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RECONSTRUCTING GENDER ROLES: EXPLORING CAREER PERCEPTIONS AMONG CONSTRUCTION STUDENTS

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Abstract: Gendered perceptions may determine the aspirations and expectations, as well as the academic and career choice of young people. This article examines the role of gender stereotypes as a predictor of career choices of students in construction. A survey of 229 conveniently sampled students, enrolled in construction-related programmes was conducted. The objectives of the study are to measure the relationship between gender stereotypes and career choice behavior, and to measure the effect of gender and socio-economic status on how gender stereotypes influence student's career choices. The Mann-Whitney U and Kruskal-Wallis test were used to test for significant differences between gender and socio-economic status (SES) groups. Results show that, as opposed to men, women seem to perceive gender stereotypes as having more influence on their career choices than men. The study finds statistically significant differences in gender stereotypes among the low and medium socio-economic groups.

Keywords: Adolescent, construction, career choice, career development, careers in the construction industry, gender, gender stereotypes, men, socio-economic status, SES, social class, women

1. INTRODUCTION

Numerous studies concerning the career choices and aspirations of young people validate the fundamental principle that the historical and cultural environment moulds the development of an individual, particularly the youth (Watson, McMahon & Longe, and 2011: 414). Their career aspirations gradually become constrained and influenced during and after high school. During these stages, occupational aspirations become progressively realistic, and their self-identity develops through their interaction with the environment, primarily through exposure to adult career roles (Becares & Priest, 2015: 2). Young people become cognisant of career choices and opportunities as they become exposed to people in their immediate environment (Galvaan, 2015: 39; Olsson & Martiny, 2018: 2). A variety of social and cultural factors such as family could affect career development and aspirations (Schultheiss, 2003: 304; Whiston & Keller, 2004: 496; Van Tuijl & Van der Molen, 2016: 161; Miville, Mendez & Louie, 2017: 175) Personality interests, family, school, media, socio-economic and geographic settings have been found to have an impact on the professional aspirations of adolescents (Porfeli, Hartung & Vondracek, 2008: 27; Watson et al., 2011: 413; Albien & Naidoo, 2017). Owing to South Africa's sociopolitical history, the process of career development is quite challenging (Watson et al., 2011: 413). Socioeconomic

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inequalities have been found to relate with gender, education and employment, and influence career development research, theories, and practice. Watson et al. (2011) identified a connection between the influence of parents on the vocational aspirations of children and the occupations of parents. Mouton, Louw and Strydom (2013) observed that school children display an unsatisfactory low progression rate, with children from low socioeconomic backgrounds, whose parents possess meagre educational qualifications being the most disadvantaged. Gender has been identified as an influential factor in career choice behavior, and such indicates that different trajectories may exist regarding gender stereotypes and career choice process for men and women (Degol et al., 2018: 976; Rocha & Van Praag, 2020: 842). The influence of society on children's career development emerges from gender-role stereotyping of career aspirations and emanates from social influences (Walton et al., 2011: 414; Shapiro et al., 2015: 5; Olsson & Martiny, 2018: 3). Numerous studies have been conducted to examine the stereotypical beliefs on career choice in male-dominated occupations and have hypothesized that the underrepresentation of women in the construction industry is due to gender stereotyping of careers (Hadjar & Aeschlimann, 2015: 26; Banchevsky & Park, 2018: 2). Likewise, studies have identified a range of sociocultural motives on gendered differences in male-dominated environments (Madikizela & Haupt, 2010; Enshassi & Mohammaden, 2012; Akinlolu & Haupt, 2019). Perceptions on the suitable occupations for women in the labour market and the inappropriateness of women undertaking careers in male dominated fields are commonly cited barriers (Ahuja & Kumari, 2012: 57; Lekchiri & Kamm, 2020: 577; O'Connell & McKinnon, 2021). Gender stereotypes have been found to contribute to the gender imbalance in the industry, which consequently has made construction an undesirable choice for many women (Navarro-Astor, Román-Onsalo & Infante-Perea, 2017: 202). Misconceptions about construction and the influence of social and environmental factors have led women to perceive negative stereotypes regarding their abilities to perform in the industry (Charity-Leeke, 2012: 40). It is, therefore, important to examine the relationship between gender stereotypes and career choice behavior. Numerous studies have explored career choices in other non-traditional and male-dominated environments (Shapiro et al., 2009; Wells, DelgadoRomero & Shelton, 2010; Akinlolu & Haupt, 2020; Panteli & Urquhart, 2022; Anwar & Khan, 2021), but few have specifically focused on the construction industry in the South African context, where the experiences of people may differ because of various sociocultural influences. Findings from previous studies suggest that demography and ethnic differences may have an impact on career choice and perceptions of career-related barriers. Although there have been numerous studies on gender issues in the construction industry (Chileshe & Haupt, 2010; English & Hay, 2015; Enshassi & Mohammaden, 2012; Rosa et al., 2017; Vainikolo, 2017), fewer studies have focused on inter-group differences (Holvino, 2010). This study aims to measure the effect of person variables such as gender and socioeconomic status (SES) on how gender stereotypes influence student's career choices in the construction industry.

2. LITERATURE REVIEW

2.1 Career choice

A career is a major predictor of a person's wealth, income, status, nature of work, and lifestyle (Kazi & Akhlaq, 2017: 187). A wrong career choice can lead to failure and disappointment (Bubić & Ivanišević, 2016: 499). Career choice and development is important because it has consequences for socio-economic equalities and mobility (Kim, Ahn & Fouad, and 2016: 515). Overtime, the complexity of the career choice process has increased significantly. People are more likely to describe their career choice as a unique interaction between their development phases and environmental circumstances (Kunnen, 2013). Typically, young people are required to undergo a process of understanding, defining, and exploring different career options with the aid of career

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guidance and planning (Polenova et al., 2018: 53; Bubić & Ivanišević, 2016: 499). Proper career planning results in fulfilment, affirms a person's unique identity, and promotes job satisfaction and well-being.

2.2 Gender stereotypes and gender roles

Gender stereotypes are conceptions commonly held by society that attribute a set of characteristics, skills, and behavior to men and women, indicating that what is masculine is feminine and vice versa (Makarova, Aeschlimann & Herzog, 2016: 2). Shelley, Morabito and Tobin-Gurley (2011: 352) stated that gender role stereotypes are institutionalized when authorities and individuals in a society share a collective opinion concerning roles suited for men and women. As part of a societal belief system, stereotypes are descriptive and prescriptive (Koenig, 2018: 1). The descriptive component of gender stereotypes uncovers how men and women behave and are usually perceived, while the prescriptive element reveals what men and women ought to be and, more importantly, what they ought not to be (Hentschel, Heilman & Peus, 2019: 2). Koenig (2018) argued that descriptive and prescriptive stereotypes are not different from one another; instead, there is an intersection between them, with a direct relation between prescribed behaviours and positive characteristics that describe each gender. These stereotypical beliefs are considerably moulded from sociocultural expectations, which include perceptions of males and females and their occupational roles (Makarova et al., 2016: 4). Socialization facilitated by parents, teachers, peers, and media during childhood through adolescence promotes gender stereotyping (Francis, 2017: 255). Gender stereotypes stem from an individual's observation and perception of daily activities of a particular group and the perceiver's belief that the personal attributes and capabilities required to conduct a task are typical of that group (Hentschel et al., 2019: 1). Associated with stereotypical societal roles, men are expected to have higher power and occupy senior work positions, while women take up domestic roles and have a lesser status in society (Makarova et al., 2016: 4). An example of such instances is when women are perceived to possess domestic skills, while men are considered to have mechanical skills (Kornrich & Ruppner, 2021:11887). Szelényi, Denson and Inkelas (2013) indicated that stereotypical beliefs emphasize the communality of women and the agency of men. Men are believed to be self-asserted and dominant, while women are attributed with qualities of selflessness, empathy, and emotions. Although it is flattering that women are perceived as warm, supportive, and kind, these stereotypes may also undermine their abilities and competence (Szelényi et al., 2013). Rudman and Glick (2001) opined that, most of the time, perceptions of empathy and the proficiency of social groups are inversely connected and that practices of sexism that perceive women as warm but not competent, serve to promote gender inequality. Therefore, these assumptions confirm that gender stereotypes are assigned by gender and are universal unfounded generalizations targeted to specific groups, resulting in a basis for the inaccuracy (Saucerman & Vasquez, 2014: 46).

