





## Article

# An Analysis of the Mediation Effect of Socio-Cultural Factors on Student's Career Choice Outcomes in the Built Environment: Applying the Socio-Cognitive Career Theory

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**Abstract:** Investigations into career development revealed the significant influence of social and cultural determinants, notably familial factors, on children's professional aspirations. Such aspirations are moulded by their milieu, individual interests, academic environments, and socio-economic contexts. South Africa's unique socio-political history introduces complexity into career development pathways. The intricate relationships between ethnicity, gender, and socio-economic backgrounds vis-a-vis career outcomes of South African youth remain underexplored. This research aimed to understand these influences within the construction domain, emphasising cognitive facets such as self-efficacy and societal endorsements. The Social Cognitive Career Theory (SCCT) served as the foundational framework, with structural equation modelling employed for causal analysis. A focus was given to early university students, predominantly from Construction Management. The study showcased pathways for informed career decisions in construction and underscored the relevance of the SCCT, especially for women in traditionally male-dominated sectors. The study culminated in unveiling pathways for informed career decisions in construction, reinforcing the pertinence of the SCCT framework, especially concerning women in traditionally male-dominated spheres like construction. Acknowledging the scarcity of empirical studies using SCCT within the construction sphere is pertinent.

**Keywords:** built environment; career; construction industry; socio-cultural; socio-cognitive theory; South Africa; students; universities



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## 1. Introduction

The construction industry is one of the most significant contributors to the country's economy regarding infrastructure production and fixed capital assets [1]. The industry plays a unique role in the country's labour market by employing young people, making it the most sought-after sector, and providing a cutting edge of sustainable economic growth, development, and innovation [2,3].

Given the high unemployment level amongst young people compared with the high labour demand in the industry, it would be assumed that graduates may consider undertaking a career in construction. Instead, the construction industry reportedly faces a skills shortage and declining fortunes, with evidence of shortages in both skilled trades and professional roles [4,5].

Studies have found a decline in the preference for the construction industry as a career option for young people, suggesting that despite the opportunity prospects in the industry

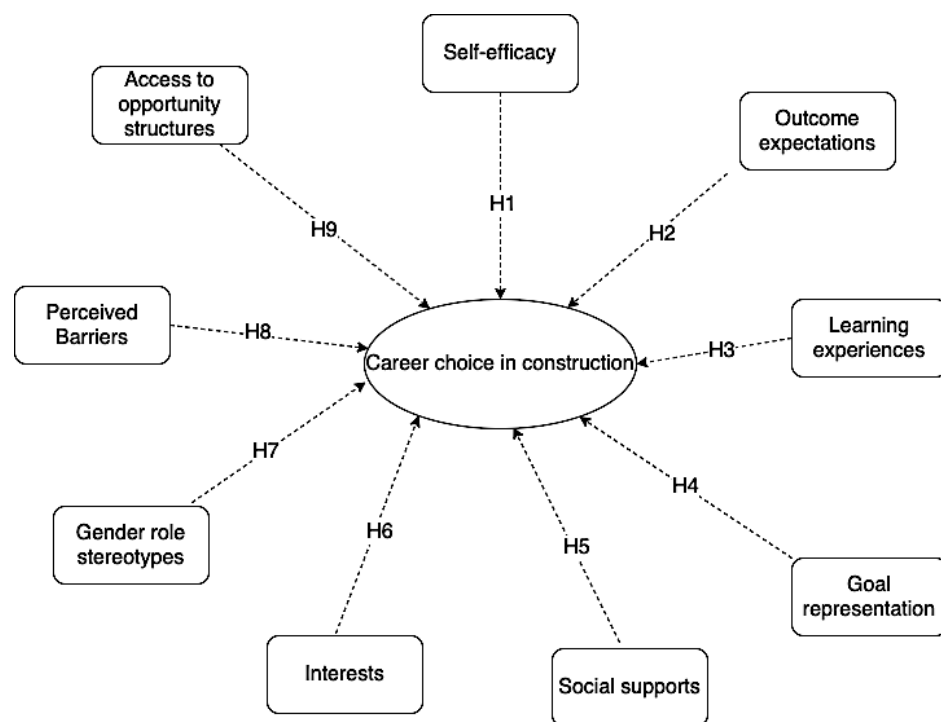
and numerous initiatives aimed at attracting young talent, construction is not a preferred career choice [6–9]. The ‘image’ of the industry, which makes men and women reluctant to enter the industry, is widely documented, and measures geared towards increasing representation have focused on increasing the numbers and filling the pipeline rather than changing the industry’s culture [10–12].

