events that impact career advancement

(Source: Self-generated).

Table 4. Facilitators and barriers to CMI.

Facilitators	Barriers
CMI is a valuable metric for measuring maturity among adolescents and young adults that facilitates career decisions.	The utility is limited to conventional career thinking and stimulators.
The CMI evaluation allows the counsellor to determine the individual's capacity to make career choices.	It may be valuable in assisting individuals in clarifying their professional decision/choice but not considering resources for career adaptation.
The CMI may also identify areas of strength and weakness in deciding on a career.	Cognitive abilities are not thoroughly evaluated.
The findings assist career educators in devising interventions tailored to the student's specific needs.	CMI is not suitable for a dynamic work world
CMI promotes in-depth vocational inquiry for students with high scores and broad occupational exploration for students with low scores.	It can measure only one aspect of career adaptability.
The Screening Form (CMI_S Form) is designed for researchers to assess general career choice readiness and decision-making ability in large groups of students.	The CMI's applicability to a diverse population has been criticised.

(Source: Self-generated).

2011) to assess career maturity/readiness attitude, competencies, career clarity, and career decision making in urban or mixed settings. It has also been discovered to be a valuable predictor of career concern, the first and most essential element in adolescent maturity. Besides, CMI determined the association between career maturity and various career outcomes.

The use of CMI to evaluate interventions focused on self-exploration, career exploration, career planning skills, problem-solving, and critical thinking was discovered. The measure was determined to be a viable and valid method for measuring career maturity, with excellent internal consistency (0.77–0.90) and reliability (0.80–0.87) in urban and mixed settings.

Facilitators and barriers to SCCT and CMI

This section identifies and documents the facilitators and barriers to utilizing SCCT (Table 3) and CMI (Table 4) in designing early career intervention. The analysis presented facilitators and barriers explicitly reported by the study authors and those inferred from the study findings.

Discussion

This ScR investigated the utility of SCCT and CMI in designing early career interventions. Additionally, this review identified and documented the facilitators and barriers to utilizing SCCT and CMI in such interventions.

By mapping the literature of interest, we intend to clarify the framework's core elements, identify its applicability, improve practice, uncover research gaps, boost interventions, and direct future studies. For tailored insights, urban and rural research findings are presented separately.

The review includes 33 scholarly articles drawn from four databases and by citation searching. The findings revealed heterogeneity in the populations under study, interventions and their components, and evaluation design.

The review of research articles across contexts revealed interesting findings regarding the distribution of studies. Although there were studies from all over the world, most intervention designs were based in the United States. It is essential to recognize that urban and common contexts were overrepresented. A significant percentage of studies were classified as 'unclear'. In a rural context, all the studies were concentrated in America. However, the cultural background of the United States was incorporated into the programme design for rural locations (Gibbons et al., 2019). A limited understanding of rural areas' unique challenges and opportunities may contribute to a lack of studies. Future research should expand to examine relevant issues across different contexts, including rural settings, and provide sufficient information on the geographical context of the studies to ensure an accurate interpretation of the results.

This review shows a rising interest in intervention evaluation studies. Early career interventions demonstrate the potential to increase career skills among students of distinct attributes at their exploration stage (at-risk, high school, girls with learning disabilities, rural teenagers, undergraduates). However, studies have outlined homogeneity in the sample within the group. Future studies can modify the intervention to include a broad population (Chen et al., 2022; Chukwuedo & Ogbuanya, 2020; Johnson et al., 2018; Miles & Naidoo, 2017). In addition, the studies reviewed provide valuable insights into the implications of the framework and the instrument on traditional high school students and undergraduates in rural settings. This calls for researchers to seek out and include participants from a more diverse range of backgrounds in rural areas.

While studies employed qualitative and quantitative methodologies, mixed method evaluation allowed for triangulation and provided a deeper understanding of the results (Dawadi et al., 2021) in both contexts.