2.3 Gender stereotypes and career choices in construction

Historically, in South Africa, women were at the centre of discriminatory laws that favoured men and were confronted with the burden of unwaged labour (Haupt & Fester, 2012: 56; Makarova et al., 2016: 3). An inflexible and obdurate arrangement of working conditions and poor maternity rights prevented them from performing well, bearing in mind that they require breaks for childcare and family responsibilities (Vainikolo, 2017: 26). These responsibilities often deny them the opportunity to undertake full-time paid employment (Ibáñez, 2017: 41). Reports from the International Labor Organization (ILO) initiated the start of research on gender inequality, poor working conditions experienced by women, and barriers to entry in the construction industry (Charity-Leeke, 2012: 45). Therefore, construction research focusing on women post-1980 concentrated on women in developing countries and the bulk of the studies in the construction industry remains focused on developing countries, as

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gender issues are comparatively more severe in these countries (Vainikolo, 2017: 26). Studies have found a link between gender stereotypes and work opportunities concerning career choices and expectations (Madikizela & Haupt, 2010; Atalay & Doan, 2020). Events and experiences that occur during childhood could influence an individual later in life (Watson et al., 2011: 415). Early childhood interaction enables and teaches young men to master their environment, while young women learn to seek help and protection (Moodley, 2012: 23; Enshassi & Mohammad, 2012: 3). Madikizela and Haupt (2010) confirmed that young people begin to make career decisions by the age of 16 and that gender-based career stereotyping hinders the ability for young girls to make career choices or take contrary career decisions in opposition to the will of their parents. English and Hay (2015) revealed that, although many parents were reluctant to encourage their daughters to take up a profession in construction, they showed no hesitance in allowing their sons to enter the construction industry. These findings offer explanations for the lack of consideration that many capable women give to construction-related careers. Women's participation in the construction industry breaks gender stereotypes and promotes the empowerment of women, by ensuring a rationale for sustainable sources of income (Gupta et al., 2009: 399; Moodley, 2012: 23). Although some progress has been made with attracting women into the construction industry, since the industry begun to establish initiatives targeted to increase the representation of women within the sector, their involvement and participation remains relatively low (Worrall et al., 2010: 270; Aneke, Derera & Bomani, 2017: 38; Vainikolo, 2017: 28; Alves & English, 2018: 582). Gender-based barriers continue to be a problem in the recruitment and retention of women in the construction industry (Charity-Leeke, 2012). The South African construction industry is the third most predominantly male sector and demonstrates extreme discrimination in the recruitment of women (Navarro-Astor et al., 2017: 202).

2.4 Gender stereotypes and participation in the construction industry

Literature has indicated that women do not take up careers in construction for several reasons (Wangle, 2009; Rosa et al., 2017). Heteronormative gender stereotyping is evident through men's perception of women's capabilities (Wright, 2014: 985; Vainikolo, 2017: 25). Embedded social and cultural beliefs regarding construction work have reinforced the perception that women are unsuitable and unable to handle the heavy workload in the industry (Adeyemi et al., 2006: 567; Wangle, 2009: 35; Francis, 2017: 255; Vainikolo, 2017: 26). Women's lack of interest in construction has been attributed to socially developed divisions in male-dominated occupations. The treatments, to which women, who enter these professions, are subjected by their male counterparts, affect their choices relating to flexible work hours and balancing childcare (Moccio, 2006: 6; Mangaroo-Pillay & Botha, 2020: 477). Along with men's perceptions regarding women's unsuitability for construction work, maternal profiling creates doubts about women's abilities (Saucerman & Vasquez, 2014: 45; Sassler et al., 2017: 193). This mindset intensifies gender disparities and puts women at a constant disadvantage (Mangaroo-Pillay & Botha, 2020: 477). Several studies revealed that women are often discouraged from undertaking careers in the construction industry by informal recruitment processes, advertisements, and promotional materials with content that reflects masculine qualities and interests, unfair selection measures, and chauvinist demeanors (English & LeJeune, 2012: 145; Moodley, 2012; Kolade & Kehinde, 2013: 77; Othman & Jaafar, 2013: 277; Makarova et al., 2016: 3). Empirical evidence shows that the existence of gender inequality in the construction industry affects the recruitment, retention, and advancement of women and is primarily attributed to social and structural barriers (Sang & Powell, 2012: 239). Women, especially Black women, who were employed in the construction industry, identified problems such as women hindering the progress of other women, female managers achieving their real potential due to patriarchy, lack of role models, and lack of confidence

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(Suraj-Narayan, 2010: 234; Mgcotyelwa, 2013). In a study conducted by McDonald (2011: 325), the culture of the industry was identified as a predominant barrier to the recruitment and retention of men and women. Although significant for both genders, the culture of the sector was found to be principally a significant barrier for women. Discriminatory behaviours towards women include the belief that women are unsuitable to occupy executive positions, since the model of an ideal manager is based on masculine qualities (Makarova et al., 2016: 4). Women have to circumnavigate common issues such as discriminatory attitudes perpetrated by the dominant male management and adversarial business relationships (Worrall et al., 2010; Haupt & Fester, 2012: 54). Women occupy supporting roles involving secretarial, clerical, and administrative duties which are linked to society's stereotypical beliefs that recognize women as nurturers (Arditi, Gluch & Holmdahl, 2013: 981; Kaewsri & Tongthong, 2013: 291; Wright, 2014: 986; Francis, 2017: 254). This implies that women listen actively and use discretion in decision-making and problem-solving (Vainikolo, 2017: 25). Meanwhile, men's roles consist of managerial duties and tasks that involve strength and lifting heavy tools (Kaewsri & Tongthong, 2013: 291). These gendered roles are assigned from the assumption that each gender possesses a distinct set of skills (Vainikolo, 2017: 25). Numerous studies have shown that women who look to pursue careers in the construction industry either have to behave like men to be successful, leave if they cannot adapt to the masculine culture, or maintain their feminine attitudes to occupy minor positions (English & LeJeune, 2012; Haupt & Fester, 2012; Moodley, 2012; English & Hay, 2015: 147; Vainikolo, 2017: 26).

2.5 Gender stereotypes, academic choices, and societal expectations

In line with gender stereotypes, several influences within the educational environment and societal expectations have been found to pressure girls and women to conform to standards of femininity and circumnavigate male dominated careers (Esteban-Gonzalo et al., 2020: 1370). Consequently, women ultimately acknowledge professions such as nursing and teaching as progressively feminine. On the other hand, disciplines such as engineering are perceived as masculine (Sangweni, 2015: 25). Women steer away from socially unacceptable professions because of adverse reactions from family members and employers (Haupt & Fester, 2012: 54). A survey of female construction students found that over 50% of the respondents indicated that their family and friends influence their career decisions (Jimoh et al., 2016). An investigation of the influence of parental attitudes on the career decisions revealed that mothers often expect their sons to outdo their daughters in science- and engineering-related subjects and their daughters to surpass their sons in social and art-related subjects (Wang & Degol, 2017: 121; Jacobs, Ahmad & Sax, 2017: 2). The studies further revealed that girls whose mothers held these perceptions performed poorly in mathematics and physics subjects as opposed to their performance in English and geography. Girls who undertake studies in science and engineering fields were found to be disfavoured by both male and female teachers, while boys were given preference and expected to outperform the girls (Chileshe & Haupt, 2010: 222; O'Donnell et al., 2015: 38; Lavy & Sand, 2018: 265).

