

The validation of a study crafting scale within the South African higher education context

M Ferreira

 orcid.org/0000-0002-0748-535X

Mini-dissertation accepted in partial fulfilment of the requirements for the degree [Master of Commerce](#) in [Industrial and Organisational Psychology](#) at the North-West University

Supervisor: Prof LT de Beer

Co-Supervisor: Prof K Mostert

Graduation: May 2020

Student number: 24969125

COMMENTS

The following remarks are important to note beforehand:

- The guidelines followed for the editorial style of this mini-dissertation is specified by the *South African Journal of Industrial Psychology (SAJIP)*. Furthermore, the referencing style used in this mini-dissertation follows the format prescribed by the Publication Manual (6th ed.) of the American Psychological Association (APA). According to the policy of the Programme in Industrial Psychology of the North-West University (Potchefstroom), these applications are to be used with the APA referencing style in all scientific documents as from January 1999.
- This mini-dissertation is submitted in the form of a research article.
- Additionally, the first chapter is a revised version of the submitted and approved research proposal.
- The chapters each contain separate reference lists.

DECLARATION

I, **Marlouise Ferreira**, hereby confirm that this mini-dissertation titled “The validation of a study crafting scale within the South African higher education context” is my own work. Likewise, the understandings and views expressed in the research article are those of the author and from the relevant literature, references are suitably cited in the reference lists.

In addition, I declare further that the content of this research study was and will not be submitted for any other qualification at any other tertiary institution.



Marlouise Ferreira
November 2019

AUTHORS' CONTRIBUTIONS AND DECLARATIONS

This research study was designed and carried out by three researchers at the North-West University, Potchefstroom Campus. In the table below, the contributions of each researcher are indicated.

Ms M. Ferreira	Master's student (M Com Industrial Psychology): responsible for the literature review, conducting of the research process, interpretation of the research findings and data, and liable for writing the research proposal and dissertation.
Prof. L. T. De Beer	Supervisor: conducted the statistical analyses, critical reviewer of the total research study.
Prof. K. Mostert	Co-supervisor: critical reviewer of the research proposal, literature review and research article.

With this statement, the student (author) and supervisors (co-authors) declare and confirm their roles in this research study. This declaration also indicates that all authors agree that the appropriate format was used for the submission of this mini-dissertation at the North-West University. All authors agree that the contents of this research study and any modified version may be used and published by an author in peer-reviewed academic journals and/or presented at academic conferences.



Ms M. Ferreira



Prof. L. T. De Beer



Prof. K. Mostert

WELLINGTON

7655

20 November 2019

TO WHOM IT MAY CONCERN:

I hereby confirm that the M Com dissertation *The validation of a study crafting scale within the South African higher education context* by Ms M Ferreira (student no: 24969125) was edited and groomed to the best of my ability. The processing included recommendations to improve the language and logical structure, guide the line of argument as well as to enhance the presentation. I am satisfied that, provided my changes to the text and my recommendations are implemented, the language would be of a standard fit for publication.

Rev Claude Vosloo

Language and knowledge practitioner and consultant

Home of Creativity/Kreatiwiteitshuis

<http://homeofcreativity.co.za/info>

ID: 590806 5146 085

South African Translator's Institute reference no: 100 2432

Associate Member of PEG (Professional Editor's Guild)

Home of Creativity ULTD 

Don't think outside the box, reinvent the box

ACKNOWLEDGEMENTS

Foremost, I wish to express my gratitude to my heavenly Father who has guided me throughout this journey, has given me the strength, continuous drive, and blessed me with the capacity to undertake this endeavour.

Secondly, I would like to give thanks to the following persons for their assistance and support:

- My research supervisors Prof Leon de Beer and Prof Karina Mostert, for all of their time, inputs, dedication, guidance, advice, and support. Thank you for being kind, considerate and understanding throughout. Prof Leon, thank you for always having an open door, being helpful, prompt, and especially for your assistance with the statistical analysis of the data. To Prof Karina, thank you for allowing me the opportunity to work on the StudyWell research project, for your encouragement and provision of expert advice, and for assistance with data coordination. None of this would have been possible without having both of you as supervisors.
- To my mother, thank you for your guidance, support, and motivation. Thank you for the continual words of encouragement and for having faith in me. You truly supported me when I needed it, financially as well as on a personal level. To my late father, I would like to thank you for the continued support that you provided me with all my life. Your example of hard work and persistence has inspired me to draw on those same character traits in this research endeavour.
- Furthermore, I would like to thank my siblings for their love and support and for ‘lending an ear’ when I needed it most. I appreciate your support and consideration more than you would ever know.
- A sincere thank you to my closest group of friends for their continued support and belief in me.
- I would like to thank Mr Ian Rothmann Jr. for managing the web-based surveys.
- A big thank you to Ms Adéle Kapp, Ms Elette van den Berg and her team of field workers, as well as Dr Musawenkosi Donia Saurombe for your assistance in distributing the printed survey booklets. Also, for making suitable arrangements for the data collection phase.
- Thank you to the Deputy Vice-Chancellor: Teaching and Learning, North-West University for making available funds to this research study. The material described in this dissertation is based on work supported by the office of this Deputy Vice-Chancellor. The views and

opinions expressed in this research are those of the researcher and do not reflect the opinion or views of the funder.

- Thank you, Rev Claude Vosloo, for the professional language and technical editing of this mini-dissertation.

TABLE OF CONTENTS

List of Tables	ix
List of Figures	x
Summary	xi
Opsomming	xiii

CHAPTER 1: INTRODUCTION

1.1	Problem statement	2
1.2	Research objectives	12
1.2.1	General objective	12
1.2.2	Specific objectives	12
1.3	Research hypotheses	13
1.4	Research method	13
1.4.1	Literature review	13
1.4.2	Research design	14
1.4.3	Research participants	14
1.4.4	Measuring instruments	15
1.4.5	Research procedure	17
1.4.6	Statistical analysis	19
1.4.7	Ethical considerations	20
1.5	Overview of chapters	21
1.6	Chapter summary	21
	References	22

CHAPTER 2: RESEARCH ARTICLE

	Abstract	32
	Introduction	34
	Literature review	36
	Background and conceptualisation of crafting	36
	Developing a measure for student crafting behaviour	38
	The psychometric properties of the Job Crafting Scale	39
	Research design	44

Research approach	44
Research method	44
Research participants	44
Measuring instruments	46
Research procedure	48
Statistical analysis	50
Results	51
Discussion	60
Summary of the findings	60
Practical implications	63
Limitations and recommendations for future research	64
Conclusion	65
Author's note	66
References	67

CHAPTER 3: CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

3.1	Conclusions	77
3.2	Limitations of the research	81
3.3	Recommendations	82
3.3.1	Recommendations for practice	82
3.3.2	Recommendations for future research	83
3.4	Conclusion	85
	References	86

APPENDIX A: THE ADAPTED STUDY CRAFTING SCALE 1

LIST OF TABLES

Table	Description	Page
Table 1	Characteristics of the total sample group's participants ($N = 611$)	45
Table 2	Correlations between the factors and the standardised factor loadings of the items	52
Table 3	Standardised loadings for the study crafting factors	54
Table 4	Reliabilities and correlation matrix for the study crafting factors	55
Table 5	Standardised loadings for the latent variables	56
Table 6	Reliabilities and correlation matrix for the latent variables	58
Table 7	Regression results for the structural model	60

LIST OF FIGURES

Figures	Description	Page
Figure 1	The Job Demands-Resources (JD-R) Model of Bakker and Demerouti (2014)	7
Figure 2	The structural model for the investigation of criterion validity	51
Figure 3	Plot of the actual versus randomly generated eigenvalues	52

SUMMARY

Title: The validation of a study crafting scale within the South African higher education context

Keywords: Study crafting, job crafting, validation, structural equation modelling, student engagement, study-course fit, strengths use and deficit correction behaviour, higher education context

Students at higher education institutions (HEIs) face various challenges in their studies. Higher education students, particularly first-year students, are, for instance, faced with increasing study demands, despite having insufficient resources and can be confronted with difficulties of time management. These challenges can negatively impact on student success, also affecting graduate dropout rates.

In order to address such challenges and add to student success during the first year of study, students need to learn to function more proactively in addressing the challenges they face. Given the importance of proactive student behaviour, for the present research study, a new type of proactive behaviour was introduced, labelled ‘study crafting’. Furthermore, as this study is the first to introduce and evaluate the study crafting construct within the higher education context, no existing crafting measure could be used for this evaluation. A need was, therefore, identified for a valid study crafting scale (SCS). The general aim of this study was thus to validate a newly-developed SCS for South African HEIs by investigating the factorial validity, reliability, convergent and discriminant validity, as well as the criterion validity of the newly-developed scale.

For this study, a cross-sectional research design was employed to gather data. Data were collected from a sample of 611 first-year students from a HEI in South Africa. These participants took part voluntarily as a convenient sampling method was used. After collecting the data from the participants, the statistical modelling programmes of JASP 0.9.2.0 and Mplus 8.1 were used to investigate the psychometric properties of the SCS. In particular, exploratory factor analysis (EFA) was used to ascertain the number of study crafting factors, whilst confirmatory factor analysis (CFA) confirmed the factor structure of the scale. With CFA, the

fit of the measuring model to the data was considered. The results from the factor analysis provided evidence of a three-factor structure of study crafting, namely: applying internal resources (AIR), seeking lecturer support (SLS), and seeking peer support (SPS). The researcher also attempted to establish the reliability of the SCS for all three factors. To determine the scale's reliability, Cronbach's alpha coefficients were considered acceptable at a value of 0.70 and above. The research findings provided sufficient evidence of acceptable reliability.

Additionally, the convergent and discriminant validity of the SCS were investigated. The findings indicated that the scale correlates positively with the theoretically-similar constructs of strengths use behaviour (SUB) and deficit correction behaviour (DCB). These results, therefore, provided evidence of convergent validity. Thereafter, discriminant validity was determined where acceptable intercorrelations between all of the latent variables were found. Discriminant validity was established further by comparing constrained versus unconstrained models where a significant difference was found. Finally, the criterion validity of the SCS was investigated by inserting regression paths in the final measuring model where the significance but also the size and direction of the beta coefficient values were considered. The reported findings indicated that AIR significantly predicts both outcome variables of student engagement and study-course fit. On the other hand, the findings showed that the study crafting factors of SLS and SPS do not relate significantly to either variable of student engagement or study-course fit.

Based on the research findings, the researcher drew conclusions about the phenomenon of study crafting. To round off the study, recommendations were made to apply the SCS in practice and for future research in this field.

OPSOMMING

Titel: Die validering van 'n studie-vormingskaal binne die Suid-Afrikaanse hoërondewyskonteks

Sleutelwoorde: Studie-vorming, werkvorming, validering, strukturele vergelykingsmodellering, studentebetrokkenheid, studie-kursus passing, sterkpunt-gebruik en tekortkoming-korrigeringsgedrag, hoërondewyskonteks

Studente aan hoërondewysinstellings (HOI's) staar verskillende uitdagings in hul studies in die gesig. Hoërondewysstudente, veral eerstejaarstudente, word byvoorbeeld gekonfronteer met toenemende studievereistes, ondanks die feit dat hulle nie oor voldoende hulpbronne beskik nie en met probleme met tydsbestuur gekonfronteer kan word. Hierdie uitdagings kan 'n negatiewe uitwerking op studentesukses hê, en dit kan ook 'n uitwerking hê op die afneem van gegraduateerdes.

Om sulke uitdagings die hoof te bied en sodoende 'n bydrae te lewer tot studentesukses gedurende die eerste studiejaar, moet studente leer om meer proaktief te funksioneer om die uitdagings wat hulle in die gesig staar, aan te pak. Gegewe die belangrikheid van proaktiewe gedrag van studente, is 'n nuwe soort proaktiewe gedrag vir die huidige navorsingstudie bekendgestel, aangewys as "studie-vorming". Aangesien hierdie studie die eerste is om die studie-vorming konstrueer binne die konteks van die hoër onderwys bekend te stel en evalueer, kon geen bestaande vormingmaatstaf vir hierdie evaluering gebruik word nie. Daarom is 'n behoefte geïdentifiseer vir 'n geldige studie-vormingskaal (SVS). Die algemene doelstelling van hierdie studie was dus om 'n nuut-ontwikkelde SVS vir die Suid-Afrikaanse HOI's te valideer deur die feitegeldigheid, betroubaarheid, konvergente en diskriminerende geldigheid, sowel as die kriteriumgeldigheid van die nuut-ontwikkelde skaal, te ondersoek.

Vir hierdie ondersoek is 'n deursnitnavorsingsontwerp gebruik om data te versamel. Data is versamel uit 'n steekproef van 611 eerstejaarstudente aan 'n HOI in Suid-Afrika. Hierdie deelnemers het vrywillig aan die studie deelgeneem aangesien 'n gerieflike steekproefmetode gebruik is. Nadat die data van die deelnemers verkry is, is die statistiese modelleringsprogramme, JASP 0.9.2.0 en Mplus 8.1, gebruik om die psigometriese eienskappe

van die SVS te ondersoek. Verkennende faktoranalise (VFA) is spesifiek gebruik om die aantal studiefaktore vas te stel, terwyl bevestigende faktoranalise (BFA) die faktorstruktuur van die skaal bevestig het. Deur VFA is dit oorweeg of die metingsmodel by die data pas. Die resultate van die faktoranalise het 'n drie-faktorstruktuur van studie-vorming uitgewys, naamlik: toepassing van interne hulpbronne (TIH), soeke na dosenteondersteuning (SDO) en soeke na portuurondersteuning (SPO). Die navorser het ook gepoog om die betroubaarheid van die SVS vir al drie faktore vasgestel. Om betroubaarheid van die skaal vas te stel, is Cronbach se alfa-koëffisiënte as aanvaarbaar beskou teen 'n waarde van 0.70 en hoër. Die bevindings het voldoende bewys van aanvaarbare betroubaarheid gelewer.

Die konvergente en diskriminerende geldigheid van die SVS is ook ondersoek. Die bevindings het aangedui dat die skaal positief korreleer met die teoreties-soortgelyke konstrunkte van sterkpunt-gebruikgedrag (SGG) en tekortkoming-korrigeringsgedrag (TKG). Hierdie resultate toon dus konvergente geldigheid. Daarna is die diskriminante geldigheid bepaal waar aanvaarbare interkorrelasies tussen al die latente veranderlikes gevind is. Diskriminante geldigheid is voorts vasgestel deur beperkte en onbeperkte modelle te vergelyk, waar 'n beduidende verskil gevind is. Laastens is die kriteriumgeldigheid van die SVS ondersoek deur regressiepaaië in die finale metingsmodel in te voeg, waar die betekenis, maar ook die grootte en rigting van die beta-koëffisiëntwaardes in ag geneem is. Die bevindings wat gerapporteer is, het aangedui dat TIH beide die uitkomsveranderlikes van studentebetrokkenheid en studie-kursus passing beduidend voorspel. Daarteenoor het die resultate getoon dat die studie-vormingfaktore van SDO en SPO nie betekenisvolle betrekking op veranderlikes van studentebetrokkenheid of die studie-kursus passing gehad het nie.

Op grond van die navorsingsbevindings het die navorser gevolgtrekkings gemaak oor die verskynsel van studie-vorming. Om die studie af te rond, is aanbevelings ook gemaak om die SVS in die praktyk toe te pas, en vir toekomstige navorsing in hierdie rigting.

CHAPTER 1
INTRODUCTION

INTRODUCTION

The present study aimed to validate a newly-developed study crafting scale (SCS) for higher education institutions (HEIs). Even though the SCS was developed during a previous qualitative phase of the overarching research project, this research study focused on validating this newly-developed scale for use in practice. The intention was to produce a reliable, valid instrument to assess the crafting behaviours of students at tertiary institutions in South Africa. To achieve this aim, various statistical methods were employed, namely factorial validity, reliability, as well as convergent, discriminant and criterion validity. This chapter, therefore, presents the problem statement and offers an overview of former research on the use of crafting behaviours, particularly within the organisational context. Furthermore, the questions, objectives, and hypotheses for the research are provided. This is followed by a breakdown of the research methodology ended off by a brief layout of the chapters.