Research examining career development and aspirations also highlights that various social and cultural factors, such as family, could affect children’s career choices [13,14]. Children’s aspirations are shaped by the social and cultural context in which they grow up. Factors such as personality interests, family, school, media, socio-economic status, and geographic location all play a role in influencing children’s career goals [15,16]. Due to South Africa’s socio-political history, the career development process is challenging [15]. With a current Gini coefficient of 0.63, South Africa has the highest measurement of income inequality in the world, and salaries, wages, and other social grants vary widely [9].

The aspect of education is no exception. While South Africa offers a high quality of education compared to other countries on the African continent and is favourably ranked internationally, there is an extremely uneven distribution within the country’s dominant population, and progress continues to be impeded by the change-resistant effects of the apartheid education system which legitimises discrimination and racial superiority [11,15]. Despite efforts to diversify this flourishing education system to the total population post-apartheid, educational disparities are still lingering [9]. Similarly, employment levels remain grossly inequitable.

Although limited, studies where inter-group differences have been examined suggest that inbred inequalities related to education and employment influence career development research, theories, and practice [17–19]. The relationship between ethnicity, gender, socio-economic background, and career outcomes of South African children remains under-researched.

Against this backdrop, this study examines how social and cultural factors, including personal, contextual, and socio-cognitive factors, predict students’ career outcomes in construction (e.g., outcome expectations, self-efficacy, interests, and gender role stereotypes: see Figure 1).



**Figure 1.** Hypothesised paths linking the effect of combined SCCT factors and integrate personal, contextual, and socio-cognitive variables on career choice behaviour.

## 2. Theoretical Framework

This study examines the role of the Social Cognitive Career Theory (SCCT) in understanding women's career decisions within the construction industry. The SCCT, developed by Lent et al. [20] and based on Bandura's social cognitive theory, posits that individuals are not solely shaped by their environments or driven by complete free will. Rather, their behaviour and thoughts both influence and are influenced by the social environment and person factors [21,22]. By applying the SCCT framework, we can gain a comprehensive understanding of the factors that impact women's career choices in this specific industry. Through rigorous analysis and examination, we aim to provide valuable insights and recommendations to promote diversity and inclusivity within the construction sector. Bandura [21] introduced the concept of "triadic reciprocity", which encompasses the interplay between personal factors, external behaviour, and the environment. This framework recognises that both the individual and the environment are not static entities [23]. Bandura further emphasised that the relative influence of these three factors varies depending on the specific circumstances. Given the dynamic nature of the person and contextual variables, Bandura's social cognitive theory provides a solid foundation for the development of a theory of career development. Lent et al. [20] have successfully applied Bandura's theory in their work on the Social Cognitive Career Theory (SCCT). Therefore, we assert that Bandura's social cognitive theory is a reasonable framework from which to build a theory of career development.

The SCCT is a direct application of Bandura's social cognitive theory. It focuses specifically on the formation of educational interests, career development, performance, and persistence of individuals in their career pursuits. Lent et al. [20] sought to create a comprehensive model of individual career choice by combining elements from various theories developed by different theorists. These theories include person-environment correspondence [24], personality typology [25], social learning [26], lifespan, life-space [27], and developmental theory [28]. The result was an inclusive and comprehensive model for understanding individual career choices. The SCCT outlines the processes through which individuals develop their academic and career interests, the effect of these interests and other socio-cognitive mechanisms on career decisions, and the achievement of different levels of career performance and persistence [29,30]. This model provides a framework for understanding and analysing the complex dynamics of career development.

Previous studies have demonstrated the function of the Social Cognitive Career Theory (SCCT) in shaping career outcomes [30–32]. These studies have highlighted the adaptability of the SCCT in capturing the social characteristics of diverse environments, making it an ideal framework for understanding the social and cultural factors that influence the vocational choices, interests, and aspirations of women and girls [31,33]. The SCCT, rooted in the social cognitive theory, applies its principles to academic experiences and career development, emphasising the role of cognitive processes and environmental influences in career decision making [23,30,34]. The social cognitive theoretical framework encompasses interconnected processes of choice, motivation, interests, and performance [30,35]. This comprehensive approach allows for a deeper understanding of the complex dynamics that shape individuals' career trajectories. Social cognitive theory, as described by Hackett and Lent [36], adopts an agency approach to human behaviour. In the process of making formative decisions, students have the capacity to intentionally produce desired outcomes through their actions within their social environments [21,34,37].

This theory places emphasis on cognitive factors, such as choice action, self-efficacy, goal representations, interests, outcomes, and expectations, and their role in the career development of individuals. Moreover, it explores how these cognitive factors interact with internal and individual variables, including gender, ethnicity, religion, and social support, to influence the career behaviour of young people [23,30,37]. Additionally, biological, situational, and contextual factors, such as race, sex, intelligence, personality, and gender role socialisation, act as moderators in the formulation of choice goals and significantly impact career development [23,30].