3. MATERIALS AND METHODS

3.1 Research design

Using a quantitative survey research design, this study aims to measure the effect of person variables such as gender and socio-economic status on how gender stereotypes influence students' perceptions of career choices in the construction industry. Quantitative research uses statistics and numbers in the analysis (descriptive and inferential) (Denis, 2019: 19, 41) and interpretation of findings that are generalized from the sample to the population (Creswell, 2014: 11; Bless, Higson-Smith & Sithole, 2018: 16). It allows for using structured questionnaire surveys to measure objectives by counting and the use of several scales (Bless et al., 2018: 16). For

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this study, ten gender stereotypes statements (see Table 3) were set to measure and rank the influence of gender stereotypes on career choice. Exploratory Factor Analysis (EFA) was used to test the reliability and validity of the gender stereotypes construct (Yong & Pearce, 2013: 80). For analysis, univariate (mean score and frequency), multivariate (Mann-Whitney U and Kruskal Wallis) and bivariate (Pearson's chi-square) tests were adopted because the study considered several research variables (Hair et al., 2010: 82). Results from these tests were used to test for significant differences between men and women and among socio-economic groups and assess the relationship between gender stereotypes and the career choices among students enrolled in construction-related programmes.

3.2 Population, sample, and response rate

During the time of the study (2021), 461 undergraduate students were enrolled in construction-related undergraduate programmes in two higher education institutions in the KwaZulu-Natal province of South Africa. Conveniently sampling, that is a non-probability sampling method (Saunders, Lewis & Thornhill, 2009), was used to select 461 study participants, from this population of first- to fourth-year students enrolled in programmes such as land surveying, architecture, quantity surveying, civil engineering, and building. Convenience sampling was preferred because it saves time and it is economical to select participants from institutions that are closest to the researcher and more convenient to access (Sekaran & Bougie, 2010: 50). Because of the lack of probability sampling, there is no intention of generalizing the results of this study to a population of all students in South Africa. The sample size table, compiled by Krejcie and Morgan (1970: 608), recommends a sample size of 210 for a population of 460. This recommendation validates the sample size of 461 as excellent for the population of 461. From the sample of 461, 229 participants completed and returned the survey responses, resulting in a response rate of 50%. According to Moyo and Crafford (2010: 68), contemporary built-environment survey response rates range between 7% and 40%, in general.

3.3 Data collection

The survey questionnaire was administered for five weeks from December 2020 to January 2021. The questionnaire was designed using Google forms and administered electronically by sending out hyperlinks to the questionnaire via email and the Whatsapp platform. The first section of the questionnaire inquired about the gender, year, programmer of study, and socio-economic status of the participants. The second section was a set of 10 Likert-scale items on the construct gender stereotypes (extracted from reviews from the literature) (see Table 3). Respondents were required to indicate their level of agreement, to examine if gender stereotypes influence career choices in the construction industry. The data from the measurements in section 2 forms the variables used in the EFA, which tested the validity and reliability of the factors. To reduce the respondent's bias, closed-ended questions were preferred for section two (Stockemer, 2019: 42). Gatekeeper's permission was obtained from the participating universities before the survey of the students. The questionnaire was administered to the study sample, along with a consent form stating the purpose of the research, and the implications of participation in the study. Consenting participants were guaranteed complete confidentiality in the treatment of their responses, as no names of participants were requested in the questionnaire and all other personal information such as phone numbers and email addresses were omitted in the data analysis.

3.4 Data analysis and interpretation of the findings

The Statistical Package for Social Science (SPSS) version 27 was used to analyse the gender stereotypes and measure them against socio demographic variables, by using descriptive and inferential statistics (George & Mallery, 2021: 112, 161).

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3.4.1 Descriptive analysis

For descriptive analysis, the frequencies and percentages of responses were generated and reported, to analyses the respondents' socio demographic profile. To determine the socio-economic background of the respondents, participants were required to indicate the current or last occupation and the highest qualification of the breadwinner of their household. Weightings were assigned to each measure under occupation and qualification. The weightings were then used to group the respondents into high, medium, and low SES categories. Values less than 3 were assigned to low SES, while those less than 6 but greater than 3 were assigned to medium SES categories. Finally, values greater than 6 were assigned to high SES categories. The mean score (MS) ratings were used to rank the level of agreement on how the ten statements on gender stereotypes affect respondents' career choices. According to Leedy & Ormrod (2010: 185), Likert-type or frequency scales use fixed choice response formats and are designed to measure opinions. For the purpose of analysis, the ranges relative to the MS are defined as follows: 1 = strongly disagree (≥ 1.00 to ≤ 1.49); 2 = Disagree (≥ 1.50 to ≤ 2.49); 3 = Neutral (≥ 2.50 to ≤ 3.49); 4 = Agree (≥ 3.50 to ≤ 4.49), and 5 = strongly agree (≥ 4.50 to ≤ 5.00). In determining the internal reliability of the gender stereotypes scale, Cronbach's alpha values were determined in line with Taber (2018: 1279), who stated that the acceptable Cronbach's alpha values range from 0.70 to 0.95. In the current study, a cut-off value of 0.70 was preferred. To determine the normality of the data gathered, the Shapiro-Wilk test was adopted. The Shapiro-Wilk test makes comparisons between the scores obtained from a sample to normally distributed score sets with the same mean and standard deviation. A non-significant test result, namely the test significance is greater than .05, means that the difference is insignificantly different from a normal distribution, therefore indicating normality (Pallant, 2021).

3.4.2 Factor analysis

In a factor analysis, the optimal inter-item correlations mean (factor loadings) should range from 0.2 to 0.4, for the factor to be reliable (Pallant, 2021: 188), and, in the current study, a value of 0.4 and above was adopted. The Bartlett's Test of Sphericity, and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test were used to assess the data's factor suitability (Pallant, 2021). Factor analysis is deemed appropriate when the value of the KMO test is higher than the acceptable minimum limit of 0.6 and a limit of 1 (Pallant, 2021; Tabachnick & Fidell, 2013: 482). A statistically significant Bartlett test ($p < 0.05$) indicates that sufficient correlations exist between the items in the construct to continue with the analysis (Hair et al., 2010: 110; Field, 2013: 38; Pallant, 2021: 190). For factor extraction, Maximum likelihood and Promax with Kaiser Normalization rotation (oblique - correlated) was used to calculate population values for factor loadings that maximize the likelihood of sampling the observed correlation matrix from a population (Pallant, 2021). As each factor is extracted, the maximum likelihood analysis statistically tests the significance. Item communalities between 0.25 and 0.4 have been suggested as acceptable cut-off values, and for this study 0.3 was adopted (Beavers et al., 2013: 3). The Kaiser's criterion or the eigenvalue rule was adopted to determine the number of factors to retain (Pallant, 2021; Tabachnick & Fidell, 2013: 38). Eigenvalues greater than 1 were considered significant and retained (Laher, 2010; Matsunaga, 2010: 100). By conducting a correlation analysis, relationships between an item and another were measured (Pallant, 2021). The value of correlation co-efficient ranges from -1.00 to +1.00. A correlation coefficient of 0 indicates no relationship between the variable in question. The closer the coefficient is to 1.00 (positive or negative), the stronger the relationship. To indicate discriminant validity, correlation coefficients should be above the cut-off value of 0.30 and less than 0.90 (Kline, 2015).

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3.4.3 Inferential analysis

Following the result of the normality test, which revealed a non-normal distribution of data, a non-parametric test was deemed suitable to test for significant differences among the gender and SES groups concerning gender stereotypes and career choices. The study adopted the MannWhitney U test to test for significant differences between the gender groups and used the Kruskal-Wallis test for significant differences between the SES groups. The Dunn-Bonferroni post-hoc test was conducted to determine where the significant differences lie between the SES groups. A p-value of 0.05 or less indicates a significant difference between groups. The Pearson's chi-square test was used to test for any significant relationship between gender stereotypes and career choices. The parameter estimate is significant at $p \leq 0.05$.