1.1 PROBLEM STATEMENT

Higher education institutions (HEIs) in South Africa are confronted with numerous challenges, especially strategic management in light of the current precarious financial situation in the country (Habib, 2016; Teferra & Altbach, 2004). In particular, universities and other HEIs are confronted with low graduation rates, high dropout rates as well as increased student unrest and protests. Further challenges entail students being unprepared for higher education and experiencing problems with funding (Habib, 2016; Letsaka & Maile, 2008; Lowe & Cook, 2003; Mouton, Louw & Strydom, 2013; Teferra & Altbach, 2004). In addition, HEIs must not only operate but also increase access to higher education for all South Africans, in circumstances exasperated by political, economic and social difficulties (Teferra & Altbach, 2004). Furthermore, students are confronted with personal challenges. These issues include a lack of academic readiness, poor time management, exaggerated educational expectations, difficulties in linking theory to practice, experiences of homesickness, and the stressful transition to the tertiary environment (Goldrick-Rab, 2010; Murtonen & Lehtinen, 2003; Roderick, Nagaoka, Coca & Moeller, 2009; Van der Meer, Jansen & Torenbeek, 2010; Urani, Miller, Johnson & Petzel, 2003).

In light of the above-mentioned challenges, HEIs must be proactive by adapting their policies and curricula to promote student success (Engle & O'Brien, 2007). Seeing that the 21st century

is considered a knowledge era, institutions need to assume responsibility for providing quality education and prepared graduates (Mouton et al., 2013; Teferra & Altbach, 2004). HEIs can thus proactively focus on their retention strategies to address low graduation and high dropout rates (Thayer, 2000). For this purpose, HEIs require a policy to improve student support systems, whilst elevating learning environments where “staff members act as first responders to students’ needs” (Engle & O’Brien, 2007, p. 3; Thayer, 2000). Students have also shown that they are academically more successful at institutions that focus on improving their first-year experience (Engle & O’Brien, 2007; Tinto, 2003). Moreover, through their facilities and services, HEIs can largely impact on students’ overall experience at a university. Generally, such an impact is provided by the courses offered at the institution, the condition of the facilities, the presence of specialist lecturers for teaching, and the availability of student accommodation (Price, Matzdorf, Smith & Agahi, 2003; Regan, 2012).

Overall, HEIs are responsible for knowledge distribution and for supplying qualified graduates as the employees and entrepreneurs of the future (Badat, 2010). To achieve this goal, institutions typically provide facilities such as computer labs, libraries, Internet Technology services, quiet study rooms, and additional tutoring programmes (Price et al., 2003). Thus, by offering the mentioned facilities and features, HEIs can effectively and positively influence students’ academic learning experience (Fleming & Storr, 1999). Several HEIs also offer mental health services, supportive counselling services, facilities for physical recreation, student societies, community-based outreach programmes, and social activities for students (Grant-Valonne, Reid, Umali & Pohlert, 2003; Knight, 1999; Reed, 2007; Yorgason, Linville & Zitzman, 2008). These resources contribute to the experience of being a student. In other words, HEIs attend to both the academic and student experience of their clients (i.e. students). To do this properly, HEIs are confronted with the enormous task of dealing with the various challenges mentioned earlier.

Consequently, these institutions can benefit from obtaining knowledge and assistance from organisational experts. Among these experts are Industrial Psychologists. As specified by the South African Department of Health (2011), Industrial and Organisational (IO) Psychologists can provide assistance to HEIs by “facilitating individual and group processes for effective institutional functioning; by designing and implementing training programmes for effective institutional functioning; designing and developing strategies in consumer behaviour; through developing interventions to ameliorate poor performance in the work setting; and by designing

and implementing programmes based on the understanding of ergonomics” (p. 10). IO Psychologists may, therefore, provide HEIs with programmes and interventions to enrich the functioning of their students, academic staff, and ultimately, the institution as a whole. These interventions may help improve the management of these institutions’ assets as well as their ability to compete fiscally in the marketplace. In this regard, IO Psychologists fulfil an important role in the functioning of HEIs. Thus, it stands to reason that HEIs should acquire the knowledge and services of IO Psychologists who, through research, can provide expert opinions and recommendations to enhance, for example, the offered student support services.

Although universities should support students, it is a shared responsibility where students ought to be involved proactively in their academic success. Given the current situation within the South African higher education setting, students have to assume more responsibility to realise academic success, especially since the emphasis is placed on the “student’s own role” in modelling his or her engagement (Kahn, 2014, p. 1006). This implies that students must take the initiative to meet their own study demands. However, most students presently enrolled at HEIs are part of the so-called millennials – individuals born from 1982 to 2002 (Elam, Stratton & Gibson, 2007; Howe & Strauss, 2000). Seemingly millennial students, compared to other generations, generally need others to provide them direction and approval, whilst expecting to be presented with structure (Crone & MacKay, 2007; DeBard, 2004). In particular, millennial students may require a structure of accountability for their education (DeBard, 2004). This suggesting that “millennials expect to be held accountable” where they strive to achieve this accountability through the display of good behaviour (Debard, 2004, p. 37).

Additionally, even though certain millennials are hardworking and invest in their studies, others still insist on instant gratification. The latter group provides relatively limited input to succeed in their studies (Crone & MacKay, 2007; McGlynn, 2008). By seeking instant gratification this can encourage further impractical expectations, where students may turn to others to deal with problems on their behalf (Tyler, 2007). Such an attitude may be due to the helplessness the millennials have become accustomed to during their childhood (Odenweller, Booth-Butterfield & Weber, 2014; Twenge, 2006). This helplessness may imply that certain millennials were not exposed to situations of failure whilst growing up. The reason being that their parents often typically took on excessive responsibility for their experiences, successes as well as failures (Bayless, 2013; Odenweller et al., 2014). Scriber and Trowbridge (2009) explain learned helplessness as instances where students no longer challenge their educators

with their opinions; they rather begin to distrust their own academic capacity, thereby doubting their ability to overcome difficulties (Sutherland & Singh, 2004). Such learned helplessness may explain why several millennial students appear to be directionless after graduating from HEIs, lacking proactivity (DeBard, 2004).

To address this helplessness, students must develop into intentional learners who explore, reflect upon, and integrate their education and experiences, thereby actively reaching their study goals (Association of American Colleges and Universities, 2002). This need underlines the importance for students to develop themselves and build a capacity to behave proactively. Essentially, proactive behaviour is to take the initiative to improve current circumstances; this means dealing actively with trials (Bindl & Parker, 2010). Proactiveness means anticipating future change behaviours, persevering despite difficulties, and challenging current situations (Crant, 2000; Frese & Fay, 2001; Parker, 2000). There are different types of proactive behaviours, namely: seeking feedback, socialising and building networks, and uncovering and taking initiatives for change. These forms of behaviour also include information gathering and novelty, problem-solving, issue selling, as well as helping others by managing their careers and work stresses (Ashford & Black, 1996; Ashford, Blatt & Van de Walle, 2003; Crant, 2000; Frese & Fay, 2001; Grant & Ashford, 2008; Morrison, 1993; Organ, 1988; Wrzesniewski & Dutton, 2001).

Organisational studies have researched a prevalent form of proactive behaviour, namely *job crafting*. The proactive behaviour labelled as “job crafting” was initially presented in 2001 by Wrzesniewski and Dutton (p. 179). Job crafting refers to “self-initiated behaviours” that employees adopt to make their work more meaningful (Parker & Collins, 2010, p. 639; Wrzesniewski & Dutton, 2001). Fundamentally, job crafting involves taking action in anticipation of a certain future situation by controlling for and initiating change (Parker & Collins, 2010). Wrzesniewski and Dutton (2001) explain job crafting as “changes (physical and cognitive)” people make in their profession as well as associated duties and assignments (p. 179). Job crafting thus entails a form of proactive behaviour that employees follow within the context of their job tasks, work perceptions and work relationships (Singh & Singh, 2016; Wrzesniewski & Dutton, 2001). Furthermore, Bakker, Tims and Derks (2012) report that “those who engage in job crafting proactively try to align their working conditions to their own needs and abilities” (p. 1364). Job crafting in particular outlines the changes made after individual employees take the initiative to balance the demands and resources of their job

(Tims, Bakker & Derks, 2012; Tims & Bakker, 2010). In this regard, Tims et al. (2012) report that job crafting consists of four dimensions, which entails the initiative to “increase structural job resources, increase social job resources, decrease hindering job demands, and to increase challenging job demands” (p. 173).

However, the present study applied the concept of job crafting to the higher education environment, informed by the Job Demands-Resources (JD-R) model as the theoretical basis (Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Tims & Bakker, 2010; Tims et al., 2012). It was thus proposed that crafting in the higher education context will consist of four dimensions similar to that of job crafting. Viewed from the perspective of the JD-R model, every job consists of both demands and resources (Bakker & Demerouti, 2007; Bakker & Demerouti, 2017). Thus, all demands require that certain resources should be present as well to buffer those demands. More to the point, job demands entail aspects within the working environment that require sustained effort, both physically and mentally, and imply that an activity needs to be completed (Jones & Fletcher, 1996; Demerouti et al., 2001). Typical job demands are: time pressure, workload, mental load, emotional demands, physical demands, interferences between work and life, experiences of diversity, and intimidation within the work context (Bakker & Demerouti, 2007; Rothmann, 2018).

In contrast to demands, job resources relate to “the physical, psychological, social or organisational aspects” of work “that may reduce demands” and help attain objectives at work (Schaufeli & Bakker, 2004, p. 296). Simply put, these are the tools which individual employees need to perform their job effectively (Rothmann, 2018). Job resources include aspects such as: supervisory relationships, colleague support, role clarity, job information, communication structures, growth opportunities, organisational support, person-job fit, autonomy, and career advancement (Bakker & Demerouti, 2007; Jackson, Rothmann & Van de Vijver, 2006; Rothmann, 2018). However, at times employees may encounter excessive demands that cannot be buffered by their available resources.

In the context of this study, students at HEIs are often faced with increasing levels of study demands, together with a lack of sufficient resources (Salanova, Schaufeli, Martinez, & Bresó, 2010). In an attempt to cope, some may increase their resources. This is in line with the supposition that employees tend to increase their resources in the work context for motivation (Tims et al., 2012). A further supposition of the JD-R model is that two separate processes

occur – an “energy impairment process” and a “motivational process” (Bakker & Demerouti, 2007, p. 313). During the energy procedure, an individual’s demands drain their resources, which may cause health impairment problems such as exhaustion (Bakker & Demerouti, 2014; Demerouti et al., 2001; Leiter, 1993). On the other hand, from the perspective of the motivational process, resources provide motivation and can predict the wellness outcomes of engagement, performance and commitment (Bakker & Demerouti, 2007; Bakker & Demerouti, 2014). Additionally, the JD-R model can be used to explain the role and importance of crafting (Petrou, Demerouti, Peeters, Schaufeli & Hetland, 2012). Figure 1 below depicts the mentioned JD-R model used by the present study.

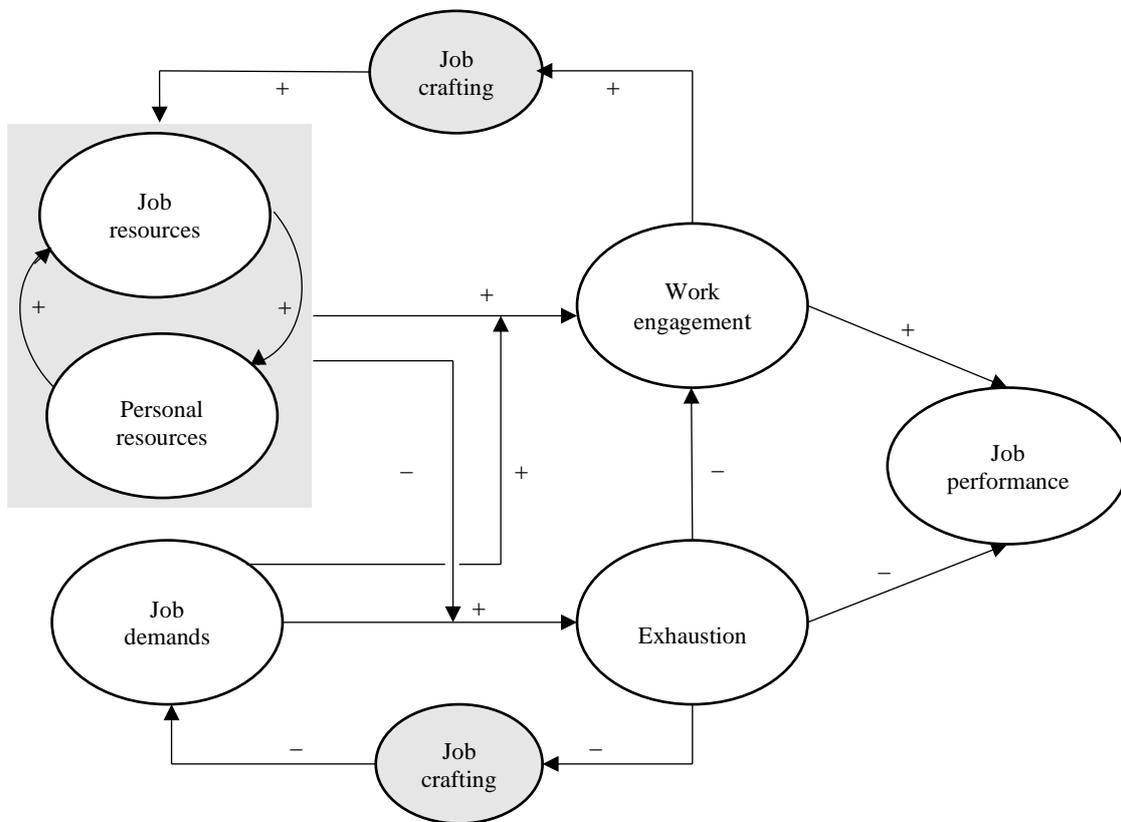


Figure 1: *The Job Demands-Resources (JD-R) model of Bakker and Demerouti (2014).*

As is evident from Figure 1, job crafting may help to increase the beneficial outcome of work engagement and buffer the undesirable influences of excessive job demands (Demerouti et al., 2001; Tims & Bakker, 2010). Therefore, job crafting can help reduce the negative outcome of exhaustion. In this regard, the crafting behaviour of employees, where changes are made to their demands and resources, can influence their levels of job satisfaction, exhaustion and engagement (Tims, Bakker & Derks, 2013).

Several research studies were conducted on the concept of job crafting. In a study by Bakker et al. (2012), it was established that proactive job crafting relates positively to high engagement levels in the workplace. This finding was substantiated in the South African mining and manufacturing sector. By supporting employees who craft their jobs, it can impact positively on their work engagement and job satisfaction (De Beer, Tims & Bakker, 2016). Findings from another study showed that job crafting predicts work engagement over time (Vogt, Hakanen, Brauchli, Jenny & Bauer, 2016). Additionally, such activity may also enhance the crafting of colleagues as well as their consequent engagement (Bakker, Rodríguez-Muñoz & Vergel, 2016). Thus, work engagement can increase employees' chances of remaining proactive in the future (Harju, Hakanen & Schaufeli, 2016).

Research also revealed a relationship between higher levels of engagement, job crafting, and improved person-job fit (Lu, Wang, Lu, Du & Bakker, 2014). Crafting, therefore, provides a means of creating optimum person-job fit (Lu et al., 2014). This finding is in line with a postulation in the latest version of the JD-R model, namely that individuals can construct or craft a conducive workplace for themselves (Tims, Derks & Bakker, 2016). In addition, Bakker (2011) found that job crafting mediates between the variables of work engagement and person-job fit. Crafting can thus fulfil an interceding role, which explains how engagement could lead to person-job fit (Lu et al., 2014). Accordingly, where jobs are crafted by engaged employees, they can significantly intensify their experiences of person-job fit.