Concerning the intervention format, workshops prevail, followed by group career counselling. While the rural setting devised a creative multi-model, the urban structure included innovative formats such as design-based science learning, a social entrepreneurship program, online career interventions, peer career counselling, and an immersive summer program. A creative activity-based multimodal curriculum may allow students to discover and express their vocational identities and interests, thereby escalating self-efficacy (Garrison et al., 2021). The sessions' varying lengths and numbers indicate no 'one-size-fits-all' approach to career interventions.

The included studies examined varied results and consisted of single arm, quasi-experiment, experimental, and qualitative assessment strategy measure mostly at baseline and post-intervention. Only seven studies included follow-up measurements. As a result, we were unable to draw meaningful conclusion on the long-term impact of educational programmes. The most recommended randomized trial, considered the gold standard for evaluating interventions (Cadaret & Hartung, 2020; Chukwuedo & Ogbuanya, 2020; Deemer & Sharma, 2019; Garrison et al., 2021; Johnston, 2018; Logue et al., 2019; Talib et al., 2015); might be challenging to conduct. We propose that the Propensity Score Method (PSM) can provide baseline equivalence between the control and treatment groups (Maguire, 2004). Regression discontinuity design (Dyson et al., 2018)

and difference-in-difference (DID) (Fazal et al., 2020) can be used to estimate the intervention effect. Studies have recommended longitudinal assessments (Cadenas et al., 2020; Gibbons et al., 2020; Legum et al., 2004; Lusk & Cook, 2009; Vaino et al., 2015) to validate the long-term efficacy of the interventions.

SCCT

SCCT views career development as a well-constructed synergy between individuals and their environment. Self-efficacy beliefs and future result expectations are guided by individual's cognitive abilities and their learning experiences, verbal persuasion, and emotional state (Blanco, 2011; Lent et al., 2002; D. Q. Wang et al., 2022). This review unlocked the broad application of SCCT in accomplishing the desired results across settings. Mounting empirical data confirmed the application of SCCT to exploring career outcomes, especially among indigents and rural (Cadenas et al., 2020; Gibbons et al., 2020; McWhirter et al., 2019). It is acceptable for individuals in the early stages of career exploration and preparation (Olson, 2014). With its specific attention to social support and barriers and its insistence on promoting agency through self-efficacy, outcome expectations, and personal goals, SCCT is the ideal framework for academic intervention at the school level.

Many investigations found self-efficacy to be a reliable predictor of career outcomes and observed favourable results in urban and rural settings. Several researchers have advocated efficacy-enhancing programmes (Bandura, 2001; Dahlstrom et al., 2022) because of their significant influence on career development. However, the intervention's influence on forming outcome expectations received the least support. This conclusion is consistent with the SCCT model, which states that outcome expectations evolve and self-efficacy occurs before outcome expectations. It has been postulated that an SCCT-based curriculum that provides mastery experience can enhance self-efficacy and form future expectations (Jederlund & Von Rosen, 2022; McWhirter et al., 2019; D. Wang & Liu, 2022).

A critical revelation from the discussed literature is the nuanced difference in the application of SCCT between rural and urban settings. It is a versatile approach that can be adapted to meet the needs of learners in different settings. While rural interventions primarily underlined the importance of self-awareness and self-efficacy in career development, urban interventions focused on comprehensive career exploration and strategic career planning to facilitate informed decisions about their future. In addition, rural interventions embraced SCCT through a culturally informed lens. A rural setting rich in diversity necessitates designing and delivering career interventions through such a lens (Gibbons et al., 2019).

This research discussion illuminates the multifaceted landscape of SCCT and its utility in designing tailored interventions. The challenges in achieving desired outcomes draw attention to further research. Conversely, empirical research established a partial relationship among variables. Future investigations should establish a link between the variables and the degree of influence on outcome measures in a broader sample of participants (Andersen et al., 2023; Johnson et al., 2018).