4. RESULTS

4.1 Respondents' profile

Table 1 shows an almost equal distribution between men (50.7%) and women (49.3%) in the sample. First-year students had the largest number of participants, with 94 students (41%), followed by second-year students at 87 (38%). This rate of participation is possible because the first-year cohort of students at South African Universities is usually larger than the later years or more advanced levels of study. The distribution shows that Construction Management (48%), Quantity Surveying (21.8%), and Building (20.5%) were the best represented study programme groups. Architecture represented the lowest number of students ($n=1$; 0.4%) in the sample because only one of the universities offered the programme and typically had fewer numbers of students compared to the other disciplines and programmes. Table 2 shows that, based on the occupation and the highest qualification of the breadwinner of the household, 133 (58.1%) of the students were categorized to be of low socio-economic status.

Table 1: Demographic distribution

Demographic	Category	Frequency (n = 229)	%
Gender	Men	116	50.7
	Women	113	49.3
Year of study	1st	94	41.0
	2nd	87	38.0
	3rd	30	13.1
	4th	18	7.9
Demographic	Category	Frequency (n = 229)	%
Programme of study	Construction Management	110	48.0
	Land Surveying	4	1.7
	Quantity Surveying	50	21.8
	Civil Engineering	17	7.4
	Building	47	20.5

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	Architecture	1	0.4
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Table 2: Socio-economic background

Characteristic	Category	Frequency (n = 229)	%
Occupation of the breadwinner of the household	Unskilled	161	70.3
	Skilled	21	9.2
	Graduate	39	17.0
	Specialist	8	3.5
Highest qualification of the breadwinner of the household	Post-Matric	59	25.7
	Matric	54	23.7
	High School	59	25.7
	Primary School	57	24.9
Socio-economic status	High SES	42	18.3
	Medium SES	54	23.6
	Low SES	133	58.1

4.2 Ranking gender stereotypes based on career choice

Table 3 ranks the gender stereotypes influencing the career choices in the construction industry. The Cronbach's alpha value was greater than 0.80 at 0.939, indicating acceptable internal reliability of the factors, as recommended by Taber (2018: 1279). With an average MS of 2.39, the respondents disagreed that gender stereotypes influence career choices in the construction industry, except for work abilities, and harder work as counterparts, that were rated as neutral. The Shapiro-Wilk test indicated a non-normal distribution at $p=0.000$ (significant $p>.05$) for all the variables. Maximum likelihood estimation with robust standard errors and chi-square was employed to account for the non-normal distribution of data.

Table 3: Descriptive statistics – Gender stereotypes

Statement	Descriptive statistics (n = 229) Cronbach's alpha 0.939			Shapiro-Wilk 0.000	
	MS	Rank	Remark	Value	P-value Sig.
Because of my gender, people will believe I possess lesser abilities in my work	2.70	1	Neutral	.882	0.000

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Because of my gender, I will have to work twice as hard as my counterparts	2.68	2	Neutral	.881	0.000
Because of my gender, I will be expected to do administrative work	2.21	3	Disagree	.831	0.000
Because of my gender, I will have to occupy a junior position at work	2.18	4=	Disagree	.834	0.000
Because of my gender, I will be expected to possess domestic skills rather than technical skills	2.18	4=	Disagree	.794	0.000
Because of my gender, I will be expected to choose a career different from the one I prefer	2.14	5	Disagree	.687	0.000
Because of my gender, I will be expected to have a lesser status in the society	2.13	6	Disagree	.811	0.000
Because of my gender, people will believe I will perform badly in mathematics and science subjects	1.96	7	Disagree	.761	0.000
Because of my gender, I will be expected to have a low level of education	1.93	8	Disagree	.757	0.000
Because of my gender, I will earn a lower salary than my counterparts for similar work	1.90	9	Disagree	.754	0.000
Average MS (composite score)	2.39		Disagree		

Significant at $p > .05$

4.3 Exploratory factor analysis

Ten items of the gender stereotypes construct with communalities loadings of 0.4 and above were subjected to EFA. The KMO for gender stereotypes was 0.931, which is greater than 0.70, and a significant Bartlett's test of Sphericity with $p < 0.000$ was obtained, as shown in Table 4. The results meet the criteria for factor analysability.

Table 4: KMO and Bartlett's test for gender stereotypes

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.931

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Bartlett's Test of Sphericity	Approx. Chi-Square	1943.421
	Df	45
	Sig.	.000

From the results presented in Table 5, one factor with an eigenvalue of 6.634 accounted for 66% of the variance. The factor analysis results suggest that one factor may be adequate to represent all the data for the construct gender stereotypes and are, therefore, considered unidimensional and adequate evidence of convergent and discriminant validity.

Table 5: Initial eigenvalues for gender stereotypes

Factor	Initial eigen values		
	Total	% of variance	Cumulative %
1	6.634	66.336	66.336
2	.792	7.917	74.253
3	.678	6.775	81.028
4	.479	4.793	85.821
5	.358	3.578	89.399
6	.310	3.103	92.502
7	.260	2.602	95.104
8	.253	2.526	97.630
9	.139	1.390	99.020
10	.098	.980	100.000

The corrected item-total correlation values were greater than the recommended cut-off value of 0.3, indicating that the items were a good measure of the construct. The factor loadings for all items were greater than 0.40, shown in Table 6, and the communalities values of 0.3 and above for the items were all acceptable. This indicates that all factors are statistically valid to represent the construct. Three items (GST4, GST5, GST6) had loadings above 0.900.

Table 6: Gender stereotypes factor statistics

Item	Factor	Factor loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
GST1	Because of my gender, people will believe I possess lesser abilities in my work	.556	.569	.404	.309
GST2	Because of my gender, I will have to work twice as hard as my counterparts	.654	.653	.512	.428

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GST3	Because of my gender, I will have to occupy a junior position at work	.804	.773	.678	.647
GST4	Because of my gender, I will be expected to do administrative work	.902	.851	.801	.813
GST5	Because of my gender, I will be expected to have a lesser status in society	.926	.865	.840	.857
GST6	Because of my gender, I will be expected to possess domestic skills rather than technical skills	.942	.885	.859	.888
GST7	Because of my gender, I will be expected to have a low level of education	.806	.790	.695	.649
GST8	Because of my gender, I will be expected to choose a career different from the one I prefer	.683	.692	.534	.467
GST9	Because of my gender, people will believe I will perform badly in mathematics and science subjects	.742	.748	.631	.550
GST10	Because of my gender, I will earn a lower salary than my counterparts for similar work	.798	.776	.650	.637

Extraction Method: Maximum Likelihood Rotation Method: Promax with Kaiser Normalization

As indicated in Table 7, almost all items have positive and high correlation with each other ranging from $r=.412$ for GST1 and GST3 to $r=.887$ for GST5 and GST6. Due to relative high correlations between items, with correlation values above 0.30 and less than 0.90, the ten items in the gender stereotypes scale would be good for factor analysis as all the construct items fulfil the requirement for convergent validity (that is constructs that are expected to be related are, in fact, related).

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4.4 Inferential analysis

4.4.1 Multivariate analysis to assess gender differences

The Mann-Whitney U test was conducted to test for significant differences between men and women, with regards to the influence of gender stereotypes. Table 8 shows the mean scores for the career choice predictor, and the rank order for men and women.