Relevant to the present study, the JD-R model is applied increasingly in the academic environment of HEIs. For example, Wilson and Sheetz (2010) investigated a demands-resources model adapted specifically to research the performance of group tasks among Information Technology students. Although crafting is considered an important component of the JD-R model (Bakker & Demerouti, 2014), to date, this concept has not been applied to or investigated within the student context. Nevertheless, for the present study, the concept of crafting is necessary and important for both students and HEIs. The reason being that students can reduce their vulnerability in stressful situations through proactive crafting, thus actively increasing important resources such as control, feedback and variety (Westman, Hobfoll, Chen, Davidson & Laski, 2005). Crafting is also essential for students' coping with changes in and to their learning environments (Salanova & Schaufeli, 2008). Moreover, prior research indicates that crafting behaviours do result in various positive outcomes. Such outcomes are social relatedness, positive attitudes, as well as engagement, which lead to improved performance and

enhanced well-being (Bakker et al., 2012; Demerouti, Bakker & Halbesleben, 2015; Ko, 2011; Leana, Appelbaum & Shevchuk, 2009; Slemp & Vella-Brodrick, 2014; Tims et al., 2013).

The significance of crafting for students is also related to their need to learn from academic disappointments and to consider their study challenges more positively. Crafting behaviours can help students barter and share their academic tasks, form collaborative student relationships, and engage in more positive forms of behaviour while studying (Singh & Singh, 2016). Thus, students should probably benefit academically by demonstrating crafting behaviours. A focus on proactive crafting is vital and beneficial for HEIs as well (Luthans, Avolio, Avey & Norman, 2007). The crafting behaviour of students could help lower dropout rates by helping students to better adjust, develop resilience, and improve their academic performance (DeRosier, Frank, Schwartz & Leary, 2013). In addition, through fostering crafting, HEIs can better equip their students with the necessary skills, competencies, and knowledge. This will help these institutions deliver more successful, knowledgeable, and well-balanced students who are capable of succeeding within the workplace (Pidgeon, Rowe, Stapleton, Magyar & Lo, 2014; Wang, 2009).

In view of the mentioned importance of crafting behaviours for both students and HEIs, it is necessary to assess how this concept is applied practically in the higher education context of South Africa. Consequently, to evaluate the crafting construct in the higher education context, a valid and reliable measure is needed. Although there are numerous scales that measure job crafting in the organisational context, to date no valid scale has been developed to measure such behaviours within the student environment. Seeing as no such scale exists, the researcher identified the need to deliver a validated scale for measuring study crafting behaviours. The purpose of the present study was, therefore, to validate a newly-developed SCS by testing the factorial validity (exploratory and confirmatory), reliability as well as convergent, discriminant, and criterion validity of the scale. Although the newly-developed SCS was developed during the previous qualitative phase of the larger research project, the current research study focused on validating this newly-developed scale for use by HEIs. Details of the procedures followed in the development of the SCS follow in the research article.

For this study, crafting is expected to be theoretically related to certain proactive behavioural constructs since these refer to self-initiated modifications and changes (Van Woerkom et al., 2016). These proactive behavioural constructs can involve the behaviour patterns of proactive

personality, personal initiative, strengths use behaviour (SUB) and deficit correction behaviour (DCB), as well as the redefining of jobs or tasks (Van Woerkom et al., 2016; Wrzesniewski & Dutton, 2001). In particular, to examine the convergent validity in the present study, the study crafting construct was associated with the theoretically linked constructs of SUB and DCB (Mostert, Theron & De Beer, 2017; Van Woerkom et al., 2016). In this regard, SUB refers to the initiative of applying and exercising personal strengths and includes the seeking of complementary affiliations, for instance, with fellow students. In turn, DCB implies “the extent to which an organisation” or university effectively reinforces individuals or students to correct their deficits and shortfalls (Mostert et al., 2017; Van Woerkom et al., 2016, p. 961). Furthermore, the discriminant validity of the SCS was assessed statistically by considering whether all the correlations between the constructs were below 0.85 (Brown, 2015). Additionally, the method was used of constraining the latent variables to correlations of 1.00 in one model, compared to another where this is not the case. In other words, if the chi-square difference test showed a significant value, the correlation would be different from 1.00 and discriminant validity acceptable.

To examine the criterion validity of the newly-developed SCS, student engagement and study-course fit were used as outcome variables of study crafting. Student engagement can be conceptualised as the devotion and high vigour levels that students display, characterised by the maintenance of “a positive, fulfilling frame of mind” toward their studies (Schaufeli, Salanova, González-Romá & Bakker, 2002, p. 74). Several research studies have indicated that crafting is in fact related to engagement (Bakker et al., 2012; Petrou et al., 2012; Tims et al., 2012). A study by Ghitulescu (2006) also established the existence of a positive relationship between crafting and dedication.

For the present study, the second outcome variable of study-course fit is viewed as being similar to person-job fit. Saks and Ashforth (1997) describe person-job fit as an individual’s general perception of whether their knowledge, skills and abilities fit the requirements of their job. In a similar vein, study-course fit denotes the perceived fit between a student’s characteristics, such as their personal skills, and the characteristics or requirements of their study course (Hancock & Betts, 2002; Kristof-Brown, Zimmerman & Johnson, 2005). Person-job fit has been linked to crafting behaviour in the literature. Individuals can enhance their job fit “by crafting their job demands and job resources” and ultimately, the meaningfulness of their jobs

(Tims et al., 2016, p. 44). This implies that “employees can act upon their jobs to create a better fit” for themselves (Wrzesniewski & Dutton, 2001, p. 118).

In closing, the most prominent gap identified from previous research is that the concept of study crafting has not been explored to date. The present study, therefore, entailed a new research undertaking within the higher education context. The hypothesis was that research on crafting is important for organisations, in this case particularly HEIs, which are progressively viewed as business units (Habib, 2016). Such research is important mainly because proactive behaviour must be cultivated in these contexts over time. Accordingly, it was presumed that similar to job crafting, study crafting would imply that students shape and influence the design of their studies while being involved in their studies (Tims et al., 2016). Therefore, if students are exposed to the practice of actively “crafting” and take self-initiative within their studies, the more likely they may turn out to become successful graduates. Eventually such graduates will become employees capable of crafting in their future jobs. The working industry will thus find value in these students’ potential abilities to behave proactively. Proactive students may become action-orientated, goal-driven, persistent and challenge-seeking employees (Salanova & Schaufeli, 2008).

In light of the discussion above, the problem statement can be condensed as follows: Crafting behaviours are important to not only organisations but also to HEIs and consequently, there is a need to investigate proactive crafting behaviours within the higher education context.

In answer to the problem statement, the general objective of this study was to validate a newly-developed scale on study crafting in the South African higher education context. This study could hence provide HEIs with a valuable tool to identify student crafting levels and areas of intervention.

Research questions

The following research questions were formulated based on the existing research problem:

- How is crafting conceptualised according to the literature?
- What is the factorial validity of the newly-developed study crafting scale?
- What is the reliability (internal consistency) of the newly-developed study crafting scale?

- Is there convergent validity between the study crafting scale and strengths use behaviour, and with deficit correction behaviour?
- What is the discriminant validity of the newly-developed study crafting scale?
- Is there criterion validity between the study crafting scale and student engagement, and with study-course fit?
- What recommendations can be made for future research and practice?

1.2 RESEARCH OBJECTIVES

The research objectives were divided into a general objective and specific objectives.

1.2.1 General objective

The general objective of the present study was to validate a newly-developed study crafting scale within the HEI context of South Africa.

1.2.2 Specific objectives

The specific objectives, derived from the main aim of this research study were formulated as follows:

- Conceptualise crafting as according to the literature.
- Determine the factorial validity of the newly-developed study crafting scale.
- Determine the reliability (internal consistency) of the newly-developed study crafting scale.
- Determine whether there is convergent validity between the study crafting scale and strengths use behaviour, and with deficit correction behaviour.
- Determine the discriminant validity of the newly-developed study crafting scale.
- Determine whether there is criterion validity between the study crafting scale and student engagement, and with study-course fit.
- Make recommendations for future research and practice.

1.3 RESEARCH HYPOTHESES

The following hypotheses were formulated to answer the posed research questions and to attain the objectives:

H₁: Study crafting comprises a four-factor structure, namely increasing structural study resources, increasing social study resources, decreasing hindering study demands, and increasing challenging study demands.

H₂: The newly-developed study crafting scale shows acceptable reliability coefficients (i.e. Cronbach's alpha coefficient ≥ 0.70).

H₃: The study crafting scale shows acceptable convergent validity with strengths use behaviour and deficit correction behaviour.

H₄: The newly-developed crafting scale shows acceptable discriminant validity.

H₅: Study crafting explains a significant amount of variance in student engagement.

H₆: Study crafting explains a significant amount of variance in study-course fit.

1.4 RESEARCH METHOD

The research method followed two stages, namely a literature review followed by an empirical investigation. Based on these methods, the findings were reported in this research article.

1.4.1 Literature review

An in-depth and scientific literature review was done focusing on study crafting. Other appropriate keywords were used to explore the context and setting for the research. These keywords were: *job crafting*, *validation*, *structural equation modelling*, *student engagement*, *study-course fit*, *strengths use and deficit correction behaviour*, and *higher education context*. Numerous sources were assessed including the following search engines: ERIC, EbscoHost, SAePublications, ProQuest, Science Direct, Emerald, PsycArticles, Google Scholar, and Nexus.

Furthermore, research articles were consulted dating from 2000 to 2019, however, older articles and journals related to the constructs provided limited information. Various books were also consulted by using the library catalogue and other functions. As part of the review, journals

relevant to the study field were used such as: *South African Journal of Economic and Management Sciences*, *South African Journal of Industrial Psychology*, *South African Journal of Human Resources Management*, *Journal of Applied Psychology*, *Journal of Management*, *Journal of Managerial Psychology*, *Journal of Occupational Health Psychology*, *Journal of College Admission*, *Research in Organizational Behavior*, *Review of Educational Research*, *Journal of Southern African Studies*, *Academy of Management Journal*, *Journal of Further and Higher Education*, *Personnel Psychology*, *Studies in Higher Education*, *Journal of Philosophy of Education*, *The International Journal of Human Resource Management*, *Journal of Organizational Behaviour*, *Journal of Counseling Psychology*, *Higher Education*, *Journal of Vocational Behavior*, *Journal of Psychology in Africa*, *Psychological Bulletin*, *Current Directions in Psychological Science*, *Journal of Higher Education*, *Journal in Educational Psychology*.

1.4.2 Research design

For the present study, a quantitative research approach was followed. Quantitative research entails the systematic investigation of a phenomenon involving larger samples and in which certain hypotheses are tested on the relationships between variables (Struwig & Stead, 2013; Wu & Little, 2011). This approach was appropriate since it permitted the use of structured methods for data collection while also obtaining generalisable results (Struwig & Stead, 2001). More specifically, a cross-sectional research design was used to gather the data and to achieve the research objectives. This design allowed the researcher to study multiple groups of people within a single phase (De Vos, Strydom, Fouché & Delpont, 2011; Olsen & St. George, 2004). Additionally, the researcher was able to obtain information on whether the specific phenomenon of study crafting was present within the population and to what degree it influenced this population (De Vos et al., 2011). Cross-sectional data was, thus, considered as an ideal method for this validation study.

1.4.3 Research participants

For the purpose of the present research study, the target population was selected as first-year students at a South African university. The researcher only included participants who registered for the first time as first-year students. Participants were included from diverse gender and ethnic backgrounds. As selection criterium for the study, participants had to be adequately

proficient in English. This was assumed since all the participants had a general high school education. In particular, a convenient sampling method was used, seeing that participation in the study was voluntary. Therefore, no undue pressure was placed on candidates to take part in the study. This method involved readily available participants, either due to geographical proximity, a willingness to partake, or due to the available time frame (Etikan, Musa & Alkassim, 2016; Leedy & Ormrod, 2010). Finally, a sample group was gathered that represents the various campuses of the university ($N = 611$).

1.4.4 Measuring instruments

The instruments described below were used to measure the latent variables and to gather biographical information.

Biographical questionnaire: was included to acquire specific information on the participants' characteristics. In terms of the reporting standards of the APA, it is deemed necessary to report on the basic demographic characteristics of any sample group (American Psychological Association, 2008). Therefore, it was important to provide the main layout of the student sample that was selected for this research study. This should also benefit future research attempts to generalise the findings (Gravetter & Forzano, 2012). In adherence to the mentioned reporting standards, the following characteristics were determined: participants' age, gender, ethnicity, home language, faculty and school of study, marital status, work experience and academic average.

Study crafting was assessed by utilising a newly-developed study crafting scale (SCS). The SCS contains 8 original items. These items were developed based on information gathered from student interviews conducted as part of the qualitative data collection from a previous qualitative phase. This qualitative phase forms part of the overarching StudyWell research project. An example of an original item reads, "I take the initiative to plan in advance to attain all of my academic goals". In addition, 8 items from the original Job Crafting Scale (JCS) were adapted to the student context and included in the final SCS (Tims et al., 2012). An example of an adapted item is, "I take the initiative to make sure that I use my capabilities in my studies to the fullest". In total, the SCS contains 16 items measured on a five-point frequency scale ranging from 1 (*Almost never*) to 5 (*Almost always*). Cronbach's alpha coefficients for all crafting dimensions on the original JCS scale, applied within the organisational context, were

found to be above 0.70, ranging from 0.75 to 0.82 (Tims et al., 2012). Since above 0.70 is considered an acceptable alpha coefficient (Akkucuk, 2014; De Farias Júnior, Mendonça, Florindo & Barros, 2014), such scores indicated that the JCS is a reliable measuring instrument and suitable for use in the present study.

Strengths use and deficit correction behaviour. The Strengths Use and Deficit Correction (SUDCQ) questionnaire was used to assess students' perceptions of their strengths use and deficit correction behaviour (Van Woerkom et al., 2016). The two sub-scales of *strengths use behaviour* (SUB) and *deficit correction behaviour* (DCB) was used to investigate convergent validity for the present study (Van Woerkom et al., 2016). These sub-scales had been adapted to the higher education context in previous research and was validated in a further study by Mostert, Theron and De Beer (2017). The adapted version of the SUDCQ used in the present study consists of 10 items, 5 items per sub-scale. An example item of the SUB sub-scale reads, "In my studies, I use my strengths proactively" (Mostert et al., 2017). The DCB sub-scale also contains 5 items, with the following example item, "In my studies, I focus on developing the things I struggle with". All the items were assessed on a five-point Likert-type scale varying from 1 (*Almost never*) to 5 (*Almost always*). The validity of the SUDCQ was established in previous studies where evidence of factorial, convergent, and criterion validity was found (Mostert et al., 2017).

Student engagement: An adapted version of the Utrecht Work Engagement Scale (UWES) was used to measure student engagement in HEIs (Schaufeli, Salanova et al., 2002). The original 17 items on the UWES were adapted for use within a student context. In particular, the following two dimensions of engagement were included in the present research study: *vigour* (6 items, e.g. "I can continue studying for a very long time") and *dedication* (6 items, e.g. "I am excited about my studies") (Schaufeli, Salanova et al., 2002). In total, the 12 items included in this study were assessed on a seven-point frequency scale, ranging from 0 (*Never*) to 6 (*Always*) (Schaufeli, Salanova et al., 2002). The third engagement dimension of *absorption*, which is also measured by using the UWES, was not included in this study. Previously, the UWES had been employed within the student context by researchers (Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002). The respective Cronbach's reliability coefficients for the two dimensions included were 0.78 (*vigour*) and 0.84 (*dedication*), which is deemed acceptable (Schaufeli, Salanova et al., 2002). Furthermore, the validity of the UWES was also found to be acceptable on an international scale.

Study-course fit: An adapted version of the Person-Job Fit Perceptions questionnaire developed by Saks and Ashforth (1997) was used to assess study-course fit. This scale was specially adapted to measure perceptions of study-course fit in the higher education context. In particular, this scale consisted of 5 items measured on a five-point Likert-type scale ranging from 1 (*To a very little extent*) to 5 (*To a very large extent*). An example of an adapted item reads, “To what extent does the study course enable you to do the kind of work you want to do?” Van Niekerk, Mostert and De Beer (2016) have already adapted the questionnaire to the higher education context in prior research and found acceptable reliability findings (i.e. Cronbach’s alpha of 0.82). The validity of the original scale was also found to be acceptable (Saks & Ashforth, 1997).

1.4.5 Research procedure

Leading up to the current study, the procedures followed in the initial survey development, completed under a previous qualitative phase of the overarching StudyWell research project, entailed a content validation process (Foxcroft, 2004). As part of this previous qualitative phase of the StudyWell research project, interviews were conducted with first-year university students from which a pool of new original study crafting items was constructed. Items from the JCS were adapted as well. Pertaining to the adapted JCS items, all 21 items on the original scale were adjusted to the higher education context. During this phase of item writing, a panel of subject experts reviewed and evaluated the pool of items (Foxcroft, 2004). The experimental item pool, consisting of 19 original items and 12 adapted JCS items, was also administered to a small group of participants for further refinement as part of the pre-testing.