### *Hypothesis Development*

Hypothesis development details the rationale behind the proposed hypotheses. In the original SCCT model, Lent et al. [20] outlined 12 propositions, which developed 32 hypotheses. The hypotheses tested in the current study were adapted from Lent et al. [20] career choice model, integrating personal, contextual, and socio-cognitive variables.

As shown in Figure 1, this study presents nine hypotheses, whereby each construct has hypothesised relationships between the different variables in the conceptual framework.

- H1: Self-efficacy beliefs have a direct influence on career choice.
- H2: Outcome expectations have a direct influence on career choice.
- H3: Goal representations have a direct influence on career choice.
- H4: Interests have a direct influence on career choice.
- H5: Social support has a direct influence on career choice.
- H6: Learning experiences have a direct influence on career choice.
- H7: Perceived barriers have a direct influence on career choice.
- H8: Gender stereotypes have a direct influence on career choice.
- H9: Access to opportunity structures has a direct influence on career choice.

### **3. Features of the Model**

Of interest to this study is the cognitive process of self-efficacy, interests, goal representations, outcome expectations, learning experiences, and social supports. This study draws on the SCCT and integrates person, contextual, and socio-cognitive factors such as gender stereotypes, perceived barriers, and access to opportunity structures. We apply structural equation modelling to examine causality relationships among independent and dependent variables in the hypothesised theoretical model in Figure 1.

#### *3.1. Self-Efficacy*

Self-efficacy, as viewed from the social cognitive perspective, refers to an individual's beliefs of their own capabilities and abilities to undertake a task in a specific domain. This perception has a significant impact on various events that shape their lives [23,30]. The formation of self-efficacy beliefs is primarily influenced by four sources: performance accomplishments, vicarious learning, social persuasion, and emotional arousal [23]. These elements of self-efficacy play a crucial role in helping individuals undertake an activity, level of persistence, and emotional response to different situations [38].

#### *3.2. Goal Representations*

Goals are a crucial factor in the mechanism of career behaviour [20]. They represent the determination to undertake a specific action or achieve a particular future outcome [21]. It is expected that firmly held goals will have a greater influence on career entry choice behaviours [20]. Moreover, goals are perceived to have a significant motivational impact on career choice behaviour, particularly when they are specific, clear, and challenging yet attainable and proximal [39]. Therefore, it is imperative for individuals to set goals that are specific, clear, and challenging yet attainable and proximal to effectively guide their career decisions and actions.

#### *3.3. Outcome Expectations*

Outcome expectations are a person's beliefs about the probable outcomes and consequences of certain actions [40]. In the context of career choice behaviour, these expectations play a significant role in determining one's actions and decisions [41,42]. According to Bandura [21], individuals base their actions on their judgements of what they can do and their beliefs about the likely consequences of those actions. Career development theories also highlight the importance of outcome expectations in decision making [38]. Locke et al. [41] specifically emphasise the impact of the likelihood of certain actions producing desired outcomes on career choice behaviour.

### 3.4. Social Supports

Significant people, such as family, teachers, and peers, play a crucial role in shaping students' occupational aspirations, career decision making, and persistence [38]. These individuals provide key support mechanisms, including exposure to role models, networking contacts, and emotional and financial support [18,20]. Among the various types of social support, parental support is considered.

### 3.5. Interests

A person's career interests, defined as patterns of preferences, dislikes, and indifference towards career-related activities, play an important role in shaping their career choices [31]. These interests are developed through the process of socialisation and ideally guide individuals toward suitable career paths. However, it is important to acknowledge that external factors, such as social and environmental influences, can impact the level of career aspirations and choices [43]. Therefore, it is crucial for individuals to consider their career interests seriously and be mindful of the various factors that may influence their decision-making process. By doing so, individuals can make informed career choices that align with their interests and maximise their potential for success.

### 3.6. Perceived Barriers

Individuals often encounter numerous barriers when considering a career path. These obstacles encompass discriminatory attitudes, conflicts between work and personal life, wage gap, workplace cultures that hinder progress, limited access to opportunities, challenges in career advancement, unfavourable working conditions, excessive work hours, the glass ceiling effect, gender stereotypes, insufficient knowledge and information about career options, a lack of role models, instances of sexual harassment, inadequate education and training, and limited availability of opportunities [19,44,45]. It is crucial for individuals and society as a whole to acknowledge and address these barriers in order to create a more inclusive and equitable professional landscape. By doing so, we can foster an environment that promotes equal access to opportunities and supports the career aspirations of all individuals.