Table 8: Test statistics for gender and gender stereotypes

Career choice predictor	Gender MIS		Mann-Whitney U	
	Men	Women	Z-value	Sig.
Gender stereotypes	24.03	27.07	4.000	0.000*

*Significant at $p \leq .05$

On the gender stereotype construct, men reported a mean score of 24.03, while women reported 27.64. This indicates that women perceived gender stereotypes to have a slightly higher influence on their career choices, compared to their male counterparts. The Z-value and the Sig. value obtained from the Mann-Whitney U test were also presented. Significant differences between the two groups were found, indicating that men and women perceived the influence of gender stereotypes differently, based on their gender ($z=4.000$, $p=.000$) as the Sig. values were less than the cut-off value of 0.05. Table 9 presents further assessment of each of the gender stereotype variables. Both men and women perceived that occupying a junior position at work ($z=.504$, $p=.614$) or doing administrative work ($z=2.560$, $p=.100$) had no influence on their career choices in the construction industry. There were significant differences in the perception of men and women for GST1, GST2, GST5, GST6, GST7, GST8, GST9 and GST10. Women perceived that possessing lesser abilities in work ($z=6.657$, $p=.000$), working twice as hard as counterparts ($z=8.830$, $p=.000$), having a lesser status in society ($z=2.680$, $p=.007$), possessing domestic skills rather than technical skills ($z=2.709$, $p=.007$), having a low level of education ($z=2.934$, $p=.001$), expectations to choose a career other than the preferred one ($z=3.284$, $p=.001$), performing badly in mathematics and science subjects ($z=3.138$, $p=.002$), and earning a lower salary than counterparts for the same work ($z=2.397$, $p=.017$) had a higher influence on their career choices in the construction industry compared to men.

Table 9: Gender differences: Further analysis for gender stereotypes

Item	Factors	MIS		Mann-Whitney U	
		Men	Women	Z-value	P-value Sig.
GST1	Because of my gender, people will believe I possess lesser abilities in my work	86.92	143.82	6.657	0.000*
GST2	Because of my gender, I will have to work twice as hard as my counterparts	98.84	131.58	8.830	0.000*
GST3	Because of my gender, I will have to occupy a junior position at work	112.92	117.14	0.504	0.614
GST4	Because of my gender, I will be expected to do administrative work	104.41	125.84	2.560	0.100

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GST5	Because of my gender, I will be expected to have a lesser status in society	103.98	126.31	2.680	0.007*
GST6	Because of my gender, I will be expected to possess domestic skills rather than technical skills	103.92	126.37	2.709	0.007*
GST7	Because of my gender, I will be expected to have a low level of education	103.31	127.00	2.934	0.003*
GST8	Because of my gender, I will be expected to choose a career different from the one I prefer	101.78	128.57	3.284	0.001*
GST9	Because of my gender, people will believe I will perform badly in mathematics and science subjects	102.39	127.95	3.138	0.002*
GST10	Because of my gender, I will earn a lower salary than my counterparts for similar work	105.47	124.78	2.397	0.017*

*Significant at $p \leq .05$

4.4.2 Multivariate analysis to assess SES differences

The Kruskal Wallis test was conducted to test for significant differences in the influence of the career choice predictors between the SES groups. Table 10 shows that significant differences were found for gender stereotypes (Chi-square =9.228, $p=.010$) as the Sig. values were less than the alpha value of 0.05. The mean score for the high SES was 26.23, the medium SES group was 20.09, and the low SES was 29.56. This result indicates that, compared to the other groups, the students from low socio-economic backgrounds found gender stereotypes to have a higher influence on their career choices in construction.

Table 10: Test statistics for SES and gender stereotypes

Career choice predictor	High SES	Medium SES	Low SES	Kruskal-Wallis		
	MIS	MIS	MIS	Test Static	Df	Sig.
Gender stereotypes	26.23	20.09	29.56	9.228	2	0.010*

*Significant at $p \leq .05$

The results of the Kruskal-Wallis test indicate that there are differences among groups but do not reveal where the differences lie (Field, 2013: 39). The Dunn-Bonferroni post-hoc procedure was adopted in this study to determine where the significant differences lie between the SES groups. The post-hoc test conducts multiple tests and adjusts the p-values by multiplying each p-value by the total number of tests performed. The Bonferroni error correction produces the Adj Sig. value which adjusts for multiple testing. As shown in Table 11, perceptions from the low SES group ($p<.015$) were significantly different from the medium SES group ($p<.020$).

Table 11: Analysis of Dunn-Bonferroni test

Career choice predictor	Groups	Test Static	Std. Error	Adj. Sig.
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Gender stereotypes	High-Low SES	6.531	10.668	1.000
	High-Medium SES	-38.234	13.602	0.015*
	Low-Medium SES	-31.703	11.702	0.020*

*Significant at $p \leq .05$

4.4.3 Bivariate analysis of relationship between gender stereotypes and career choice

The Pearson's chi-square test was used to test for any significant relationship between gender stereotypes and career choices. Gender stereotypes were hypothesized to have a relationship and direct influence on career choice. The results in Table 12 show the standardised regression relationship. The value of R^2 was 0.518, and the p-value was 0.000, indicating statistical significance as the p-value was less than 0.50. This result shows that gender stereotypes have a positive relationship and direct influence on students' career choices in the construction industry.

Table 12: Testing direct influence of gender stereotypes on career choice

	Relationship	Regression estimate	P
Proposed hypothesis	CRC GSP	0.518	0.00*

CRC = Career Choice; GSP = Gender Stereotypes

*Significant at $p \leq 0.05$

5. DISCUSSION

With reference to the perception of men and women on how gender stereotypes influence their career choices, a statistically significant difference was found for the influence of gender stereotypes for men and women. The results illustrated that there are differences between men and women with regards to gender stereotypes and career choice in construction. As shown by the mean scores obtained, the women in this study perceived their career choices to be influenced by gender stereotypes more than the men. Overall, this result is consistent with findings from previous research, indicating that gender stereotypes influence the career choices of men and women differently. Previous research provides evidence that men and women differ in their perception of gender stereotypes (Betz & Hackett, 2006; Eccles, 2011; Su & Rounds, 2015). Serra et al. (2019) found that there was a higher likelihood for female students than male students to choose careers traditionally associated with their gender. Evidence from literature examining gender stereotyping and the differences in career choice behaviour reveals that gender differences are due to gender role socialization (Malach-Pines & Kaspi-Baruch, 2008; Wilmuth, 2016; Solbes-Canales, Valverde-Montesino & Herranz-Hernández, 2022). Generally, masculine behaviours are socially preferred (Ezzedeen, Budworth & Baker, 2015: 360). Stereotypically, feminine traits such as gentleness and kindness have been attributed to weakness and are less valued in professions such as construction (Olsson & Martiny, 2018; Makarova, Aeschlimann & Herzog, 2019). The extent to which the decision of men and women to undertake careers in construction are influenced by gender stereotypes and certain stereotypical masculine characteristics are commonly ascribed to men, which are not attributed to women. Similarly, women held stereotypes about themselves that expected them to possess less masculine attributes and assumed stereotypical feminine supportive roles. Differences in the perceptions of men and women regarding gender stereotypes were found to be largely as result of how the men perceived women (Akinlolu & Haupt, 2019; Oo, Liu & Lim, 2022; Tapia et al., 2020:813). Consistent with these findings, it has been noted that gender stereotypes, through how men perceive women in the construction, may impact women's decisions to undertake a career in construction (Watts, 2009; Wright, 2014; Francis, 2017; Opoku & Williams, 2018). A statistically significant difference was

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found among the SES groups for gender stereotypes, therefore lending support to the assumption that SES differences exist for the influence of gender stereotypes on career choices in construction. Poor performance and a low participation rate in construction-related professions has been reported for students of minority and lower SES groups, resulting from gender stereotypes, which are accumulated during the socialization process, and is a major determining factor in making career choices (Bécares & Priest, 2015; Dicke, Safavian & Eccles, 2019; Oo et al., 2022). The relationship between gender stereotypes and the career choice in construction was found to be statistically significant. As established in literature, this result demonstrates the powerful role that gender-related stereotypes play in the career choice process of students. Many studies have confirmed that continued gender stereotyping of the construction profession influences career choices in the industry (Kay, Matuszek & Munson, 2015; Rosa et al., 2017; Naoum et al., 2020). Social norms and unconscious biases have been found to reinforce the perception that construction is more appropriate for men than for women (Powell & Sang, 2015). These stereotypes became deeply rooted when girls rarely received encouragements to enter in male-dominated professions (Mujtaba & Reiss, 2013: 2980).