All recommendations from the experimental pre-testing were considered, the items were again reviewed by experts, some items were discarded, and item analyses were conducted (Foxcroft, 2004). Based on the outcome of these phases, the final version of the SCS was decided upon. From the newly-constructed study crafting items, 8 items were included in the final item pool. It was further decided to include 8 adapted JCS items to complete the SCS. The final item pool thus consisted of 16 items as these items best fit the hypothesised study crafting dimensions of increasing structural study resources, increasing social study resources, decreasing hindering study demands, and increasing challenging study demands. All these procedures occurred during the previous qualitative research phase before the newly-developed SCS was to be

administered to a large sample of first-year students in the present study. This research study, therefore, aimed to establish the validity and reliability of the newly-developed SCS by evaluating a range of statistical techniques.

To realise the various research objectives of this study, ethical clearance was first obtained from both the researcher's HEI and the HEI concerned. This ethical permission was obtained before the research study commenced. Upon having received the necessary clearance, the researcher carefully constructed the web-based survey to be used for the data collection. The final web-based survey included the newly-developed SCS, developed during the earlier qualitative research phase, as well as the other measuring instruments. Once the web-based survey was finalised, a secure hyperlink to the survey was placed on the HEI's online platform. This hyperlink was specifically posted onto the online platform on specific course modules, which students from certain faculties across all of the campuses were required to take.

Though, the researcher found that online participation did not deliver the level of participation anticipated. Therefore, a printout version of the survey was compiled and handed out across the different campuses in the classes of the mentioned course modules and even in campus hostels. The researcher, along with a team of fieldworkers, assume the responsibility to distribute and collect these printed survey booklets. Before distributing the printed booklets, the researcher ensured that students were made aware of the study before inviting them to participate voluntarily. This was accomplished by having fieldworkers host brief awareness sessions in the associated classes and campus hostels throughout the campuses. In these sessions, relevant information was provided on the intent and objectives of the study, informed consent and the measuring instruments along with their aims. Nevertheless, a summary of the research objectives and intent was incorporated into the web-based survey as well as in the printed survey booklets; forming part of the informed consent process. An accompanying cover letter explained the necessary instructions for completing the survey, together with a note of appreciation.

Since the present study was based on voluntary participation, the research participants had to fill in the attached informed consent letter before completing the survey. Participants were also informed that their recorded responses will be kept confidential, that the data used for the analysis would comply with requirements for anonymity, and that the results would be stored securely at the HEI. The time-frame for completion of the survey was approximated at 15 to

20 minutes. Finally, once a sufficient amount of data had been collected, the capturing and statistical analysis of the data took place; guided by the objectives set out for this study.

1.4.6 Statistical analysis

For the statistical analysis, the total data sample was divided randomly into two sub-samples; the first sample (sample 1) for exploratory factor analysis (EFA) and the second sample (sample 2) to confirm the EFA with confirmatory factor analysis (CFA). Thereafter the total sample was analysed again. Thus, an EFA was conducted to ascertain how the study crafting items clustered into different factors in sample 1. To conduct the EFA, the JASP 0.9.2.0 (JASP Team, 2018) programme was used. In particular, an oblique rotation was selected with parallel analysis (Hayton, Allen & Scarpello, 2004). The scree plot of the parallel analysis and the Eigenvalues for the current study above the 95th quantile of the simulated data were considered as the number of factors. In addition, the correlation between the factors as well as the respective loadings of these correlations on the given factors was also used to determine the total number of factors.

For sample 2, CFA was used to identify a measuring model based on the EFA results. The aim was to replicate the factor structure that was found. In this regard, Mplus 8.1 was used to constitute the latent variables with specific items (Muthén & Muthén, 2017). Thereafter, a range of indices was consulted to ascertain whether the specified model fit the information. The researcher calculated the comparative fit index (CFI) with suitable values at 0.90 and above, the Tucker-Lewis index (TLI) with suitable values at 0.90 and above, and finally the root mean square error of approximation (RMSEA) with suitable values below 0.08 and considered these results in determining the fit (Van de Schoot, Lugtig & Hox, 2012).

To determine reliability, Cronbach's alpha coefficients were calculated. As an indicator of convergent validity, the composite reliability indicator was also calculated "by combining all of the true score variances and covariances in the composite of indicator variables related to the constructs, and by dividing this sum by the total variance in the composite" (Pauluzzo & Shen, 2018, p. 189). As explained previously, a value of 0.70 and above on this index is considered acceptable (Akkucuk, 2014; De Farias Júnior et al., 2014). In addition, the correlation between the study crafting factors and SUB and DCB were also considered. In this case, the value of the correlations had to be below 0.85 (Brown, 2015). Furthermore, a

correlation matrix was used to describe the strength of the relationship between the latent variables, where the effect sizes (medium = $r \geq 0.30$; large = $r \geq 0.50$) were examined as well (Cohen, 1977).

Regarding discriminant validity, two approaches were taken: 1) the guideline of Brown (2015), which states that for discriminant validity, correlations between all the latent variables must be below 0.85; and 2) CFA was used to test models where the correlations between factors of interest were constrained to 1.00 and the correlation was unconstrained. Thereafter, the mentioned correlations were compared, where a non-significant difference would indicate the absence of discriminant validity. In addition, a structural model was specified by using the final measuring model and inserting regression paths. The structural model was used to investigate study crafting's criterion validity. This was done by considering not only the significance of the regression paths but also the size and direction of the standardised beta coefficient values (β). Furthermore, the variance explained in the criterion variables (student engagement and study-course fit) was considered in terms of R^2 , while the level of statistical significance for all parameters in the model was set at $p < 0.05$.

1.4.7 Ethical considerations

Before commencing the study, the researcher obtained ethical clearance to ensure the research would be piloted fairly and ethically. In this regard, Struwig and Stead (2001) emphasise the need for research to be conducted by a competent researcher, who accepts responsibility and shows integrity. Thus, in all research attempts, the researcher first made sure to obtain the candidates' voluntary informed consent to partake in the study (Struwig & Stead, 2013). Participants were also notified of their right to withdraw from the research without repercussions and that their responses would be kept confidential (Leedy & Ormrod, 2010). Jackson (2011) adds that researchers should also protect participants' privacy by keeping their participation confidential as well. Throughout the present study, this confidentiality code was strictly enforced and adhered to. Furthermore, Salkind (2009) emphasises the need for participants to be protected from harm at all times. Therefore, the researcher in no way deceived the participants or acted unethically; instead, their rights and dignity were upheld throughout the process (Struwig & Stead, 2013).

1.5 OVERVIEW OF CHAPTERS

In this mini-dissertation, Chapter 2 presents the research results in the form of a research article, while Chapter 3 discusses the conclusions, points out limitations and makes recommendations regarding the present research study.

1.6 CHAPTER SUMMARY

In closing, Chapter 1 presented the problem statement, research objectives, and the research hypotheses. This chapter outlined the measuring instruments and the research method followed in the present study. Finally, the chapter provided a brief overview of the chapters to follow in the dissertation as a whole.

REFERENCES

- Akkucuk, U. (2014). *Handbook of research on developing sustainable value in economics, finance, and marketing*. Istanbul, TR: Bogazici University.
- American Psychological Association. (2008). Reporting standards for research in psychology: Why do we need them? What might they be? *American Psychologist*, *63*, 839-851. doi: 10.1037/0003-066X.63.9.893
- Ashford, S. J., & Black, J. S. (1996). Proactivity during organizational entry: The role of desire for control. *Journal of Applied Psychology*, *81*, 199-214. doi: 10.1037/0021-9010.81.2.199
- Ashford, S. J., Blatt, R., & Van de Walle, D. (2003). Reflections on the looking glass: A review of research on feedback-seeking behavior in organizations. *Journal of Management*, *29*, 773-799. doi: 10.1016/S0149-2063(03)00079-5
- Association of American Colleges and Universities. (2002). *Greater expectations: A new vision for learning as a nation goes to college*. Washington, DC: Association of American Colleges and Universities.
- Badat, S. (2010). *The challenges of transformation in higher education and training institutions in South Africa*. Johannesburg: Development Bank of Southern Africa.
- Bakker, A. B. (2011). An evidence-based model of work engagement. *Current Directions in Psychological Science*, *20*, 265-269. doi: 10.1177/0963721411414534
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, *22*, 309-328. doi: 10.1108/02683940710733115
- Bakker, A. B., & Demerouti, E. (2014). Job demands-resources theory. *Wellbeing*, *3*, 1-28. doi: 10.1002/9781118539415.wbwell019
- Bakker, A. B., & Demerouti, E. (2017). Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, *22*, 273-285. doi: 10.1037/ocp0000056
- Bakker, A. B., Rodríguez-Muñoz, A., & Vergel, A. I. S. (2016). Modelling job crafting behaviours: Implications for work engagement. *Human Relations*, *69*, 169-189. doi: 10.1177/0018726715581690
- Bakker, A. B., Tims, M., & Derks, D. (2012). Proactive personality and job performance: The role of job crafting and work engagement. *Human Relations*, *65*, 1359-1378. doi: 10.1177/0018726712453471
- Bayless, K. (2013). *What is helicopter parenting?* Retrieved March 22, 2018, from <https://www.parents.com/parenting/better-parenting/what-is-helicopter-parenting/>

- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). New York, NY: Guilford Press.
- Cohen, J. (1977). *Statistical power analysis for the behavioural sciences* (rev. ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Crant, J. M. (2000). Proactive behavior in organizations. *Journal of Management*, 26, 435-462.
- Crone, I., & MacKay, K. (2007). Motivating today's college students. *Peer Review*, 9(1), 18-21.
- De Beer, L. T., Tims, M., & Bakker, A. B. (2016). Job crafting and its impact on work engagement and job satisfaction in mining and manufacturing. *South African Journal of Economic & Management Sciences*, 19, 400-412. doi: 10.17159/2222-3436/2016/v19n3a7
- De Farias Júnior, J. C., Mendonça, G., Florindo A. A., & Barros, M. V. G. D. (2014). Reliability and validity of a physical activity social support assessment scale in adolescents – ASFA Scale. *Revista Brasileira de Epidemiologia*, 17, 355-370. doi: 10.1590/1809-4503201400020006ENG
- De Vos, A. S., Strydom, H., Fouché, C. B., & Delpont, C. S. L. (2011). *Research at grassroots: For the social sciences and human service professions* (4th ed.). Pretoria: Van Schaik.
- DeBard, R. (2004). Millennials coming to college. *New Directions for Student Services*, 2004(106), 33-45. doi: 10.1002/ss.123
- Demerouti, E., Bakker, A. B., & Halbesleben, J. R. (2015). Productive and counterproductive job crafting: A daily diary study. *Journal of Occupational Health Psychology*, 20, 457-469. doi: 10.1037/a0039002
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499-512. doi: 10.1037//0021-9010.86.3.499
- DeRosier, M., Frank, E., Schwartz, V., & Leary, K. (2013). The potential role of resilience education for preventing mental health problems for college students. *Psychiatric Annals*, 43, 538-544. doi: 10.3928/00485713-20131206-05
- Elam, C., Stratton, T., & Gibson, D. D. (2007). Welcoming a new generation to college: The millennial students. *Journal of College Admission*, 195, 20-25.
- Engle, J., & O'Brien, C. (2007). *Demography is not destiny: Increasing the graduation rates of low-income college students at large public universities*. Washington, D. C.: The Pell Institute.

- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical & Applied Statistics*, 5(1), 1-4. doi: 10.11648/j.ajtas.20160501.11
- Farrell, A. M. (2010). Insufficient discriminant validity: A comment on Bove, Pervan, Beatty and Shiu (2009). *Journal of Business Research*, 63(3), 324-327. doi: 10.1016/j.jbusres.2009.05.003
- Fleming, D., & Storr, J. (1999). The impact of lecture theatre design on learning experience. *Facilities*, 17, 231-236. doi: 10.1108/02632779910270186
- Foxcroft, C. D. (2004). Planning a psychological test in the multicultural South African context. *South African Journal of Industrial Psychology*, 30(4), 8-15.
- Frese, M., & Fay, D. (2001). Personal initiative: An active performance concept for work in the 21st century. *Research in Organizational Behavior*, 23, 133-187. doi: 10.1016/S0191-3085(01)23005-6
- Ghitulescu, B. E. (2007). *Shaping tasks and relationships at work: Examining the antecedents and consequences of employee job crafting* (Doctoral dissertation). University of Pittsburgh, Pittsburgh, PA.
- Goldrick-Rab, S. (2010). Challenges and opportunities for improving community college student success. *Review of Educational Research*, 80, 437-469. doi: 10.3102/0034654310370163
- Grant, A. M., & Ashford, S. J. (2008). The dynamics of proactivity at work. *Research in Organizational Behaviour*, 28, 3-34. doi: 10.1016/j.riob.2008.04.002
- Grant-Valonne, E., Reid, K., Umali, C., & Pohlert, E. (2003). An analysis of the effects of self-esteem, social support, and participation in student support services on students' adjustment and commitment to college. *Journal of College Student Retention: Research, Theory & Practice*, 5, 255-274. doi: 10.2190/C0T7-YX50-F71V-00CW
- Gravetter, F. J., & Forzano, LA. B. (2012). *Research methods for the behavioral sciences*. Belmont, CA: Wadsworth: Cengage Learning.
- Habib, A. (2016). Transcending the past and reimagining the future of the South African university. *Journal of Southern African Studies*, 42, 35-48. doi: 10.1080/03057070.2016.1121716
- Hancock, V., & Betts, F. (2002). Back to the future: Preparing learners for academic success in 2004. *Learning & Leading with Technology*, 29(7), 10-14.

- Harju, L. K., Hakanen, J. J., & Schaufeli, W. B. (2016). Can job crafting reduce job boredom and increase work engagement? A three-year cross-lagged panel study. *Journal of Vocational Behavior, 95*, 11-20. doi: 10.1016/j.jvb.2016.07.001
- Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods, 7*, 191-205. doi: 10.1177/1094428104263675
- Howe, N., & Strauss, W. (2000). *Millennials rising: The next great generation*. New York, NY: Vintage Books.
- Jackson, L. T. B., Rothmann, S., & Van de Vijver, F. J. R. (2006). A model of work-related well-being for educators in South Africa. *Stress & Health, 22*, 263-274. doi: 10.1002/smi.1098
- Jackson, S. L. (2011). *Research methods: A popular approach* (2nd ed.). Belmont, CA: Wadsworth/Cengage Learning.
- JASP Team. (2018). JASP (Version 0.9.2.0) [Computer software]. Retrieved from <https://jasp-stats.org/>
- Jones, F., & Fletcher, B. C. (1996). Job control and health. In M. J. Schabracq, J. A. M. Winnubst, & C. L. Cooper (Eds.), *The handbook of work and health psychology* (pp. 30-50). West Sussex: John Wiley & Sons.
- Kahn, P. E. (2014). Theorising student engagement in higher education. *British Educational Research Journal, 40*, 1005-1018. doi: 10.1002/berj.3121
- Knight, J. (1999). Internationalisation of higher education. In D. Blight, D. Davis & A. Olsen (Eds.), *Quality and internationalisation in higher education* (pp. 13-24). Danvers, MA: Organisation for Economic Co-operation and Development.
- Ko, I. (2011). *Crafting a job: Creating optimal experiences at work* (Doctoral thesis). Available from ProQuest Dissertations & Theses Global. (UMI No. 3466478).
- Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology, 58*, 281-342. doi: 10.1111/j.1744-6570.2005.00672.x
- Leana, C. Appelbaum, E., & Shevchuk, I. (2009). Work process and quality of care in early childhood education: The role of job crafting. *Academy of Management Journal, 52*, 1169-1192.
- Leedy, P. D., & Ormrod, J. E. (2010). *Practical research: Planning and design* (9th ed.). Upper Saddle River, NJ: Pearson Education.