### 3.7. Learning Experience

Previous learning experiences play a crucial role in shaping future career behaviours. It has been observed that a person's career choices are influenced by a combination of various reinforcements [31,37]. These reinforcements can be both positive and negative and contribute to the decision-making process. Career choice behaviour is not solely determined by learning experiences; rather, it is influenced by a complex interplay of personal and contextual factors [32]. Individuals are exposed to different vocational activities through direct and indirect means, such as observing others in their environment. These experiences expose individuals to diverse activities and reinforce their aspirations to pursue certain career paths. It is important to recognise the significance of these learning experiences and their impact on career decision making [23]. People refine their career choices through repetitive engagement in specific activities, the influence of role models, and feedback from models [12]. The acquisition of values through learning experiences is a result of socialisation and fundamental social learning processes, including vicarious learning and self-evaluative experiences [46,47]. Interactions with various individuals and institutions, such as family members, teachers, peers, role models, cultural and religious institutions, and media sources, play a significant role in shaping personal values and standards, which in turn may impact career choice behaviour [22]. It is crucial to recognise and understand the impact of these factors in order to make informed career decisions.

### 3.8. Gender Role Stereotypes

Gender role stereotypes are deeply ingrained in society and shape our expectations of how individuals should behave based on their gender [48–51]. These stereotypes encom-



pass various aspects of life, including occupation, cognitive abilities, and skills. Numerous studies have examined the impact of gender-stereotyped beliefs and attitudes on career choices [52–54]. It has been found that these beliefs can hinder individuals from pursuing certain careers, as they may be seen as violating traditional gender norms [52]. Consequently, individuals often feel compelled to compromise their career aspirations and opt for more “realistic” choices [55–57]. This phenomenon reflects the influence of socio-cultural and stereotypical beliefs on career decision making. As researchers, we must continue to investigate and challenge these gender role stereotypes to create a more inclusive and equitable society.

### 3.9. Access to Opportunity Structures

Insufficient information regarding career opportunities can significantly impact individuals’ career advancement and their perception of the value associated with different educational and career paths [30]. This lack of access to educational and vocational job-training opportunities has notable consequences for women considering careers in the construction industry [18]. Numerous studies have highlighted the unequal distribution of training and development programs, networking opportunities, and educational initiatives, resulting in an uneven awareness of various career options that could expand women’s choices, including construction as a viable pathway [22]. To address this issue, we must prioritise the dissemination of comprehensive information on career prospects, ensuring equal access to training and development initiatives, networking opportunities, and educational resources for all individuals, regardless of gender. By doing so, we can empower individuals to make informed decisions about their career paths and foster greater diversity and inclusivity within industries such as construction.

## 4. Materials and Methods

### 4.1. Participants

In this study, a sample size of 229 individuals was used. 113 were female students, accounting for 49.3% of the sample. Notably, first-year students constituted the largest group, with 94 participants representing 41% of the sample. This high participation rate can be attributed to the fact that the initial year cohort at South African Universities tends to be larger compared to subsequent years or higher levels of study.

Regarding the distribution across disciplines, the majority of respondents, 110 individuals (48%), were enrolled in Construction Management. This program attracted the largest number of participants due to its availability at both participating universities. Conversely, Architecture had the lowest representation, with only one student (0.4%) in the sample. This can be attributed to the fact that only one of the universities offered the Architecture program, which typically has fewer students compared to other disciplines and programs.

### 4.2. Instrument and Scale Measures

The questionnaire utilised in this study consisted of scales to measure the variables on a 5-point Likert scale were between 1 = strongly disagree and 5 = strongly agree. Respondents were required to indicate their level of agreement with statements about their career choices. Self-efficacy (confidence in abilities to effectively perform construction-related tasks) was measured using the short version of the career choice self-efficacy scale derived and modified from Betz et al. [58].

Using Everhart and Chelladurai’s [59] 15-item scale and Sainz’s scale [54], seven variables focused on occupation attributes specific to the construction field were used to measure goal representations and were adopted in this study. The statements presented to the participants were worded so that their responses would provide information about their personal goals. The Ali and Saunders [30] 32-item measure was adopted to measure social support. For this study, seven items specifically assessing the extent to which students received support from their mother, father, significant other, teachers, and peers were presented to the respondents. Betz and Vuyten’s [60] 9-item career decision outcome

expectations scale was used to assess the personal beliefs of the students towards the accomplishment of their career choices.

The 15-item scale developed by Betz and Schifano [61] was adopted for interests. The measures were developed to evaluate students' interests in career-related activities. The scale used in this study included 6 items to which participants were asked to respond regarding their interest in performing the specific tasks.