6. CONCLUSION

This study examined the role of gender stereotypes in the career choices of students in construction-related programmes, as well as the perception of gender and SES groups regarding choosing a career in construction, and specifically gender stereotypes as a predictive variable of career choice. The study's findings confirm gender stereotypes as a predictor of career choice, and how gender stereotypes guide students towards careers deemed appropriate to their gender. Findings of the current study have meaningful implication for practice in career choice and development in male-dominated environments and occupations. Addressing the issue of gender role stereotypes within non-traditional environments could serve to empower women to pursue non-traditional professions more confidently and with a better understanding of the barriers to participation. Although this study sampled men and women from diverse ethnic and socio-economic backgrounds in the KwaZulu-Natal province of South Africa, a generalization of the findings to the entire South African population needs caution. Since the present sample may be described as unique, due to the inclusion of only men and women enrolled in construction-related programmes at two higher education institutions, it is uncertain whether these results may not adequately represent the population of interest and be generalized to a general sample of students at other universities.

REFERENCES

- Adeyemi, A., Ojo, S., Aina, O. & Olanipekun, E. 2006. Empirical evidence of women under-representation in the construction industry in Nigeria. *Women in Management Review*, 21(7), pp. 567-577.
- Ahuja, V. & Kumari, S. 2012. Issues and challenges for women in construction industry: Global as well as Indian perspectives. *Proceedings of the Regional Conference of the International Network of Women Engineers & Scientists (INWES)*, 12-13 October, India International Centre, New Delhi, pp. 1-11.
- Akinlolu, M. & Haupt, T.C. 2019. Investigating a male-dominated space: Female students' perceptions of gendered cultures in construction workplaces. In: Aigbavboa, C. & Thwala, W. (Eds), *Proceedings of the 11th Construction Industry Development Board (CIDB) Postgraduate Research Conference*, 28-30 July, Johannesburg, South Africa, pp. 43-55.

Original Article

- Akinlolu, M. & Haupt, T.C. 2020. Gender and women in construction: A conceptual model of career choice, humanities. In: 5th International Conference on Business Management, Economics, Social Sciences and Humanities (BMESH – 2020), 14-16 December, Bangkok, Thailand, ASRES, pp.196-204.
- Albien, A.J. & Naidoo, A.V. 2017. Deconstructing career myths and cultural stereotypes in a context of low resourced township communities. *South African Journal of Education*, 37(4), pp. 1-12.
- Alves, S. & English, J. 2018. Female students' preparedness for a maledominated workplace. *Journal of Engineering, Design and Technology*, 16(4), pp. 581-595.
- Aneke, E.O., Derera, E. & Bomani, M. 2017. An exploratory study of challenges faced by women entrepreneurs in the construction industry in South Africa. *International Journal of Business and Management Studies*, 9(2), pp. 35-51.
- Anwar, S.M. & Khan, A.A. 2021. Sociological study about the issues of women career advancement at male-dominated workplace. *Journal of Management Practices, Humanities and Social Sciences*, 5(1), pp. 87-94.
- Arditi, D., Gluch, P. & Holmdahl, M. 2013. Managerial competencies of female and male managers in the Swedish construction industry. *Construction Management and Economics*, 31(9), pp. 979-990.
- Atalay, O. & Doan P. 2020. Making lesbian space at the edge of Europe: Queer spaces in Istanbul. *Journal of Lesbian Studies*, 24(3), pp. 255-271.
- Banchefsky, S. & Park, B. 2018. Negative gender ideologies and genderscience stereotypes are more pervasive in male-dominated academic disciplines. *Social Sciences*, 7(2), article number 27.
- Beavers, A.S., Lounsbury, J.W., Richards, J.K., Huck, S.W., Skolits, G.J. & Esquivel, S.L. 2013. Practical considerations for using exploratory factor analysis in educational research. *Practical Assessment, Research, and Evaluation*, 18(1), Article 6. DOI:
- Bécares, L. & Priest, N. 2015. Understanding the influence of race/ ethnicity, gender, and class on inequalities in academic and non-academic outcomes among eighth-grade students: Findings from an intersectionality approach. *PLoS One*, 10(10), e0141363.
- Betz, N.E. & Hackett, G.J. 2006. Career self-efficacy theory: Back to the future. *Journal of Career Assessment*, 14(1), pp. 3-11.
- Bless, C., Higson-Smith, C. & Sithole, and S. 2018. *Fundamentals of social research methods: An African perspective*. 8th edition. Cape Town: Juta Company Ltd.

Original Article

- Bubić, A. & Ivanišević, K. 2016. The role of emotional stability and competence in young adolescents' career judgments. *Journal of Career Development* 43(6), pp. 498-511. DOI: 10.1177/0894845316633779
- Charity-Leeke, P. 2012. Women in engineering: A phenomenological analysis of sociocultural contextual meaning of gender roles. Unpublished PhD thesis. Cleveland State University.
- Chileshe, N. & Haupt, T.C. 2010. An empirical analysis of factors impacting career decisions in South African construction industry. *Journal of Engineering, Design and Technology*, 8(2), pp. 221-239.
- Creswell, J.W. 2014. Research design: Quantitative, qualitative and mixed methods approaches. 4th edition. Thousand Oaks, CA: Sage.
- Degol, J.L., Wang, M.T., Zhang, Y. & Allerton, J. 2018. Do growth mindsets in math benefit females? Identifying pathways between gender, mindset, and motivation. *Journal of Youth and Adolescence*, 47(5), pp. 976-990.
- Denis, D.J. 2019. SPSS data analysis for univariate, bivariate, and multivariate statistics. Hoboken, NJ: John Wiley & Sons.
- Dicke, A.L., Safavian, N. & Eccles, J.S. 2019. Traditional gender role beliefs and career attainment in STEM: A gendered story? *Frontiers in Psychology*, 10, article number 1053.
- Eccles, J. 2011. Gendered educational and occupational choices: Applying the Eccles et al. model of achievement-related choices. *International Journal of Behavioral Development*, 35(3), pp. 195-201.
- English, J. & Hay, P. 2015. Black South African women in construction: Cues for success. *Journal of Engineering, Design and Technology*, 13(1), pp. 144-164. <https://doi.org/10.1108/JEDT-06-2013-0043>.
- English, J. & Le Jeune, K. 2012. Do professional women and tradeswomen in the South African construction industry share common employment barriers despite progressive government legislation? *Journal of Professional Issues in Engineering Education and Practice*, 138(2), pp. 145-152.
- Enshassi, A. & Mohammaden, A. 2012. Occupational deaths and injuries in the construction industry.
- Esteban-Gonzalo, S., Sik Ying Ho, P., Aparicio-García, M.E. & EstebanGonzalo, L. 2020. Understanding the meaning of conformity to feminine norms in lifestyle habits and health: A cluster analysis. *International Journal of Environmental Research and Public Health*, 17(4), article number 1370.
- Ezzedeen, S.R., Budworth, M.-H. & Baker, S.D. 2015. The glass ceiling and executive careers: Still an issue for pre-career women. *Journal of Career Development*, 42(5), pp. 355-369.
- Field, A. 2013. Discovering statistics using IBM, SPSS Statistics. London: Sage Publications.