- Leiter, M. P. (1993). Burnout as a developmental process: Considerations of models. In W. B. Schaufeli, C. Maslach and T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 237-250). Washington, DC: Taylor & Francis.
- Letsaka, M., & Maile, S. (2008). *High university drop-out rates: A threat to South Africa's future*. Pretoria: Human Sciences Research Council.
- Lingley, P. A., & Harrington, S. (2006). Playing to your strengths. *The Psychologist*, *19*, 86-89.
- Lowe, H., & Cook, A. (2003). Mind the gap: Are students prepared for higher education? *Journal of Further & Higher Education*, *27*, 53-76. doi: 10.1080/03098770305629
- Lu, C., Wang, H., Lu, J., Du, D., & Bakker, A. B. (2014). Does work engagement increase person-job fit? The role of job crafting and job insecurity. *Journal of Vocational Behavior*, *84*, 142-152. doi: 10.1016/j.jvb.2013.12.004
- Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance. *Personnel Psychology*, *60*, 541-572. doi: 10.1111/j.1744-6570.2007.00083.x
- McGlynn, A. P. (2008). Millennials in college: How do we motivate them? *Education Digest*, *73*(6), 19-22.
- Morrison, E. W. (1993). Longitudinal study of the effects of information seeking on newcomer socialization. *Journal of Applied Psychology*, *78*, 173-183. doi: 10.1037/0021-9010.78.2.173
- Mostert, K., Theron, B., & De Beer, L. T. (2017). Validating strengths use and deficit correction behaviour scales for South African first-year students. *South African Journal of Industrial Psychology*, *43*, 1-12. doi: 10.4102/sajip.v43.1395
- Mouton, N., Louw, G. P., & Strydom, G. L. (2013). Present-day dilemmas and challenges of the South African tertiary system. *International Business & Economics Research Journal*, *12*, 285-300. doi: 10.19030/iber.v12i3.7672
- Murtonen, M., & Lehtinen, E. (2003). Difficulties experienced by education and sociology students in quantitative methods courses. *Studies in Higher Education*, *28*, 171-185. doi: 10.1080/0307507032000058064
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Los Angeles, CA: Muthén & Muthén.
- Odenweller, K. G., Booth-Butterfield, M., & Weber, K. (2014). Investigating helicopter parenting, family environments, and relational outcomes for millennials. *Communication Studies*, *65*, 407-425. doi: 10.1080/10510974.2013.811434

- Olsen, C., & St. George, D. M. M. (2004). Cross-sectional study design and data analysis. *College Entrance Examination Board*. Retrieved from http://www.physioblasts.org/f/public/1355667773_1_FT0_4297_module_05.pdf
- Organ, D. W. (1988). Organizational citizenship behaviour: The good soldier syndrome. *The Academy of Management Review*, *14*, 294-297.
- Pauluzzo, R., & Shen, B. (2018). *Impact on culture on management of foreign SMEs in China*. Springer International Publishing.
- Parker, S. K. (2000). From passive to proactive motivation: The importance of flexible role orientations and role breadth self-efficacy. *Applied Psychology: An International Review*, *49*, 447-469. doi: 10.1111/1464-0597.00025
- Parker, S. K., & Collins, C. G. (2010). Taking stock: Integrating and differentiating multiple proactive behaviors. *Journal of Management*, *36*, 633-662. doi: 10.1177/0149206308321554
- Petrou, P., Demerouti, E., Peeters, M. C. W., Schaufeli, W. B., & Hetland, J. (2012). Crafting a job on a daily basis: Contextual correlates and the link to work engagement. *Journal of Organizational Behavior*, *33*, 1120-1141. doi: 10.1002/job.1783
- Pidgeon, A. M., Rowe, N. F., Stapleton, P., Magyar, H. B., & Lo, B. C. Y. (2014). Examining characteristics of resilience among university students: An international study. *Open Journal of Social Sciences*, *2*, 14-22. doi: 10.4236/jss.2014.211003
- Price, I., Matzdorf, F., Smith, L., & Agahi, H. (2003). The impact of facilities on student choice of university. *Facilities*, *21*, 212-222. doi: 10.1108/02632770310493580
- Reed, J. (2007). Perceptions of the availability of recreational physical activity facilities on a university campus. *Journal of American College Health*, *55*, 189-194. doi: 10.3200/JAC.55.4.189-194
- Regan, J. (2012). The role obligations of students and lecturers in higher education. *Journal of Philosophy of Education*, *46*, 14-24. doi: 10.1111/j.1467-9752.2011.00834
- Roderick, M., Nagaoka, J., Coca, V., & Moeller, E. (2009). *From high school to the future: Making hard work pay off*. Chicago, IL: Consortium for Chicago School Research.
- Rothmann, I. (2018). *Wellbeing governance and management in business: 2018*. Potchefstroom: Afriforte.
- Saks, A. M., & Ashforth, B. E. (1997). A longitudinal investigation of the relationships between job information sources, applicant perceptions of fit, and work outcomes. *Personnel Psychology*, *50*, 395-426. doi: 10.1111/j.1744-6570.1997.tb00913.x

- Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management*, *19*, 116-131. doi: 10.1080/09585190701763982
- Salanova, M., Schaufeli, W. B., Martinez, I., & Breso, E. (2010). How obstacles and facilitators predict academic performance: The mediating role of study student burnout and student engagement. *Anxiety, Stress & Coping: An International Journal*, *23*, 53-70. doi: 10.1080/10615800802609965
- Salkind, N. J. (2009). *Exploring research* (7th ed.). Upper Saddle River, NJ: Pearson Education.
- Schaufeli, W. B. & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behaviour*, *25*, 293-315. doi: 10.1002/job.248
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross-national study. *Journal of Cross-cultural Psychology*, *33*(5), 464-481. doi: 10.1177/0022022102033005003
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytical approach. *Journal of Happiness Studies*, *3*, 71-92. doi: 10.1023/A1015630930326
- Scriber, K., & Trowbridge, C. (2009). Is direct supervision in clinical education for athletic students always necessary to enhance student learning? *Athletic Training Education Journal*, *4*(1), 32-37.
- Singh, V. L., Singh, M. (2016). Techniques of job crafting: An exploratory study on management consultants. *South Asian Journal of Management*, *23*, 25-50.
- Slemp, G. R., & Vella-Brodick, D. A. (2014). Optimising employee mental health: The relationship between intrinsic need satisfaction, job crafting, and employee well-being. *Journal of Happiness Studies*, *15*, 957-977. doi: 10.1007/s10902-013-9458-3
- South African Department of Health (2011, September 2). *Health Professions Act 56 of 1974: Regulations defining the scope of the profession of psychology*. (Notice 10505 of 2011). *Government Gazette*, 34581, 4-9.
- Struwig, F. W., & Stead, G. B. (2001). *Planning, designing and reporting research*. Cape Town: Pearson Education.
- Struwig, F. W., & Stead, G. B. (2013). *Research: Planning, designing and reporting*. Cape Town: Pearson Education.

- Sutherland, K. S., & Singh, N. N. (2004). Learned helplessness and students with emotional or behavioural disorders: Deprivation in the classroom. *Behavioral Disorders, 29*, 169-181.
- Teferra, D., & Altbach, P. (2004). African higher education: Challenges for the 21st century. *Higher Education, 47*, 21-50. Retrieved from <http://www.jstor.org/stable/4151555>
- Thayer, P. B. (2000). Retention of students from first generation and low income backgrounds. *Opportunity Outlook, 2*-8.
- Tims, M., & Bakker, A. B. (2010). Job crafting: Towards a new model of individual job redesign. *South African Journal of Industrial Psychology, 36*, 1-9. doi: 10.4102%2Fsajip.v36i2.841
- Tims, M., Bakker, A. B., & Derks, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behavior, 80*, 173-186. doi: 10.1016/j.jvb.2011.05.009
- Tims, M., Bakker, A. B., & Derks, D. (2013). The impact of job crafting on job demands, job resources, and well-being. *Journal of Occupational Health Psychology, 18*, 230-204. doi: 10.1037/a0032141
- Tims, M., Derks, D., & Bakker, A. B. (2016). Job crafting and its relationships with person-job fit and meaningfulness: A three-wave study. *Journal of Vocational Behavior, 92*, 44-53. doi: 10.1016/j.jvb.2015.11.007
- Tinto, V. (2003). *Student success and the building of involving educational communities*. Syracuse, NY: Higher Education Monograph Series. Syracuse University.
- Twenge, J. M. (2006). *Generation me*. New York, NY: Free Press.
- Tyler, K. (2007). The tethered generation. *HR Magazine, 52*, 40-46.
- Urani, M. A., Miller, S. A., Johnson, J. E., & Petzel, T. P. (2003). Homesickness in socially anxious first year college students. *College Student Journal, 37*, 392-399.
- Van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist of testing measurement invariance. *European Journal of Developmental Psychology, 9*, 486-492. doi: 10.1080/17405629.2012.686740
- Van der Meer, J., Jansen, E., & Torenbeek, M. (2010). 'It's almost a mindset that teachers need to change': First-year students' need to be inducted into time management. *Studies in Higher Education, 35*, 777-791. doi: 10.1080/03075070903383211
- Van Niekerk, G., Mostert, K., & De Beer, L. T. (2016). Strengths use and deficit improvement: The relationship with engagement and fit with study course amongst first-year students. *Journal of Psychology in Africa, 26*, 43-48. doi: 10.1080/14330237.2015.1124610
- Van Woerkom, M., Mostert, K., Els, C., Bakker, A. B., De Beer, L. T., & Rothmann, S. (2016). Strengths use and deficit correction in organizations: Development and validation of

- a questionnaire. *European Journal of Work and Organizational Psychology*, 25, 1-16. doi: 10.1080/1359432X.2016.1193010
- Vogt, K., Hakanen, J. J., Brauchli, R., Jenny, G. J., & Bauer, G. F. (2016). The consequences of job crafting: A three-wave study. *European Journal of Work & Organizational Psychology*, 25, 353-362. doi: 10.1080/1359432X.2015.1072170
- Wang, J. (2009). A study of resiliency characteristics in the adjustment of international graduate students at American universities. *Journal of Studies in International Education*, 13, 22-45. doi: 10.1177/1028315307308139
- Westman, M., Hobfoll, S. E., Chen, S., Davidson, O. B., & Laski, S. (2005). Organizational stress through the lens of conservation of resources (cor) theory. *Research in Occupational Stress & Well-being*, 4, 167-220. doi: 10.1016/S1479-3555(04)04005-3
- Wilson, E. V., & Sheetz, S. D. (2010). A demands-resources model of work pressures in IT student task groups. *Computers & Education*, 55, 415-426. doi: 10.1016/j.compedu.2010.02.006
- Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, 26, 179-201. doi: 10.5465/AMR.2001.4378011
- Wu, W., & Little, T. D. (2011). Quantitative research methods. In B. B. Brown & M. J. Prinstein (Eds.), *Encyclopedia of adolescence* (vol. 1, pp. 287-297). Lawrence, KS: Academic Press.
- Yorgason, J. B., Linville, D., & Zitzman, B. (2008). Mental health among college students: Do those who need service know about and use them? *Journal of American College Health*, 57, 173-182. doi: 10.3200/JACH.57.2.173-182

CHAPTER 2
RESEARCH ARTICLE

The validation of a study crafting scale within the South African higher education context

Abstract

Orientation: Proactive student behaviour holds consequences for both HEIs and students alike. In particular, this study applied the proactive behavioural concept of job crafting to the higher education environment, informed by the Job Demands-Resources (JD-R) model as the theoretical basis. The present study is, therefore, the first to evaluate the self-initiated proactive behaviour of “crafting” within the higher education context; labelled by the researcher as “study crafting”. In this study, the study crafting construct was evaluated in relation to the constructs of strengths use behaviour (SUB) and deficit correction behaviour (DCB), student engagement and study-course fit. Though, to date, there is no existing validated scale to measure the means by which students at South African HEIs utilise crafting behaviour in their studies.

Research purpose: The purpose was to validate a newly-developed study crafting scale (SCS) for South African HEIs by investigating the factorial validity, reliability, convergent and discriminant validity, as well as the criterion validity of the newly-developed scale.

Motivation for the study: Although this study aimed to evaluate the study crafting construct within the higher education context, no existing job crafting measure could be used for this evaluation. A need was, therefore, identified for a valid and reliable scale. This providing the primary motivation for validating the newly-developed SCS, developed during a previous qualitative phase of the StudyWell research project, for use within the higher education environment. This study can hence provide HEIs with a valuable tool to gain information on both students’ study crafting behaviours and potential areas of intervention.

Research design, approach and method: A cross-sectional research design was followed, which allowed for the gathering of quantitative data. The present study also used a convenient sampling method, seeing that participation in the study was voluntary. Overall, a research sample ($N = 611$) of students in their first year of academic studies at an HEI was selected. The sample was made up of students from the different campuses of the HEI concerned. Specifically, this validation study employed a variety of statistical techniques such as factorial validity (exploratory and confirmatory), reliability, convergent validity, discriminant validity, as well as criterion validity, to answer the research questions.

Main findings: The results showed that three dimensions of study crafting can be distinguished between; indicating three independent study crafting factors. These factors were termed: applying internal resources (AIR), seeking lecturer support (SLS), and seeking peer support (SPS). Based on the findings, the newly-developed SCS showed acceptable levels of reliability ($\alpha \geq 0.70$) suggesting that the scale's items consistently measure the extent to which students take the initiative to apply study crafting behaviours. It was further found that the relationship between study crafting and SUB and with DCB were both positive and significant; showing convergent validity. Moreover, all the inter-correlations between the constructs were found to be within acceptable constraints; providing evidence of discriminant validity. Finally, the criterion validity hypotheses for this study were partially supported. This seeing that only the study crafting factor of AIR positively predicted the outcome variables of student engagement and study-course fit. While the study crafting factors of SLS and SPS did not significantly predict student engagement or study-course fit.

Practical implications: The findings made available important insights into an HEI by providing a validated SCS which can be applied to assess students' proactive crafting behaviour patterns over the long-term. By measuring student crafting behaviours, the results can be used to determine how the study crafting dimensions contribute towards enforcing increased student engagement and greater study-course fit among first-year students. Specifically, interventions can be introduced to build the study crafting dimension of AIR seeing as it is a significant predictor of both student engagement and study-course fit. Increased student engagement and greater study-course fit may contribute towards higher levels of student success, higher graduation rates and may in effect lower dropout rates.

Contribution/value-add: This study adds to the limited available research on the phenomenon of study crafting and the measurement of crafting behaviours of HEI students in South Africa by providing a valid and reliable scale. Such a scale could assist with the examination of study crafting behaviour patterns, specifically within the higher education sector.

Keywords: Study crafting, job crafting, validation, structural equation modelling, student engagement, study-course fit, strengths use and deficit correction behaviour, higher education context

INTRODUCTION

In the current era of globalisation and rapid technological advancement, higher education institutions (HEIs) face substantial challenges. These include, amongst others, higher demands for further education, increased academic competitiveness, a decrease in government education subsidies along with “the changing nature of knowledge” and the emergence of artificial intelligence (Burnett & Huisman, 2010; Rajasingham, 2011). Students at HEIs themselves also deal with challenges. Students may be challenged to transition into the higher education system, whilst dealing with lower study commitment and efficacy (Gu, 2011; Gu & Schweisfurth, 2006; Murphy-Lejeune, 2003). HEI students can endure learning challenges as well, such as time management issues, as well as higher expectations and more output demands (Burnett & Huisman, 2010; Fook & Sidhu, 2015). While it is expected of HEIs to assist students during this transitioning phase (Kantanis, 2000), it is a shared responsibility, where students need to take initiative and accept responsibility for their academic success (Kahn, 2014). Students must learn to demonstrate resourcefulness and to manage their study challenges proactively (Fook & Sidhu, 2015; Zakarevičius & Župerka, 2010). Proactive behaviour is defined as “taking initiative in improving current circumstances” and entails defying the status quo (Crant, 2000, p. 436). Different types of proactive behaviour exist, such as active feedback-seeking and network building (Ashford & Black, 1996; Ashford, Blatt & Van de Walle, 2003); information gathering (Morrison, 1993); problem-solving and prevention (Frese & Fay, 2001; Parker & Collins, 2010), strengths use behaviour (Van Woerkom, Mostert, Els, Bakker, De Beer & Rothmann, 2016); as well as job crafting (Van den Heuvel, Demerouti & Peeters, 2015).