To measure students' perceptions of career barriers, the perceived barriers scale developed by McWhirter [62] was adopted and modified in this study. Items presented addressed barriers such as discrimination, environmental support, and role models in the respondent's future career.

The Schaub [63] learning experiences questionnaire derived from Bandura's four sources of self-efficacy beliefs, namely, performance accomplishments, vicarious learning, verbal persuasion, and emotional arousal, was adopted to measure learning experiences in this study. Access to Opportunity Structures was measured using Furlong et al.'s opportunity structures scale [64]. To measure gender stereotypes, the study adopted the implicit association test developed by Fokunmoju et al. [65].

## 5. Data Analysis

The scales were replicated by using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) in SPSS v27 and AMOS v27.

To determine the factor structure of the measurement scales, a Maximum Likelihood analysis and Promax with Kaiser Normalization rotation was conducted. This approach identified the underlying factors that contribute to the observed variables. In order to assess the suitability of the data for factor analysis, the Bartlett's Test of Sphericity and the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy test were deployed. These tests provided valuable information about the appropriateness of the data for factor analysis.

The results of the exploratory factor analyses demonstrated strong reliability, convergent validity, and discriminant validity of the sub-scales. This indicates that the measurement scales effectively capture the intended constructs and exhibit consistent patterns of relationships among the observed variables. The reliability of the sub-scales suggests that the measurement items are internally consistent and measure the same underlying construct.

Moreover, the convergent validity of the sub-scales indicates that the measurement items within each sub-scale are strongly related to each other, providing evidence of their ability to measure the same construct. The discriminant validity of the sub-scales suggests that the measurement items within different sub-scales are less strongly related to each other, supporting the distinctiveness of the constructs they represent.

Dimensionality and significance of factors were determined by calculating the population values for each factor loading that maximises the likelihood of sampling the observed correlation matrix. Kaiser's criterion, the eigenvalue rule, was adopted to determine the number of factors to retain. The eigenvalue was used to explain the extent of variance by a factor. Eigenvalues greater than 1 were considered significant and retained and were used to explain the variance obtained by a factor, while eigenvalues less than 1 were excluded. Before performing the Maximum Likelihood analysis, communalities extracted from each factor variable were assessed and presented. Values with high communalities above or equal to 1 and low communalities ( $<0.030$ ) indicating problems with the solutions were excluded. The factors were rotated using Promax with Kaiser Normalization rotation to aid the data interpretation process. The selected items in each scale and their factor loadings are presented in Table 1.

All the items on the scale met the criteria for factor analysis. The factor loadings for the interest items were all acceptable. A Bartlett's test of Sphericity with  $p < 0.000$  was obtained for all the scales. The scale items were, therefore, considered unidimensional, and adequate evidence of convergent and discriminant validity was provided.

In the CFA, the reliability and validity statistics showed that the corrected item–total correlation for all the items in the scales was above the recommended cut-off value of

0.30, indicating internal consistency and that the items measure what they are intended to measure. All the subscales were above the Cronbach alpha cut-off value of 0.70, showing acceptable internal reliability. The factor loadings ranged from 0.556 to 0.943. All items were above the cut-off value of 0.50. In addition, all the constructs' AVE and CR fell within the acceptable threshold of 0.50 and 0.60, respectively.

**Table 1.** Selected items and their factor loadings in the study scales.

Item	Element	Factor Loading
Self-Efficacy		
SEF1	I have confidence in my ability to identify resources, limitations, and personal characteristics that might influence my career choices	0.693
SEF2	I am confident about being able to collect information about training and employment opportunities for myself and manage them effectively	0.602
SEF3	I am confident about being able to develop lists of priorities on the effective actions to successfully manage my own personal professional development	0.622
SEF4	I am confident about being able to plan the steps needed to realise a project related to my profession	0.857
SEF5	I am confident about being able to address any difficulties related to my career	0.773
Goal Representations		
GRP1	I will obtain technical/functional skills in my chosen career	0.724
GRP2	I will have opportunities for training and development in my chosen career	0.868
GRP3	I will have the opportunities for interesting work in my chosen career	0.878
GRP4	My chosen career will allow me to meet my financial obligations	0.784
GRP5	I will be successful in my chosen career	0.797
GRP6	I will occupy leadership positions in my chosen career	0.775
GRP7	My chosen career will make my family, friends and society have a good and positive opinion of me	0.769
Social Supports		
SSP2	I receive support from my teachers	0.671
SSP3	I receive support from my family members	0.659
SSP4	I receive support from my peers (e.g., friends, colleagues)	0.732
Interests		
INT1	I enjoy performing tasks and activities related to my choice of profession	0.773
INT2	I would like to make a lot of money	0.769
INT3	I would like to receive recognition in the society	0.684
INT4	I would like to perform well at my job.	0.886
INT5	I enjoy thinking and solving problems	0.805
INT6	I like highly challenging activities and taking risk	0.699
Perceived Barriers		
PRB1	Discriminatory behaviors	0.611
PRB2	Work–life conflict	0.605
PRB3	Wage gap	0.587
PRB4	Masculine workplace culture	0.532
PRB5	Lack of access to opportunities	0.755
PRB6	Poor working conditions	0.715
PRB9	Gender stereotypes	0.648
PRB10	Glass ceiling (Invisible barrier to career advancement)	0.655
PRB11	Lack of knowledge and career information	0.832
PRB12	Lack of role models in my chosen career	0.650
PRB13	Lack of education and training	0.811
PRB14	Lack of opportunities in my chosen career	0.791