Original Article

- Francis, V. 2017. What influences professional women's career advancement in construction? *Journal of Construction Management*, 35(5), pp. 254-275.
- Galvaan, R. 2015. The contextually situated nature of occupational choice: Marginalised young adolescents' experiences in South Africa. *Journal of Occupational Science*, 22(1), pp. 39-53.
- George, D. & Mallery, P. 2021. *IBM SPSS statistics 27 step by step: A simple guide and reference*. New York,: Routledge.
- Gupta, V.K., Turban, D.B., Wasti, S.A. & Sikdar, A. 2009. The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. *Entrepreneurship theory and practice*, 33(2), pp. 397-417.
- Hadjar, A. & Aeschlimann, B. 2015. Gender stereotypes and gendered vocational aspirations among Swiss secondary school students. *Educational Research*, 57(1), pp. 22-42.
- Hair, J.F., Anderson, R.E., Babin, B.J. & Black, W.C. 2010. *Multivariate data analysis: A global perspective*. Upper Saddle River, NJ: Pearson.
- Haupt, T. & Fester, F. 2012. Women-owned construction enterprises: A South African assessment. *Journal of Engineering, Design and Technology*, 10(1), pp. 52-71.
- Hentschel, T., Heilman, M.E. & Peus, C.V. 2019. The multiple dimensions of gender stereotypes: A current look at men's and women's characterizations of others and themselves. *Frontiers in Psychology*, 10, article number 11.
- Holvino, E. 2010. Intersections: The simultaneity of race, gender and class in organization studies. *Gender, Work & Organization*, 17(3), pp. 248-277.
- Ibáñez, M. 2017. Women in the construction trades: Career types and associated barriers. *Women's Studies International Forum*, 60, pp. 39-48.
- Jacobs, J.A., Ahmad, S. & Sax, L.J. 2017. Planning a career in engineering: Parental effects on sons and daughters. *Social Sciences*, 6(1), article number 2.
- Jimoh, R.A., Oyewobi, L.O., Adamu, A.N. & Bajere, P.A. 2016. Women professionals' participation in the Nigerian construction industry: Finding voice for the voiceless. *Organization, Technology and Management in Construction*, 8, pp. 1429-1436.
- Kaewsri, N. & Tongthong, T. 2013. Professional development of female engineers in the Thai construction industry. *Procedia – Social and Behavioral Sciences*, 88, pp. 291-298.

Original Article

- Sbspro.2013.08.508 Kay, M., Matuszek, C. & Munson, S.A. 2015. Unequal representation and gender stereotypes in image search results for occupations. In: Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems, 18-23 April, Seoul, Korea, pp. 3819-3828.
- Kazi, A.S. & Akhlaq, A. 2017. Factors affecting students' career choice. *Journal of Research and Reflections in Education*, 2, pp. 187-196.
- Kim, S.-Y., Ahn, T. & Fouad, N. 2016. Family influence on Korean students' career decisions: A social cognitive perspective. *Journal of Career Assessment*, 24, pp. 513-526.
- Kline, R.B. 2015. Principles and practice of structural equation modeling. New York, U.S.A: Guilford publications.
- Koenig, A.M. 2018. Comparing prescriptive and descriptive gender stereotypes about children, adults, and the elderly. *Frontiers of Psychology* 9, article number 1086.
- Kolade, O.J. & Kehinde, O. 2013. Glass ceiling and women career advancement: Evidence from Nigerian construction industry. *Iranian Journal of Management Studies*, 6(1), pp. 77-97.
- Kornrich, T.S. & Ruppanner, L. 2021. Good housekeeping, great expectations: Gender and housework norms. *Sociological Methods and Research*, 50(3), pp. 1186-1214.
- Krejcie, R.V. & Morgan, D.W. 1970. Determining sample size for research activities. *Educational and psychological measurement*, 30(3), pp. 607-610. <https://doi.org/10.1177/001316447003000308>
- Kunnen, E.S. 2013. The effects of career choice guidance on identity development. *Education Research International*, article number 901718.
- Laher, S.J. 2010. Using exploratory factor analysis in personality research: Best-practice recommendations. *SA Journal of Industrial Psychology*, 36(1), pp. 1-7. <https://doi.org/10.4102/sajip.v36i1.873>
- Lavy, V. & Sand, E. 2018. On the origins of gender gaps in human capital: Short- and long-term consequences of teachers' biases. *Journal of Public Economics*, 167, pp. 263-279. <https://doi.org/10.1016/j.jpubeco.2018.09.007>
- Leedy, P.D. & Ormrod, J. 2010. Practical research: Planning and design. Merrill, OH: Prentice Hall.
- Lekchiri, S. & Kamm, J.D. 2020. Navigating barriers faced by women in leadership positions in the US construction industry: A retrospective on women's continued struggle in a male-dominated industry. *European Journal of Training and Development*, 44(6/7), pp. 575-594.
- Madikizela, K. & Haupt, T. 2010. Influences on women's choices of careers in construction: A South African study. *Construction Economics and Building*, 10(1/2), pp. 1-15.

Original Article

- Makarova, E., Aeschlimann, B. & Herzog, W. 2016. Why is the pipeline leaking? Experiences of young women in STEM vocational education and training and their adjustment strategies. *Empirical Research in Vocational Education and Training*, 8(2), pp. 1-18.
- Makarova, E., Aeschlimann, B. & Herzog, W. 2019. The gender gap in STEM fields: The impact of the gender stereotype of math and science on secondary students' career aspirations. *Frontiers in Education*, 4, article number 60.
- Malach-Pines, A. & Kaspi-Baruch, O. 2008. The role of culture and gender in the choice of a career in management. *Career Development International*, 13(4), pp. 306-319.
- Mangaroo-Pillay, S. & Botha, D. 2020. An exploration of women's workplace experiences in the South African mining industry. *Journal South African Institute of Mining and Metallurgy*, 120(8), pp. 475-483.
- Matsunaga, M.J. 2010. How to factor-analyze your data right: Do's, don'ts, and how- to's. *International Journal of Psychological Research*, 3(1), pp. 97-110.
- McDonald, S. 2011. What's in the "old boys" network? Accessing social capital in gendered and racialized networks. *Social Networks*, 33(4), pp. 317-330.
- Mgcotyelwa, N.B. 2013. Experiences of gender and power relations among a group of Black women holding leadership positions: A case study of six government departments in the Western Cape. Unpublished M-Art thesis. University of the Western Cape, South Africa.
- Miville, M.L., Mendez, N. & Louie, M. 2017. Latina/o gender roles: A content analysis of empirical research from 1982 to 2013. *Journal of Latina/o Psychology*, 5(3), pp. 173-194.
- Moccio, F. 2006. Pioneers, settlers or passers-by? Addressing female gender inequality in non-traditional jobs. New York State legislative hearings on the equal rights amendment to the New York State Constitution.
- Moodley, M.S. 2012. An investigation of the role of women in the South African construction industry. Unpublished MSc thesis. University of Johannesburg, South Africa.
- Mouton, N., Louw, G.P. & Strydom, G. 2013. Critical challenges of the South African school system. *International Business & Economics Research Journal*, 12(1), pp. 31-44.
- Moyo, A. & Crafford, G.J. 2010. The impact of hyperinflation on Zimbabwean construction industry. *Acta Structilia*, 17(2), pp. 53-83.
- Mujtaba, T. & Reiss, M. 2013. What sort of girl wants to study physics after the age of 16? Findings from a large-scale UK Survey. *International Journal of Science Education*, 35(17), pp. 2979-2998.