CMI

CMI is based on career construction theory, which states that 'students should approach career choice tasks with concern for their futures, a sense of personal control over their careers, the curiosity to experiment with possible selves and explore social opportunities, and the confidence to engage in designing and executing plans to make their occupational futures a reality.' We included the three CMI versions: CMI_R (Crites & Savickas, 1996), CMI_C, and CMI_S (Savickas & Porfeli, 2011). The CMI was built on the premise that any measure of a developmental parameter must be systematically tracked over time (Crites & Savickas, 1996). CMI is a relevant and appropriate tool in counselling in

determining career guidance requirements (Savickas & Porfeli, 2011). The review findings affirm the potency of CMI to advise career decisions for students at an exploration stage (Chen et al., 2022; Legum et al., 2004; Lusk & Cook, 2009; Motlova & Honsova, 2021; Talib et al., 2015).

It promotes self-awareness, which is an essential aspect of professional growth. Assessment can help individuals determine their strengths and limitations, informing career decisions (Whiston et al., 2017). Stimulating students' curiosity and concerns fosters career development (Chukwuedo & Ogbuanya, 2020; Poulsen, 2020).

Nevertheless, the CMI has a limited reach since it only evaluates specific facets of career maturity, such as decision-making and planning. Its value in explaining boundaryless career choices is low (Chan et al., 2015; Chen et al., 2022). Furthermore, we discovered that it is underemployed in rural areas. The underutilization of CMI in rural areas may stem from inadequate consideration of the instruments' relevance in adapting to rural dynamics. Practical concerns such as limited awareness, resources, or accessibility may have influenced the choice of assessment tools. The research gaps warrant further investigation. Modifications in CMI to enhance its applicability in rural contexts can be undertaken. Further, testing and validating the tools before incorporating them into interventions are crucial. Overall, the screening tool can address the areas of concern where the client has the most destitute self and career knowledge.

Although SCCT and CMI have individual research support, more evidence is needed to confirm their synergy. SCCT's emphasis on self-efficacy, social support, interest, and personal goals, when combined with CMI, could foster career concern, curiosity, and confidence. Integrating both frameworks holds promise for developing more comprehensive and effective career interventions. Moreover, the practitioners could leverage the facilitators and barriers identified to design interventions that promote the effective use of the framework and the instrument.

Strengths and limitations

To the best of our knowledge, the present review is the first to uncover the utility of SCCT and CMI in early career intervention development. As a result, new directions for designing content-specific interventions have emerged. This review presents novel ideas for developing theory-integrated effective career interventions in the exploration stage, particularly in rural areas. Including studies across geographical boundaries significantly advances the cross-national knowledge pool, policy, research and practice. The study's strength is the use of a comprehensive search approach tailored to each database, which reduces the risk of missing prospective inclusions.

One of the study's limitations is that we narrowed it down to include SCCT and CMI. While the studies assigned the outcomes to the specific theoretical framework, it is crucial to acknowledge the inherent challenge of disentangling the potential influence of one theory over another. In addition, the literature reported the potential of other frameworks to contribute to career development. Future studies could benefit from including a more comprehensive range of frameworks and instruments. A systematic synthesis of multiple frameworks can assess the interventions' efficacy in promoting career-related outcomes and provide a cohesive understanding of the topic. Additionally, excluding grey literature and articles in other languages has drawbacks because we might have overlooked essential data.

Conclusion

The ScR synthesizes a wide array of research literature on career intervention within the domain. In summary, effective career intervention must be holistically designed to address student assets and vulnerabilities within their ecologies to stimulate career readiness. The holistic model is often based on a solid theoretical foundation and is assessed for validity using robust evaluation

techniques. It is critical to note that the content should be relevant to the student's requirements, organized to combine diverse pedagogical methodologies and create chances for active engagement between students and their facilitators. Additionally, it is pivotal to incorporate experiential training. As such, SCCT and CMI could be leveraged in tandem with relevant theories to achieve the desired results.

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Data availability statement

Data relevant to the review is included in the article or provided as supplementary material.

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