The relationships between self-efficacy, outcome expectations, goal representations, interests, social supports, perceived barriers, learning experiences, access to opportunity structures, and gender role stereotypes with the preference for a career choice in construction were assessed using multiple regression analysis. To identify the unique effects of the career choice predictors, separate multiple regression analyses were carried out for the



career choice predictors (independent variables, where career choice in construction was the dependent variable). The parameter estimate is significant at  $p \leq 0.05$ .

To test the model's goodness of fit, the Relative Normed Chi-square, Root-Mean-Square-Error of Approximation (RMSEA), Comparative Fit Index (CFI), Standardised Root Mean Square Residual (SRMR), Normed Fit Index (NFI), Tucker–Lewis Index (TLI), Parsimony Adjusted Normed Fit Index (PNFI), Relative Fix Index (RFI), and Parsimony Adjusted Comparative Fit Index (PCFI) were the fit indices considered in this study, using the following criteria: RMSEA < 0.05, CFI > 0.95, TLI > 0.95, SRMR  $\leq$  0.05, TLI > 0.95, NFI > 0.95, RFI > 0.95, PNFI > 0.90, and PCFI > 0.90. No cut-off value was set for the Chi-square values as the fit static varies according to the model's design complexity, amount of data, and sample size. The final model, including its significant paths, is shown in Figure 2.