The proactive behaviour of crafting has been extensively researched within the organisational context. The concept of crafting was introduced first by Wrzesniewski and Dutton (2001), who defined it as “the physical and cognitive changes that individuals make to the task or relational boundaries of their work” (p. 179). According to Tims and Bakker (2010), job crafting can be described as the alterations and modifications that individuals make to the demands and resources in their jobs. It has also been described as changes made to a job’s characteristics on an individual employee’s own initiative to accommodate their capabilities and needs (Lu, Wang, Lu, Du & Bakker, 2014; Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001). The crafting phenomenon is thus explained as the proactive changes made by job crafters to mainly improve their work motivation and person-job fit (Demerouti & Bakker, 2014).

Crafting behavioural patterns are regarded as important for the current work context, infiltrated with change, uncertainty and cumulative job demands to which employees need to respond (Fletcher, Sindelar & Yamaguchi, 2011; Petrou, Demerouti, Peeters, Schaufeli & Hetland, 2012). The importance of job crafting is further emphasised in the light of employees' need to deal with increasingly difficult tasks in the workplace where they are expected to meet changeable demands and various needs (Kanten, 2014). To meet these demands and needs, employees can employ crafting behaviours to redesign and adapt their work roles proactively (Kanten, 2014). Additionally, crafting is considered important since individuals assume more control and initiate changes prior to certain future work circumstances (Parker & Collins, 2010). Research also established that job crafting can stimulate several outcomes, leading to increased job performance, enhanced employee well-being, stronger job identification, job satisfaction, engagement, resilience and overall work motivation and job-fit (Berg, Dutton & Wrzesniewski, 2008; Bindl & Parker, 2010; Tims, Bakker & Derks, 2012).

Proactive and crafting behaviour patterns are not only important in the organisational context but should also be researched in the higher education setting, where students have their own study demands and resources to manage. Students can, for instance, learn proactive behaviour patterns to help them persevere in demanding study courses and for achieving academic goals (Kuh, Kinzie, Cruze, Shoup & Gonyea, 2006). Particularly, proactive behaviour may permit students to use their available resources more efficiently (Frederickson, 2001). Proactive crafting behaviour is thus important for students since it may help them deal with study-related challenges to endorse success (Engle & O'Brien, 2007). Moreover, students need to develop and practise proactive behaviour patterns as they will gain more insight into their study aspirations and take further actions to manage their learning (De Vos & Soens, 2008). Previous research showed that increased personal proactivity can be linked to enhanced self-efficacy (Speier & Frese, 1997), as well as to the ability for dealing with more difficult, complex situations (Frese, Kring, Soose & Zempel, 1996). Students may, therefore, develop the capability to cope with higher levels of complexity in their studies, whilst strengthening the belief in their ability to succeed.

To investigate crafting behaviour patterns in the student context, a valid and reliable measure is needed. Several job crafting measures have been developed (cf. Ghitulescu, 2006; Leana, Appelbaum & Shevuchuk, 2009; Nielsen & Abildgaard, 2012; Tims et al., 2012). These measures include scales such as the Job Crafting Scale (JCS) (Tims et al., 2012), a job crafting

measure for blue-collar workers (Nielsen & Abildgaard, 2012) and the Job Crafting Questionnaire (JCQ) (Slemp & Vella-Brodrick, (2014). However, the concept of crafting has not been researched previously within the higher education context and no valid study-related crafting instrument currently exists. It was also not possible to utilise one of the existing job crafting scales and apply this to the student context. This being that the items on these scales were specifically designed for the organisational and work context (Tims et al., 2012). Hence, the present study represents a new research undertaking and adds to the existing literature by validating a newly-developed crafting measure for the student context.

This research article consists of four sections. The first section presents an overview of the literature on crafting, outlines the development of a measure for study crafting behaviour, and describes the psychometric properties of the JCS (Tims et al., 2012). This is followed by section two, a discussion of the research approach, method and of the measuring instruments employed in the present study. The research findings are also reported on and summarised in the discussion section. Finally, the article concludes by pointing out the limitations of the study, recognising the practical implications of the findings, and by making applicable recommendations for future research.

LITERATURE REVIEW

Given that the present study aimed to validate a newly-developed study crafting scale (SCS) for HEIs, where no such scale previously existed, it was necessary to first review the available literature on the crafting construct.

Background and conceptualisation of crafting

Crafting as a proactively initiated behaviour is a well-researched construct within the organisational context. The term ‘job crafting’ was introduced first by Wrzesniewski and Dutton (2001) and is described as “the changes made by individuals to the task and relational boundaries of their work” (Wrzesniewski & Dutton, 2001, p. 179). It was further explained that job crafting may entail three dimensions of changes to the boundaries of a job, namely in terms of the task, cognitive task, or the relational work environment (Wrzesniewski & Dutton, 2001).

A further research approach explains job crafting within the context of the Job Demands-Resources (JD-R) model (Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Tims & Bakker, 2010; Tims et al., 2012). One of the central suppositions of the JD-R model is that every job involves both job demands and resources (Bakker & Demerouti, 2007; Bakker & Demerouti, 2017). *Job demands* can be defined as aspects concerning the physical, psychological, social and organisational domains of a job, which requires continued mental or physical effort. This effort is said to be associated with mental or physiological costs (Demerouti et al., 2001; Tims et al., 2012). *Job resources* can be described as aspects of the physical, psychological, social and organisational domains of a job that help employees achieve work-related goals (Demerouti et al., 2001; Tims et al., 2012). Such resources allow for the reduction of job demands and related stresses, whilst ensuring personal growth, learning and development (Bakker & Demerouti, 2007).

The job crafting construct was recently introduced to form part of the processes outlined in the JD-R model (Tims & Bakker, 2010; Tims et al., 2012). The mentioned model explains that employees may craft their job demands and job resources in an attempt to create an equilibrium between the two (Tims & Bakker, 2010). Therefore, the crafting concept is defined as the “self-initiated changes that employees make to their own job demands and job resources to attain and/or optimise their personal and work-related goals” (Tims et al., 2012, p. 173).

Tims et al. (2012) further conceptualised job crafting as consisting of four dimensions:

- *Increasing structural job resources*: refers to employees’ dynamic efforts to craft added work for themselves through the resources of autonomy, variety and having available growth opportunities (Nielsen, Antino, Sanz-Vergel & Rodríguez-Muñoz, 2017; Tims et al., 2012).
- *Increasing social job resources*: focuses on individual crafting aimed at dealing with excessive job demands by making the most of the social resources of feedback, coaching and received social support (Nielsen et al., 2017; Tims & Bakker, 2010; Tims et al., 2012).
- *Decreasing hindering job demands*: points to a situation where role conflict and ambiguity lead to demands which are perceived as overwhelming, and where individuals actively attempt to lower such unwarranted demands, thereby avoiding emotionally difficult circumstances (LePine, Podsakoff & LePine, 2005; Nielsen et al., 2017; Tims et al., 2012).

- *Increasing challenging job demands:* entails individuals increasing their demands by engaging in added job activities to reach an adequate level of challenge in their work (LePine et al., 2005; Nielsen et al., 2017; Tims & Bakker, 2010; Tims et al., 2012).

Job crafting can thus be regarded as modifications made to job demands and resources that individuals initiate in order to create increased meaningfulness, engagement and satisfaction for themselves (Demerouti, 2014). In the present study, the construct of study crafting was adapted from the job crafting phenomenon, informed by the JD-R model as a theoretical basis.

Developing a measure for student crafting behaviour

Various scales exist that are used to measure job crafting in the organisational context (cf. Ghitulescu, 2006; Leana et al., 2009; Nielsen & Abildgaard, 2012; Tims et al., 2012). Amongst these existing scales is the Job Crafting Scale (JCS) developed by Tims et al. (2012). The main purpose of the present study was, however, to validate a newly-developed scale intended to measure crafting behaviour patterns in the higher education context. This study crafting scale (SCS), developed during a previous qualitative phase of the overarching StudyWell research project, was developed by following the procedures laid out by Foxcroft (2004). The scale construction thus began with a planning phase where the aim and content of the scale were clearly defined, providing the conceptual foundation (Foxcroft, 2004). This following by the development of an item pool; as a reservoir for the study crafting construct.

In particular, original study crafting items were constructed based on qualitative interview data collected during the previous qualitative research phase. Additionally, items from the JCS (Tims et al., 2012) were adjusted to the higher education context. It was hypothesised that the SCS consists of dimensions similar to that measured by the JCS (Tims et al., 2012). Furthermore, it was assumed that certain items from the JCS would prove to be effective in measuring the crafting behaviour patterns of students. Therefore, it made sense to adapt the JCS for the student context. During this item writing phase, a panel of subject experts reviewed and evaluated the pool of items constructed. Subject matter experts were also involved to decide on the scaling format; a Likert-type response format was decided upon (DeVellis, 2003). The experimental item pool, consisting of 19 original items and 12 adapted JCS items, was also administered to a small group of participants for further refinement forming part of the pre-testing.

Following the experimental pre-testing, the items were once again reviewed and refined by subject experts. Some items were even discarded. The next phase of item analysis (Foxcroft, 2004) was performed as well to guide the final selection of items for the SCS. From the newly-constructed study crafting items, 8 items were included in the final item pool. It was further decided to include 8 adapted JCS items to complete the scale. The final item pool thus consisted of 16 items as these items best fit the hypothesised study crafting dimensions of increasing structural study resources, increasing social study resources, decreasing hindering study demands, and increasing challenging study demands.

The psychometric properties of the Job Crafting Scale

Since the scales and conceptualisation of the JCS were used in the development of the newly-developed SCS, the psychometric properties of this instrument are discussed as a foundation for the hypotheses of the SCS. This research focused on examining the following psychometric properties of the original JCS: the factorial validity, reliability, convergent validity, discriminant validity, as well as the criterion validity. These properties are expounded below.

Factorial validity

Factorial validity is essentially used to determine the primary factors measured by a scale as determined by factor analysis (Foxcroft & Roodt, 2013). Thus, factor validity examines “the extent to which items designed to measure a particular factor (i.e. a latent construct)” does measure that factor (Byrne, 2010, pp. 96). Specifically, the JCS was found to comprise a four-factor model. These factors are the following: increasing structural job resources (five items), with example, “I try to develop my capabilities”; increasing social job resources (five items), with example, “I ask my supervisor to coach me”; decreasing hindering job demands (six items), with example, “I make sure that my work is mentally less intense”; and increasing challenging job demands (five items), with example, “I regularly take on extra tasks even though I do not receive extra salary for them” (Tims et al., 2012). As reported by Tims et al. (2012), the four-factor crafting model showed acceptable fit; the chi-square/*df* ratio was found to be smaller than 3, whilst other indices including the comparative fit index (CFI), the Tucker-Lewis index (TLI), the incremental fit index (IFI), and the root mean square error of approximation (RMSEA) were all within suitable ranges (Tims et al., 2012).

Other validation studies have also been conducted on the JCS. In particular, a four-factor job crafting model was also confirmed when the JCS was applied in the South African mining and manufacturing sector (De Beer, Tims & Bakker, 2016). In a study by Nielsen and Abildgaard (2012) though, a five-factor solution for crafting was found where the JCS was adapted to measure crafting among blue-collar workers. However, another study established that a Turkish version of the JCS supported the four-dimensional model (Akin, Sariçam, Kaya & Demir, 2014), whilst that study also supported validity for the scale. Therefore, it was accepted that the four-factor crafting model of Tims et al. (2012) presents a better fit. Regarding the present study, it was thus proposed as *Hypothesis 1* that the study crafting scale (SCS) will contain four dimensions, similar to that of the original JCS (Tims & Bakker, 2010).

H₁: Study crafting comprises a four-factor structure, namely increasing structural study resources, increasing social study resources, decreasing hindering study demands, and increasing challenging study demands.

Reliability

In addition, reliability concerns “the consistency with which an instrument measures what it is supposed to measure” (Foxcroft & Roodt, 2013, p. 48). Subsequently, to assess the internal consistency of a scale, Cronbach’s alpha reliability coefficients were investigated. On the original JCS, adequate reliability values of above the 0.70 guideline were found (Nunnally & Berstein, 1994; Tims et al., 2012). Previous studies on the JCS also brought to light acceptable reliability coefficients. Specifically, the internal consistency of the Turkish JCS was found to be acceptable, overall equating to a value of 0.84 for the entire scale (Akin et al., 2014). The longitudinal study by Nielsen and Abildgaard (2012) also indicated acceptable test-retest reliability findings ($\alpha \geq 0.70$). Likewise, the South African study by De Beer et al. (2016) established acceptable reliability values of above 0.70, once again suggesting internal consistency. It was, therefore, postulated in *Hypothesis 2* that the SCS will show acceptable reliability.

H₂: The newly-developed study crafting scale shows acceptable reliability coefficients (i.e. Cronbach’s alpha coefficient > 0.70).

Convergent validity

Convergent validity is determined when research finds a specific construct to be associated strongly with related variables, indicating that it is a measure of the proposed construct (Furr & Bacharach, 2014). Crafting is thus expected to be theoretically related to certain proactive behavioural constructs since these refer to self-initiated modifications and changes (Van Woerkom et al., 2016). Prior research has evaluated job crafting with similar types of proactive behaviour patterns, including that of proactive personality, personal initiative, strengths use behaviour (SUB) and deficit correction behaviour (DCB) (Van Woerkom et al., 2016; Wrzesniewski & Dutton, 2001). A study by Slemp and Vella-Brodrick (2013) indicated significant positive correlations between the JCQ and the “similar behaviourally-based index of strengths use” (p. 138), which provided evidence of convergence. Moreover, SUB and DCB have also been validated in the student context previously (Stander, Diedericks, Mostert & De Beer, 2015). This finding further motivated the inclusion of the proactive behaviour of strengths use in the present study. Therefore, this study examined study crafting in relation to the constructs of SUB and DCB (Van Woerkom et al., 2016, p. 2). SUB and DCB were both included as recognised types of proactive behaviour, although these patterns still differ to an extent from the crafting concept (Van Woerkom et al., 2016). Thus, *Hypothesis 3* was formulated as below.

H₃: The study crafting scale shows acceptable convergent validity with strengths use behaviour and deficit correction behaviour.

Discriminant validity

Discriminant validity is determined by examining whether the specific construct being studied “correlates weakly with all other constructs except for the one to which it is theoretically associated” (Gefen & Straub, 2005, p. 92). Existing research findings showed that the JCS exhibited acceptable discriminant validity (Tims et al., 2012). Particularly, a replication study provided evidence that the scale displayed adequate discriminant validity, seeing that the inter-correlations between the crafting dimensions were found to be reasonable (Nielsen & Abildgaard, 2012). The inter-correlational values ranged from 0.41 to 0.78, falling below Brown’s (2015) 0.85 guideline. However, another study had certain “concerns with discriminant validity”, where the correlational value between two of the job crafting dimensions exceed the 0.85 guideline (De Beer et al., 2016, p. 405). For the present study, the researcher also adhered to the set cut-off that the correlational values between the study crafting

constructs and the other latent variables needed to be less than 0.85 (Brown, 2015). It was, therefore, proposed as *Hypothesis 4* that the SCS would show acceptable discriminant validity.

H₄: The newly-developed crafting scale shows acceptable discriminant validity.

Criterion validity

Criterion validity is used to measure the ability of a scale to explain variance in another variable, thus providing evidence that can predict future outcomes (Fraenkel, Wallen & Hyun, 1993). Regarding criterion validity, several constructs relate to job crafting. Previous research showed that job crafting positively to a large extent affects constructs, including work engagement, strengths use behaviour, person-job fit, job satisfaction, as well as meaningfulness (Bakker, 2011; Bakker, Rodríguez-Muñoz & Vergel, 2016; Bakker, Tims & Derks, 2012; De Beers et al., 2016; Lu et al., 2014; Vogt, Hakanen, Brauchli, Jenny & Bauer, 2016). However, existing research studies do not describe how crafting behaviour patterns impact students' engagement, their study-course fit, or study satisfaction. In essence, challenges remain evident at HEIs where students may not have sufficient resources to meet their increasing study demands (Salanova, Schaufeli, Martinez, & Bresó, 2010). Consequently, the proactively initiated behaviour of study crafting could help address these challenges, resulting in improved student perceptions about their studies coupled with higher levels of study engagement. For the present study, crafting is thus considered to predict the positive outcome variables of student engagement and study-course fit. This is distinctly postulated in *Hypothesis 5* and *Hypothesis 6* which is discussed below.