Original Article

- Naoum, S.G., Harris, J., Rizzuto, J. & Egbu, C. 2020. Gender in the construction industry: Literature review and comparative survey of men's and women's perceptions in UK construction consultancies. *Journal of Management in Engineering*, 36(2), article number 04019042.
- Navarro-Astor, E., Román-Onsalo, M. & Infante-Perea, M. 2017. Women's career development in the construction industry across 15 years: Main barriers. *Journal of Engineering, Design and Technology*, 15(2), pp. 199221.
- O'Connell, C. & McKimmon, M. 2021. Perceptions of barriers to career progression for academic women in STEM. *Societies*, 11(2), article number 27.
- O'Donnell, K., Botelho, J., Brown, J., González, G.M. & Head, W. 2015. Undergraduate research and its impact on student success for underrepresented students. *New Directions for Higher Education*, 169, pp. 27-38.
- Olsson, M. & Martiny, S.E. 2018. Does exposure to counter stereotypical role models influence girls' and women's gender stereotypes and career choices? A review of social psychological research. *Frontiers in Psychology*, 9, article number 2264. <https://doi.org/10.3389/fpsyg.2018.02264>
- Oo, B.L., Liu, X. & Lim, B.T.H. 2022. The experiences of tradeswomen in the Australian construction industry. *International Journal of Construction Management*, 22(8), pp.1408-1419.
- Opoku, A. & Williams, N. 2018. Second-generation gender bias: An exploratory study of the women's leadership gap in a UK construction organisation. *International Journal of Ethics and Systems*, 35(1), pp. 2-23.
- Othman, N.L. & Jaafar, M. 2013. Personal competency of selected women construction project managers in Malaysia. *Journal of Engineering, Design and Technology*, 11(3), pp. 76-287.
- Pallant, J. 2021. *SPSS Survival Manual: A step-by-step guide to data analysis using IBM SPSS*. London: Routledge.
- Panteli, N. & Urquhart, C. 2022. Job crafting for female contractors in a male dominated profession. *New Technology, Work and Employment*, 37(1), pp. 102-123.
- Polenova, E., Vedral, A., Brisson, L. & Zinn, L. 2018. Emerging between two worlds: A longitudinal study of career identity of students from Asian American immigrant families. *Emerging Adulthood*, 6(1), pp. 53-65.
- Porfeli, E.J., Hartung, P.J. & Vondracek, F.W. 2008. Children's vocational development: A research rationale. *The Career Development Quarterly*, 57(1), pp. 25-37.
- Powell, A. & Sang, K.J. 2015. Everyday experiences of sexism in maledominated professions: A Bourdieusian perspective. *Sociology*, 49(5), pp. 919-936.

Original Article

- Rocha, V. & Van Praag, M. 2020. Mind the gap: The role of gender in entrepreneurial career choice and social influence by founders. *Strategic Management Journal*, 41(5), pp. 841-866. <https://doi.org/10.1002/smj.3135>
- Rosa, J.E., Hon, C.K., Xia, B. & Lamari, F. 2017. Challenges, success factors and strategies for women's career development in the Australian construction industry. *Construction Economics and Building*, 17(3), pp. 27-46.
- Rudman, L.A. & Glick, P. 2001. Prescriptive gender stereotypes and backlash toward agentic women. *Journal of Social Issues*, 57(4), pp. 743-762.
- Sang, K. & Powell, A. 2012. Gender inequality in the construction industry: Lessons from Pierre Bourdieu. In: *Proceedings of the 28th Annual ARCOM Conference*, 3-5 September, Edinburgh. UK: Association of researchers in construction management, pp. 237-247.
- Sangweni, N. 2015. Women in construction: Hindrances that shorten the professional working life of female site engineers on construction sites in South Africa. Unpublished PhD thesis. University of the Witwatersrand.
- Sassler, S., Glass, J., Levitte, Y. & Michelmore, K.M. 2017. The missing women in STEM? Assessing gender differentials in the factors associated with transition to first jobs. *Social Science Research*, 63, pp. 192-208.
- Saucerman, J. & Vasquez, K.J. 2014. Psychological barriers to STEM participation for women over the course of development. *AdultSpan Journal*, 13(1), pp. 46-64.
- Saunders, M., Lewis, P. & Thornhill, A. 2009. *Research methods for business students*. New York: Pearson Education.
- Schultheiss, D.E. 2003. A relational approach to career counselling: Theoretical integration and practical application. *Journal of Counselling and Development*, 81(3), pp. 301-310.
- Sekaran, U. & Bougie, R. 2010. *Research for business – A skill building approach*. New York: John-Wiley and Sons.
- Serra, P., Soler, S., Camacho-Miñano, M.J., Rey-Cao, A.I. & Vilanova, A.J. 2019. Gendered career choices: Paths towards studying a degree in physical activity and sport science. *Frontiers in Psychology*, 10, article number 1986.
- Shapiro, M., Ingols, C., O'Neill, R. & Blake Beard, S. 2009. Making sense of women as career self-agents: Implications for human resource development. *Human Resource Development Quarterly*, 20, pp. 477-501.
- Shapiro, M., Grossman, D., Carter, S., Martin, K., Deyton, P. & Hammer,

Original Article

- D. 2015. Middle school girls and the “Leaky Pipeline” to leadership. *Middle School Journal*, 46(5), pp. 3-13. 461919
- Shelley, T., Morabito, M.S. & Tobin-Gurley, J.J. 2011. Gendered institutions and gender roles: Understanding the experiences of women in policing. *Criminal Justice Studies*, 24(4), pp. 351-367.
- Solbes-Canales, I., Valverde-Montesino, S. & Herranz-Hernández, P. 2020. Socialization of gender stereotypes related to attributes and professions among young Spanish school-aged children. *Frontiers in Psychology*, 11, article number 609.
- Stockemer, D. 2019. *Quantitative methods for the social sciences*. Switzerland: Springer.
- Su, R. & Rounds, J. 2015. All STEM fields are not created equal: People and things interests explain gender disparities across STEM fields. *Frontiers in Psychology*, 25(6), article number 189.
- Suraj-Narayan, G. 2010. Gender, race and stress amongst women in management. *Social Work/Maatskaplike Werk*, 46(2), pp. 234-238.
- Szelényi, K., Denson, N. & Inkelas, K.K. 2013. Women in STEM majors and professional outcome expectations: The role of living-learning programs and other college environments. *Research in Higher Education*, 54(8), pp. 851-873.
- Tabachnick, B.G. & Fidell, L.S. 2013. *Using multivariate statistics*. Boston, MA: Pearson.
- Taber, K.S. 2018. The use of Cronbach’s alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), pp. 1273-1296.
- Tapia, M., Safapour, E., Kermanshachi, S. & Akhavian, R. 2020. Investigation of the barriers and their overcoming solutions to women’s involvement in the US construction industry. In: El Asmar, M. (Ed.), *Proceedings of the Construction Research Congress 2020: Safety, Workforce, and Education*, 8-10 March, Tempe, Arizona. Reston, VA: American Society of Civil Engineers, pp. 810-818.
- Vainikolo, K. 2017. Women’s career paths in the construction industry in New Zealand. Unpublished PhD thesis. Auckland University of Technology.
- Van Tuijl, C. & Van der Molen, J.H.W. 2016. Study choice and career development in STEM fields: An overview and integration of the research.

Original Article

- Wang, M.T. & Degol, J.L. 2017. Gender gap in Science, Technology, Engineering, and Mathematics (STEM): Current knowledge, implications for practice, policy, and future directions. *Educational Psychology Review*, 29(1), pp. 119-140.
- Watson, M., McMahon, M. & Longe, P. 2011. Occupational interests and aspirations of rural Black South African children: Considerations for theory, research and practice. *Journal of Psychology in Africa*, 21(3), pp. 413-420.
- Watts, J.H. 2009. Leaders of men: Women 'managing' in construction. *Work, Employment and Society*, 23(3), pp. 512-530.
- Wells, E.M., Delgado-Romero, E.A. & Shelton, K.L. 2010. An analysis of race and ethnic categories in career research from 1990 to 2007. *Journal of Career Development*, 37, pp. 503-518.
- Whiston, S.C. & Keller, B.K. 2004. The influences of the family of origin on career development: A review and analysis. *The Counselling Psychologist*, 32(4), pp. 493-568.