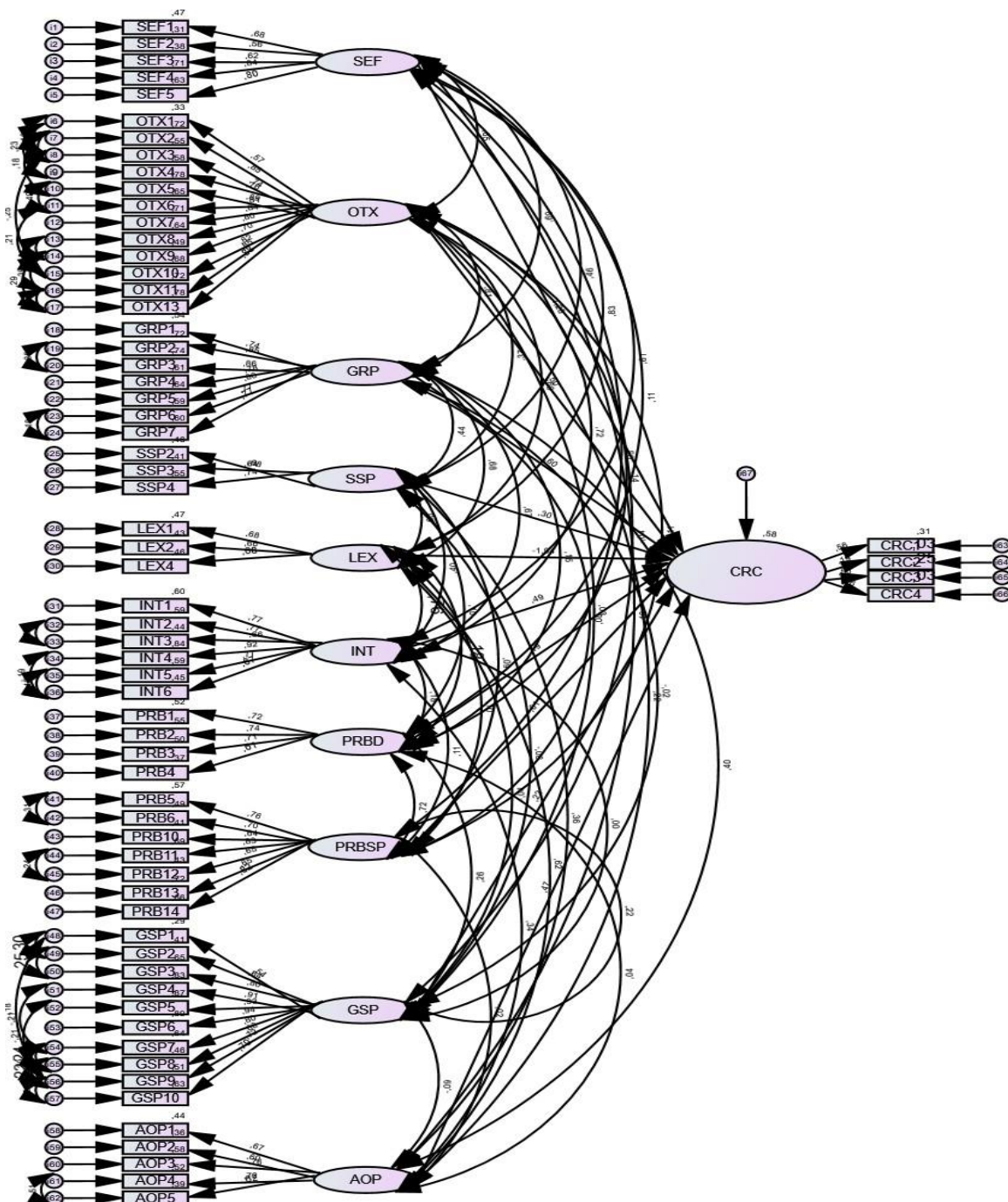


Figure 2. Final model.

## 6. Results

The assessment of the validity of the hypothesised model in Figure 1 produced a chi-square value of 2905.017 and 1997 degrees of freedom. The associated  $p$ -value was less than 0.005 ( $p = 0.00$ ). The CMIN/df = 1.455 and, based on the cut-off criteria, indicated a good fit. The value of RMSEA = 0.045 and SRMR (0.046) showed a good fit. Therefore, the measurement model fulfilled the requirements for absolute fitness.

Although the NFI (0.765) indicated a poor model fit, the CFI (0.953), RFI (0.952), and TLI (0.954) suggested a good fit of the model, therefore exhibiting acceptance of comparative fit. The PNFI (0.712) and PCFI (0.848) indices were above 0.50, indicating an acceptable fit. Although the model met the threshold for parsimonious fit suggested by Hooper et al. (2008), the model is not so parsimonious.

The results of the standardised regression relationships between variables are summarised in Table 2. All estimates for the model presented in Figure 2 were significant for the influence of the exogenous variables on endogenous at the  $p \leq 0.05$  level, except for learning experiences (LEX). Self-efficacy, outcome expectations, goal representations, interests, social supports, perceived barriers, access to opportunity structures, and gender role stereotypes had significant direct associations with a career choice in construction. Although learning experiences were hypothesised to influence career choice directly, no empirical findings supported the hypothesis, as no statistical significance was found ( $R^2 = -0.500$ ,  $p = 0.088$ ). Therefore, the hypothesis was rejected.

**Table 2.** Parameter estimation (standardised regression weights) for the modified model.

Proposed Hypothesis	Path	Regression Estimate	$p$ Label
SEF	<---	0.395	***
OTX	<---	0.154	0.002
GRP	<---	0.617	0.030
SSP	<---	0.126	0.028
LEX	<---	-0.500	0.088
INT	<---	0.796	***
PRBD	<---	0.161	0.014
PRBSP	<---	0.631	***
GSP	<---	0.518	***
AOP	<---	0.344	0.011

Note: \*\*\*  $p < 0.001$ .

## 7. Discussion

The result of the structural model revealed that the general hypotheses, which state that self-efficacy, outcome expectations, goal representations, interests, social supports, perceived barriers, gender stereotypes, and access to opportunity structures jointly influence career choice in the construction industry, could not be rejected. However, the hypothesis that learning experiences influence career choices in construction was rejected.

Results of the structural model revealed no significant direct relationship between learning experiences and career choice. However, findings from past studies have suggested that individuals' career choices are generally influenced by some parts of their external environment, which they learn from by observing the demographic features of that profession [20,66]. This is contrary to the anticipated outcome of learning experiences as a determinant of career choice. Developing relevant information and skills through learning experiences fosters a strong career self-efficacy belief, which could result in choosing a career in a specific profession [60]. The lack of influence of learning experiences on the career choices of this particular population can be understood through various explanations. One possible reason for the findings in this study is the socio-economic homogeneity of the sample, with a majority of respondents belonging to low socio-economic status (SES) categories. It is plausible that individuals in such circumstances may not have access to positive learning experiences or any learning experiences at all. This aligns with Betz's [58]

argument that an environment lacking information and experiences about certain careers for young adults can be considered a null environment, neither encouraging nor discouraging their participation in those careers. Moreover, an environment characterised by deep poverty, which significantly impacts learning experiences, is unlikely to foster career aspirations and choices. These factors collectively contribute to the non-influence of learning experiences on career decisions within this population.