Student engagement

Student engagement is explained as “both the time and energy that students invest in educationally purposeful activities” (Kuh, Cruce, Shoup, Kinzie & Gonyea, 2008, p. 542). Such engagement is based on HEIs providing valuable educational services. Student engagement typically leads to academic achievement, dedication as well as quality learning (Zepke, 2017). Furthermore, student engagement in terms of contributions of time and resources is also associated with higher levels of vigour and dedication (Quaye & Harper, 2009; Krause & Coates, 2008; Schaufeli, Salanova, González-Romá & Bakker, 2002). Vigour is portrayed as “high levels of energy and mental resilience while working, a willingness to invest effort in one’s work”, and characterised by a persevering nature (Schaufeli et al, 2002, p. 74). Dedication, as distinct from vigour, refers to a high degree of significant involvement in one’s

work, leading with pride, enthusiasm and inspiration (Kanungo, 1982; Lawler & Hall, 1970; Schaufeli et al., 2002).

As mentioned previously, job crafting indicates a direct positive association with enhanced work engagement (Bakker et al., 2012). A study by Petrou et al. (2012) confirmed this positive relationship present in the proactive behaviour of a challenge-seeking employee during work engagement. It is, therefore, argued that study crafting may also have a positive association with the construct of engagement. Consequently, students may craft their study resources and available time as a means to enhance their engagement and meet their academic goals. This postulate is expressed in *Hypothesis 5* below.

H₅: Study crafting explains a significant amount of variance in student engagement.

Study-course fit

For the present study, study-course fit is viewed as similar to the construct of person-job fit in the organisational context. Consistent with the literature, person-job fit refers to individual employees focusing on matching, on the one hand, their knowledge, capabilities and skills, with the job-specific requirements of a particular position on the other hand (Kristof, 1996; Saks & Ashford, 1997). Accordingly, study-course fit occurs when students experience an alignment between their own education, competence and abilities, and the requirements of their chosen study course (Kristof-Brown, Zimmerman & Johnson, 2005). The literature repeatedly affirms that a product of crafting behaviour is improved person-job fit (Berg, Dutton & Wrzesniewski, 2013; Wrzesniewski & Dutton, 2001).

Additionally, the proactive behaviour patterns of SUB and DCB showed a practically significant positive association with perceptions of study-course fit (Van Niekerk, Mostert & De Beer, 2016). In cases where students proactively engaged in and accomplished their study-related goals, they could even further their competence and reach study satisfaction, indirectly, thus affecting their perceptions of a good study-course fit (Bandura, 1997; Brunstein, 1993; Van Niekerk et al., 2016). Moreover, it is argued that students capable of crafting can implicitly enhance their engagement through their perceived study-course fit (Van Niekerk et al., 2016). Nevertheless, similar to crafting in the organisational context, it is argued that students may craft their study demands and resources in an attempt to optimise their study-course fit, which

can consequently create more meaningful outcomes (Tims, Derks & Bakker, 2016). The aforementioned assumption is tested through *Hypothesis 6* below.

H₆: Study crafting explains a significant amount of variance in study-course fit.

RESEARCH DESIGN

Research approach

A quantitative research approach was chosen for the present study. In quantitative research, a phenomenon, involving larger samples, is systematically investigated and certain hypotheses, relating to the relationships between variables, are tested (Struwig & Stead, 2013; Wu & Little, 2011). Furthermore, in the present study, a cross-sectional design was utilised to collect the research data and eventually attain the research objectives. This cross-sectional design allowed for multiple groups of people to be studied at a single point in time (De Vos, Strydom, Fouché & Delport, 2011; Olsen & St. George, 2004). By using the mentioned design, the researcher could identify whether, as well as the degree to which, the phenomenon of study crafting was present within the population (De Vos et al., 2011). Therefore, the gathering of cross-sectional research data was exemplary for this validation study.

RESEARCH METHOD

Research participants

The target population selected for the present study was first-year students at a South African HEI, consisting of distinctive campuses. The researcher only included students registered for their first year of study. In particular, a convenience sampling method was utilised. One large sample group was obtained ($N = 611$) and divided randomly into two smaller groups based on gender, ethnicity and campus. These two groups were used to conduct the various validation implementations of exploratory factor analysis ($n = 308$) and confirmatory factor analysis ($n = 303$). The total sample group varied in terms of age, gender, ethnicity, home language, campus site and faculty of study, as well as in terms of on-campus or off-campus living. A breakdown of the research participants' characteristics is presented in Table 1 below.

Table 1

Characteristics of the total sample group's participants (N=611)

Item	Category	Frequency	Percentage (%)
Age (in years)	17 – 19	425	69.60
	20 – 22	156	25.50
	23 – 25	20	3.30
	26 – 29	2	0.30
	30 +	2	0.30
	Missing values	6	1.00
Gender	Male	217	35.50
	Female	394	64.50
Ethnicity	Asian	1	0.20
	Black	338	55.30
	Coloured	28	4.60
	Indian	6	1.00
	White	236	38.60
	Other	2	0.30
	Missing values	6	1.00
Home Language	Afrikaans	239	39.10
	English	38	6.20
	Sepedi	29	4.70
	Sesotho	111	18.20
	Setswana	64	10.50
	siSwati	14	2.30
	Tshivenda	9	1.50
	isiNdebele	5	0.80
	isiXhosa	27	4.40
	isiZulu	66	10.80
	isiTsonga	5	0.80
	Other	3	0.50
	Missing values	1	0.20
Site	Site 1	24	3.90
	Site 2	306	50.10
	Site 3	281	46.00
Faculty	Economic and Management Sciences	218	35.70
	Education	65	10.60
	Engineering	24	3.90
	Humanities	103	16.90
	Law	54	8.80

Note. The Sites referred to in this table indicate the distinctive campuses of the HEI.

Table 1 continues

Characteristics of the total sample group's participants (N=611)

Item	Category	Frequency	Percentage (%)
	Theology	4	0.70
	Natural and Agricultural Sciences	43	7.00
	Health Sciences	97	15.90
	Missing values	3	0.50
Stay On/Off Campus	Stay on-campus	289	47.30
	Stay off-campus	317	51.90
	Missing values	5	0.80

Note. The Sites referred to in this table indicate the distinctive campuses of the HEI.

As observed in Table 1 above, the sample comprised 611 research participants of whom 394 (64.50%) were female and 217 (35.50%) male. The largest part of the sample group was between 17 to 19 years of age (69.60%). In terms of ethnic origin, 338 (55.30%) participants were Black, 236 (38.60%) were White, 28 (4.60%) were Coloured, six (1.00%) were Indian, and one (0.20%) participant was Asian, whilst the remaining two (0.30%) participants did not specify their ethnic groups. From the 611 research participants, 239 (39.10%) indicated that they spoke Afrikaans, whilst 111 (18.20%) listed Sesotho as their home language. Setswana, isiZulu and English, as well as other languages, accounted for the remaining 42.60% of the sample group. Most of the participants were either studying at site 2 ($n = 306$; 50.10%) or site 3 ($n = 281$; 46.00%). Most of the students were enrolled in either their first year of Economic and Management Sciences ($n = 218$; 35.70%), in Humanity Studies ($n = 103$; 16.90%), or in Health Sciences ($n = 97$; 15.90%). Finally, 317 (51.90%) participants mentioned that they lived off-campus, while 289 (47.30%) participants stayed on-site on one of the campuses.

Measuring instruments

The measuring instruments and the measured variables from the research study are expounded below.

Biographical questionnaire: administered to obtain specific information on the participants' biographical characteristics. The reason for obtaining and reporting on the participants' characteristics was to conform to the reporting standards of the APA (American Psychological Association, 2008). In accordance with the APA requirements, the main layout of this study's

sample group was provided. Consequently, such a layout would be purposeful, should future researchers attempt to generalise the findings (Gravetter & Forzano, 2012). In particular, the characteristics that were measured include the participants' age, gender, ethnicity, home language, faculty and school of study, marital status, work experience and academic average.

Study crafting: was assessed by utilising a newly-developed study crafting scale (SCS). The SCS contains 8 original items. These items were developed based on information gathered from student interviews conducted as part of the qualitative data collection from a previous qualitative phase. An example of an original item reads, "I take the initiative to plan in advance to attain all of my academic goals". In addition, 8 items from the original Job Crafting Scale (JCS) were adapted to the student context and included in the final SCS (Tims et al., 2012). An example of an adapted item is, "I take the initiative to make sure that I use my capabilities in my studies to the fullest". In total, the SCS contains 16 items measured on a five-point frequency scale ranging from 1 (*Almost never*) to 5 (*Almost always*). Cronbach's alpha coefficients for all crafting dimensions on the original JCS scale, applied within the organisational context, were found to be above 0.70, ranging from 0.75 to 0.82 (Tims et al., 2012). Since above 0.70 is considered an acceptable alpha coefficient (Akkucuk, 2014; De Farias Júnior, Mendonça, Florindo & Barros, 2014), such scores indicated that the JCS is a reliable measuring instrument and suitable for use in the present study.

Strengths use and deficit correction behaviour: The two sub-scales of the Strengths Use and Deficit Correction (SUDCQ) questionnaire were employed to measure students' perceptions about their strengths use and deficit correction behaviour (Van Woerkom et al., 2016). The SUDCQ had already been applied by Mostert, Theron and De Beer (2017) within the higher education context. The adapted version of the SUDCQ used in the present study consists of 10 items, 5 items per sub-scale. An example item of the SUB sub-scale reads, "In my studies, I use my strengths proactively" (Mostert et al., 2017). The DCB sub-scale also contains 5 items, with the following example item, "In my studies, I focus on developing the things I struggle with". All the items were assessed on a five-point Likert-type scale varying from 1 (*Almost never*) to 5 (*Almost always*). The validity of the SUDCQ was established in previous studies where evidence of factorial, convergent, and criterion validity was found (Mostert et al., 2017).

Student engagement: An adapted version of the Utrecht Work Engagement Scale (UWES) was used to measure student engagement in HEIs (Schaufeli, Salanova et al., 2002). The

original 17 items on the UWES were adapted for use within a student context. In particular, the following two dimensions of engagement were included in the present research study: *vigour* (6 items, e.g. “I can continue studying for a very long time”) and *dedication* (6 items, e.g. “I am excited about my studies”) (Schaufeli, Salanova et al., 2002). In total, the 12 items included in this study were assessed on a seven-point frequency scale, ranging from 0 (*Never*) to 6 (*Always*) (Schaufeli, Salanova et al., 2002). The third engagement dimension of absorption, which is also measured by using the UWES, was not included in this study. The respective Cronbach’s reliability coefficients for the two dimensions included were 0.78 (*vigour*) and 0.84 (*dedication*), which is deemed acceptable (Schaufeli, Salanova et al., 2002). Moreover, the UWES has also been validated across various countries, including for the South African context (Carmona-Halty, Schaufeli & Salanova, 2019; Storm & Rothmann, 2003).

Study-course fit: An adapted version of the Person-Job Fit Perceptions questionnaire developed by Saks and Ashforth (1997) was used to assess study-course fit. This scale was specially adapted to measure perceptions of study-course fit in the higher education context. In particular, this scale consisted of 5 items measured on a five-point Likert-type scale ranging from 1 (*To a very little extent*) to 5 (*To a very large extent*). An example of an adapted item reads, “To what extent does the study course enable you to do the kind of work you want to do?” Van Niekerk, Mostert and De Beer (2016) have already adapted the questionnaire to the higher education context in prior research and found acceptable reliability findings (i.e. Cronbach’s alpha of 0.82).

Research procedure

The procedures followed in the initial survey development, completed under a previous qualitative phase of the overarching StudyWell research project, entailed a content validation process (Foxcroft, 2004). As part of this previous qualitative phase, interviews were conducted with first-year university students from which a pool of original study crafting items was constructed. Items from the JCS were adapted to the higher education context as well. During the item writing phase, a panel of subject experts reviewed and evaluated the experimental pool of items which was also administered to a small group of participants for further refinement. All recommendations from the experimental pre-testing were considered, the items were again reviewed by experts, some items were discarded, and item analyses were conducted (Foxcroft, 2004). Based on the outcome of these phases, the final version of the SCS was decided upon.

The final item pool of 16 items included 8 newly-constructed study crafting items together with 8 adapted JCS items. All these procedures occurred during the previous qualitative research phase before the newly-developed SCS was to be administered to a large sample of first-year students in the present study.

Beforehand, adequate permission and ethical clearance were acquired from both the researcher's HEI and the HEI involved in the research project. Upon having received the necessary clearance, the researcher carefully constructed the web-based survey to be used for the data collection. After the web-based study crafting survey was finalised, a hyperlink and relevant information were placed on the HEI's online platform. This hyperlink was therefore issued on the platforms of specific course modules. A few course modules were selected, which allowed the researcher to make the survey hyperlink available to students from various faculties across campuses of the HEI. The researcher also had a printout version of the survey compiled, which were distributed in the classes of the course's modules, as well as on the different campuses and in campus hostels. This was done when the online student participation in the survey proved unsuccessful. The distribution and collection of these paper-and-pencil surveys were done by the researcher, assisted by a team of fieldworkers. Before inviting the students to participate in this voluntary study, the researcher also had to create awareness about the study. This was achieved by having the fieldworkers host brief information sessions in the relevant classes and campus hostels across the campuses.

During these sessions, the necessary information was explained. This covered the aim and objectives of the study, the measuring instruments that were included, as well as informed consent. A brief outline of the mentioned information was also included in the survey booklets. Both the paper-and-pencil and web-based surveys were accompanied by a cover letter, providing instructions to complete the survey. A note of appreciation was also included. For participants to take part in the survey, they first needed to complete the informed-consent section, as this study was based solely on voluntary participation. This informed-consent process made it possible to inform the participants that confidentiality and anonymity would be ensured. It took the participants approximately 15 to 20 minutes to complete the survey. As soon as a sufficient amount of data had been collected, the capturing and statistical analysis of the results commenced.

Statistical analysis

For the statistical analysis of the present study, the total research sample was divided randomly into two smaller sub-samples. In the first sample ($n = 308$) an exploratory factor analysis (EFA) was conducted. A confirmatory factor analysis (CFA) replication-study was done involving sample 2 ($n = 303$). Finally, the total sample was used again for further analytical investigations.

The EFA was done for sample 1, to determine the number of factors that should be retained (Hurley, Scandura, Schriesheim, Brannick, Seers, Vandenberg et al., 1997). In particular, the JASP 0.9.2.0 programme (JASP Team, 2018) was used to ascertain how the items clustered into different study crafting factors. To determine the clustering, an oblique rotation was employed with parallel analysis (PA) (Hayton, Allen & Scarpello, 2004). In PA “the eigenvalues from the random correlation matrices were compared to the eigenvalues from the real data correlation matrix” (Hayton et al., 2004, p. 194). Therefore, the scree plot of the PA and the eigenvalues for the current study above the 95th quantile of the random data were considered as the number of factors. In the EFA, the items’ loadings onto the given factors, as well as the correlations between the factors, were considered.

Furthermore, with sample 2, Mplus 8.1 (Muthén & Muthén, 2017) was used to replicate the EFA results through CFA when identifying the measuring model. During the CFA, the aim was to determine the fit of the specified model to the information where various fit indices were consulted. This included the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). Additionally, the reliability of the data was also investigated by calculating Cronbach’s alpha coefficients.

For convergent validity, the correlation matrix was examined to identify how the study crafting factors correlate with the other proactive behaviour patterns of SUB and DCB. This correlation matrix also helped the researcher describe the relationships between the latent variables and their strength (i.e. medium = $r \geq 0.30$; large = $r \geq 0.50$) (Cohen, 1977). Regarding discriminant validity, the correlations between all the latent variables needed to be below Brown’s (2015) 0.85 guideline. In addition, CFA was used to compare measuring models where the correlations between the factors of interest were constrained to 1.00 and the correlation was unconstrained – a non-significant difference would indicate that discriminant validity does not exist.