Another possible explanation for the findings can be attributed to Layton's theory of locus of control [67]. According to Trice et al. [68], locus of control is the belief individuals have regarding their control over choices and shaping future career plans. It is a measure of the extent to which individuals perceive themselves as having control over their own lives and the ability to determine their own career outcomes. Research suggests that career choices are closely tied to one's willingness to take control and responsibility for significant life events [69,70]. Consequently, individuals with a high internal locus of control firmly believe that their career choices are shaped by their own skills, abilities, and internal factors that are under their control. This perspective highlights the importance of personal agency and self-determination in career decision making. By recognising and embracing their own capabilities, these individuals are more likely to take ownership of their career paths and actively pursue opportunities that align with their goals and aspirations. In the context of the current study, it is plausible that the respondents perceive their career choices as being minimally influenced by their past experiences.

#### *Implications of Findings*

Findings from the study have meaningful implications for practice in career choice and development in male-dominated environments and occupations. Overall, the most significant of the present study is that results suggest clear pathways to making a career choice in construction for people who want to enter and remain in construction work. The SCCT developed by Lent et al. [20] was applied in this study and tested on the study's sample. The SCCT career choice model was developed by Lent et al. [20] to identify some of the differential issues facing academic and career development. In support of this philosophy, some of the implications stated in this study may be useful to academia and the industry.

Results were consistent with the SCCT-relevant suppositions. The generalisability and applicability of the SCCT in the South African context and culture are supported. The SCCT's incorporation of important academic and career development factors, such as personal inputs and contextual factors, makes it a sound theoretical framework to examine women's career choices in non-traditional professions such as construction.

Although the SCCT has been applied to study career choices and persistence in several occupations, little empirical support exists for applying the theory to career choice in construction, particularly women in the construction profession [23,30,34,38,39,46,71,72]. An increasing amount of empirical support for the SCCT's postulated influence of self-efficacy and outcome expectations on career choice has also accumulated [59,70].

#### **8. Limitations**

We conducted a study in the KwaZulu-Natal province of South Africa, sampling men and women from diverse ethnic and socio-economic backgrounds. However, it is important to exercise caution when generalising the findings to the entire South African population. The diversity of the population in South Africa, both in terms of ethnicity and socio-economic status, necessitates careful consideration when extrapolating our results. Further research is needed to explore the nuances and variations within different regions and populations of South Africa to obtain a comprehensive understanding of the entire country. Researchers should take into account the specific characteristics and circumstances of different regions and populations when drawing conclusions and making generalisations.

## 9. Conclusions

The study findings demonstrate that the structural model exhibits a commendable fit, as evidenced by the analysis conducted. Our examination of the sample data reveals that the model adequately captures the underlying relationships. Additionally, the model fit statistics derived from the measurement models indicate that the constructs incorporated in the structural model meet the necessary criteria for inclusion. Furthermore, it is important to note that the covariance between the constructs in the model and the exogenous variables is statistically significant. These results provide robust evidence for the validity and reliability of the proposed model. This revealed that the career choice model for the construction industry, through a review of the extant literature and questionnaire survey, is validated. Likewise, the study justifies that the identified factors predict career choices in construction-related professions, i.e., self-efficacy, social supports, goal representations, interests, perceived discriminatory barriers, outcome expectations, perceived barriers to success and progression, gender stereotypes, and access to opportunity structures.

Although much needed within the career development literature, there is a dearth of research on career choice and influencing factors in male-dominated fields such as construction. This study presented an in-depth examination of career choice development for a subset of these groups. This study also represents a concrete attempt to examine their career choices from an existing theoretical perspective (SCCT), and the results reveal the applicability of the SCCT to the population in this study. Further, findings from this study suggest that the proposed career choice model could give insight into how members of this population make career decisions and persist in their academic endeavours. Additional variables such as personality, career aspirations, sex role, and biological sex should be considered for inclusion in the model and tested to further investigate career choice predictors in future research.

Future research may investigate the intersectionality between gender, technology, and factors such as sex, class, and market demand to examine the determinants of students' career choices in non-Western contexts. Undoubtedly, future research can be conducted on an intersectional analysis of diverse groups. Nevertheless, the current study is one of the first to apply the SCCT—a major career theory in the South African context. The current study is anticipated to motivate further cross-cultural studies in this area.

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