In the last phase, the total sample was used to investigate the study crafting model's criterion validity. At this point, the researcher inserted regression paths using the final measuring model. In this investigation, the size and direction of the standardised beta coefficient values (β) were considered as well as the significance of the regression paths (statistical significance level for all parameters in the model was set at $p < 0.05$). The researcher also took account of the variance explained in the criterion variables (in terms of R^2). These calculations were done to specify the structural model, which is depicted in Figure 2 below.

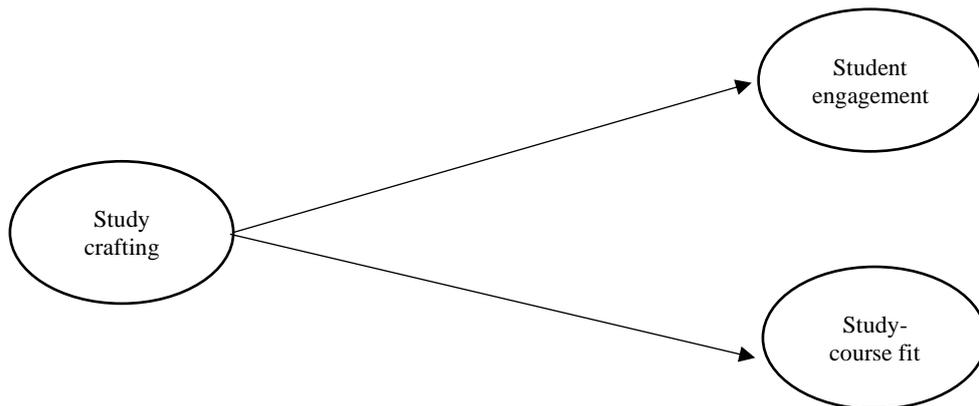


Figure 2. The structural model for the investigation of criterion validity

RESULTS

This section reports on the results for the factorial validity, reliability, convergent validity and discriminant validity, as well as the criterion validity of the SCS. The results are displayed in table format, together with descriptions. Furthermore, the gathered data were divided randomly into two smaller datasets in line with gender, ethnicity and campus – as sample 1 and sample 2. In sample 1 ($n = 308$), the average age of the respondents was found to be 19.47 years ($SD = 1.67$), whilst in sample 2 ($n = 303$) the average age was 19.34 ($SD = 1.27$).

The EFA for sample 1 is first reported on, thereafter the CFA replication study based on sample 2, and lastly the final measuring model for the combined (total) sample.

EFA of the study crafting scale: Sample 1

In sample 1 ($n = 308$), EFA was conducted with the oblique method and direct oblimin rotation with PA (Hayton et al., 2004). Consequently, depicted in Figure 3 below, is the scree plot that

shows the eigenvalues for the SCS as well as the eigenvalues for the random set of data generated with PA.

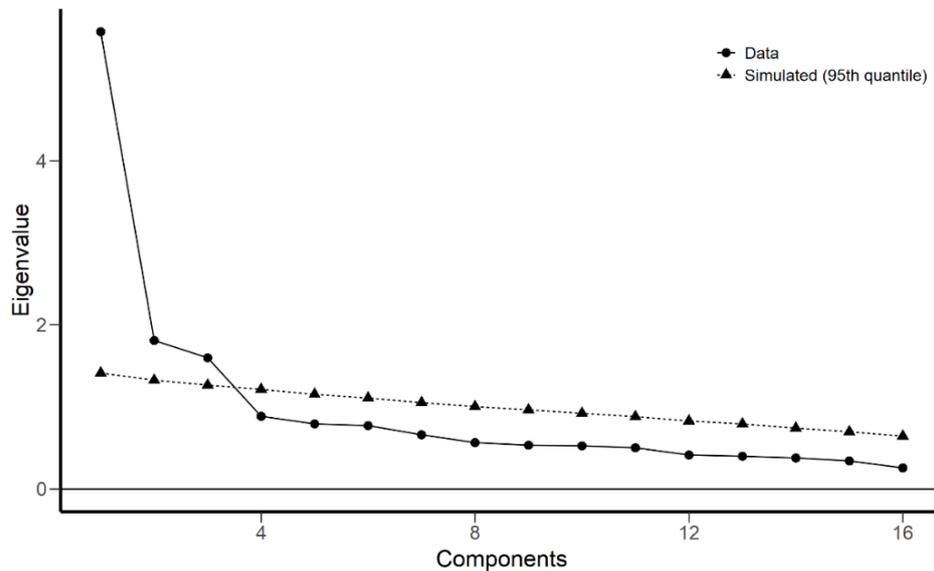


Figure 3: Plot of the actual versus randomly generated eigenvalues.

By examining the scree plot of the PA, as is evident from Figure 3 above, the first three actual eigenvalues are greater than the PA randomly-generated eigenvalues (for the 95th percentile criteria) (Hayton et al., 2004). Therefore, the factors corresponding with these three actual eigenvalues were retained. These results showed that three dimensions of study crafting could be differentiated. This factor structure does not correspond with the hypothesised four-factor structure. As a result, *Hypothesis 1 (H₁)* was not accepted.

Table 2 below presents the items of the three retained factors and their factor loadings (see Appendix A for a description of the item text).

Table 2

Correlations between the factors and the standardised factor loadings of the items

Item	Factor 1	Factor 2	Factor 3	Uniqueness
AIR1	0.580	-	-	0.575
AIR2	0.625	-	-	0.509
AIR3	0.603	-	-	0.585
AIR4	0.510	-	-	0.707
AIR5	0.641	-	-	0.626

Table 2 continues

Correlations between the factors and the standardised factor loadings of the items

Item	Factor 1	Factor 2	Factor 3	Uniqueness
AIR6	0.594	-	-	0.555
AIR7	0.715	-	-	0.539
AIR8	0.682	-	-	0.476
SLS1	-	0.670	-	0.609
SLS2	-	0.647	-	0.467
SLS3	-	0.772	-	0.359
SLS4	-	0.682	-	0.482
SLS5	-	0.726	-	0.489
SPS1	-	-	0.785	0.358
SPS2	-	-	0.462	0.717
SPS3	-	-	0.691	0.509

The first retained factor was termed “applying internal resources” (AIR) and consisted of eight items, whereas the second factor, consisting of five items, was labelled “seeking lecturer support” (SLS). Finally, the third factor was labelled “seeking peer support” (SPS), which included three items. Additionally, all of the items for all three factors indicated loadings above the 0.30 communality cut-off value (Field, 2009). Therefore, all of the factor loadings can be viewed as significantly estimated loadings (Nunnally, 1978).

CFA of the study crafting scale: Sample 2

To establish the factorial validity of the SCS further, CFA was done with sample 2 ($n = 303$) in order to replicate the findings of the EFA. The fit of the measuring model to the data was examined in this case. Based on the results, the fit of the data to the three-factor CFA measuring model was found to be acceptable; the chi-square (234.37) divided by the degrees of freedom (101) ratio was less than 3, indicating acceptable fit (Kline, 1998; Ivan, Herteliu & Nosca, 2008). The fit of the replicated three-factor model was assessed further based on the following fit indices: The comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). The values of these indices were as follows: CFI = 0.92; TLI = 0.90; RMSEA = 0.07. Both the CFI and TLI indices were found to indicate acceptable fit, considering that values of equal to, and above, 0.90 were obtained (Byrne, 2016; Hoyle, 1995). The RMSEA index also exhibited acceptable model fit, seeing that a value of below 0.08 was found (Browne & Cudeck, 1993; Van de Schoot et al., 2012). Given these

results, it is apparent that the three-factor structure obtained from the EFA and specified in this CFA model fitted the data. Therefore, the results above provide further evidence to reject H_1 . Table 3 below presents the standardised factor loadings for the items of the three-factor study crafting model.

Table 3
Standardised loadings for the study crafting factors

Factor	Item	Loading	S.E.	<i>p</i>
Applying internal resources	AIR1	0.68	0.04	0.001
	AIR2	0.67	0.04	0.001
	AIR3	0.62	0.04	0.001
	AIR4	0.50	0.05	0.001
	AIR5	0.54	0.05	0.001
	AIR6	0.62	0.04	0.001
	AIR7	0.60	0.04	0.001
	AIR8	0.74	0.03	0.001
Seeking lecturer support	SLS1	0.67	0.04	0.001
	SLS2	0.70	0.04	0.001
	SLS3	0.79	0.03	0.001
	SLS4	0.75	0.03	0.001
	SLS5	0.72	0.03	0.001
Seeking peer support	SPS1	0.78	0.05	0.001
	SPS2	0.52	0.05	0.001
	SPS3	0.71	0.05	0.001

Notes: no cross-loadings of items between the different items; S.E. = standard error; All p -values < 0.001

The results of the three-factor model showed that all of the items forming part of the study crafting factors – applying internal resources (AIR), seeking lecturer support (SLS), and seeking peer support (SPS) – had statistically significant and acceptable factor loadings (λ) ranging between 0.50 and 0.79 on the respective factors. In particular, factor loadings are considered high if it is equal to or above 0.70; medium if it is equal to or above 0.50; and as small if it is equal to or below 0.30 (Shevlin & Miles, 1998). Based on the results provided in Table 3 above, it is apparent that the factor loadings for the study crafting items ranged from medium to high. Additionally, accurate estimates are assumed since the standard errors for all the items of the three factors were small (Payton, Miller & Raun, 2000).

More specifically, for AIR the highest factor loading proved to be item 8 (AIR8: “I take the initiative to develop myself academically”; $\lambda = 0.74$, $SE = 0.03$). Likewise, SLS item 3 and SPS item 1 (respectively obtained the highest factor loadings (SLS3: “I take the initiative to proactively ask my lecturers for feedback”; $\lambda = 0.79$, $SE = 0.03$ and SPS1: “I take the initiative to ask fellow students for help when I need it”; $\lambda = 0.78$, $SE = 0.05$).

Conversely, for AIR, the smallest factor loading proved to be item 4 (AIR4: “I take the initiative to make sure that my studies are mentally not so intense”; $\lambda = 0.50$, $SE = 0.05$). Moreover, for SLS, the smallest factor loading was item 1, whilst item 2 proved to be the smallest for SPS (SLS1: “I take the initiative to ask if my lecturers are satisfied with my academic work”; $\lambda = 0.67$, $SE = 0.04$, and SPS2: “I take the initiative to ask fellow students to collaborate on our studies”, $\lambda = 0.52$, $SE = 0.05$). However, these loadings were still considered to be acceptable, according to the guidelines mentioned previously.

In terms of reliability and as a means of internal consistency, Cronbach’s alpha coefficients were calculated for the three-factor model (Cronbach, 1951). The standard cut-off value of 0.70 was considered acceptable (Nunnally & Berstein, 1994; Tabachnick & Fidell, 2001). It was evident that all the reliability coefficients were acceptable ($\alpha \geq 0.70$), of which the values may be observed on the sloping of the correlation matrix in Table 4 below. These results, therefore, support and provide evidence for H_2 . In addition, the correlation matrix was also only investigated once acceptable fit and reliability were established. Subsequently, the correlation matrix for the three-factor study crafting model is presented below.

Table 4
Reliabilities and correlation matrix for the study crafting factors

Variables	α	1	2	3
1. Applying internal resources	0.83	(1.00)	-	-
2. Seeking lecturer support	0.85	0.56***	(1.00)	-
3. Seeking peer support	0.71	0.43**	0.32**	(1.00)

Notes: α = Cronbach’s alpha reliability coefficient; All correlations are statistically significant $p < 0.001$; *, Small practical effect; **, Medium practical effect; ***, Large practical effect.

The correlation matrix above was also used to determine the relationships between the study crafting factors, where the effect sizes were regarded as small for $r < 0.30$, medium for $r \geq 0.30$, and large for $r \geq 0.50$ (Cohen, 1988). As is clear from Table 4 above, the study crafting

factors of AIR, SLS and SPS all correlated with one another, where the effect sizes ranged from medium to large. In particular, AIR proved to have a positive relationship with SLS ($r = 0.56$, large effect) and with SPS ($r = 0.43$, medium effect). SLS also correlated positively with SPS ($r = 0.32$, medium effect). These results thereby provide evidence for the strength of the relationships between the study crafting variables and supporting convergent validity as stated in H_3 . Positive and significant relationships were therefore found.

Final measuring model: Total sample

Lastly, the final measuring model was examined by utilising the total sample's ($N = 611$) results. The results indicate that the final three-factor measuring model was also found to be acceptable for the total sample as would be expected. Once again, the chi-square (2443.44) divided by the degrees of freedom (839) ratio was less than 3 (Kline, 1998; Ivan et al., 2008). The following fit indices were once again determined: The comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). The results of these indices were: CFI = 0.94; TLI = 0.93; RMSEA = 0.06. More specifically, the CFI and TLI indices indicated an acceptable fit, given that values of above 0.90 were obtained (Byrne, 2016; Hoyle, 1995). The RMSEA index similarly exhibited an acceptable model fit (a value below 0.08 was obtained) (Browne & Cudeck, 1993; Van de Schoot et al., 2012). Based on the former results, it can be accepted that this final three-factor model fit the data the best, thereby presenting additional evidence to reject H_1 .

In addition, Table 5 below provides the standardised factor loadings for all of the latent variables.

Table 5

Standardised loadings for the latent variables

Factor	Item	Loading	S.E.	P
Applying internal resources	AIR1	0.71	0.03	0.001
	AIR2	0.70	0.03	0.001
	AIR3	0.67	0.03	0.001
	AIR4	0.54	0.03	0.001
	AIR5	0.60	0.03	0.001
	AIR6	0.70	0.03	0.001

Notes: S.E. =standard error; All p -values < 0.001

Table 5 continues

Standardised loadings for the latent variables

Factor	Item	Loading	S.E.	P
	AIR7	0.68	0.03	0.001
	AIR8	0.80	0.02	0.001
Seeking lecturer support	SLS1	0.64	0.03	0.001
	SLS2	0.78	0.03	0.001
	SLS3	0.83	0.02	0.001
	SLS4	0.84	0.03	0.001
	SLS5	0.73	0.03	0.001
Seeking peer support	SPS1	0.77	0.04	0.001
	SPS2	0.71	0.05	0.001
	SPS3	0.68	0.04	0.001
Student engagement	VI1A_N	0.67	0.02	0.001
	DE1_R	0.74	0.02	0.001
	VI2_R	0.68	0.02	0.001
	DE3_R	0.81	0.02	0.001
	VI2A_N	0.65	0.02	0.001
	DE41_R	0.83	0.02	0.001
	VI3C_N	0.85	0.01	0.001
	DE5B_R	0.81	0.02	0.001
	VI4_R	0.72	0.02	0.001
	DE6_N	0.65	0.03	0.001
	VI5B_R	0.65	0.02	0.001
	DE7_N	0.76	0.02	0.001
Strengths use behaviour	SUB1	0.87	0.02	0.001
	SUB2	0.83	0.02	0.001
	SUB3	0.73	0.03	0.001
	SUB4	0.84	0.02	0.001
	SUB5	0.81	0.02	0.001
Study-course fit	SCFT1	0.71	0.03	0.001
	SCFT2	0.89	0.02	0.001
	SCFT3	0.83	0.02	0.001
	SCFT4	0.86	0.02	0.001
	SCFT5	0.84	0.02	0.001
Deficit correction behaviour	DCB1	0.85	0.02	0.001
	DCB2	0.86	0.02	0.001
	DCB3	0.82	0.02	0.001
	DCB4	0.80	0.02	0.001
	DCB5	0.74	0.03	0.001

Notes: S.E. =standard error; All *p*-values < 0.001

From Table 5 above, it is clear that all of the items loaded significantly on the corresponding latent variables ($\lambda > 0.50$), whilst the standard errors were found to be small (Payton et al., 2000), which indicate valid and accurate estimates. More specifically, for AIR the highest factor loading was found for item 8 (AIR8: $\lambda = 0.80$, SE = 0.02), whereas the smallest was for item 4 (AIR4: $\lambda = 0.54$, SE = 0.03). Regarding SLS, item 4 had the highest loading (SLS4: $\lambda = 0.84$, SE = 0.03), whilst the smallest loading was evidently for item 1 (SLS1: $\lambda = 0.64$, SE = 0.03). Similarly, for SPS, item 1 had the highest factor loading (SPS1 $\lambda = 0.77$, SE = 0.04) and item 3 the smallest (SPS3 $\lambda = 0.68$, SE = 0.04).

In addition, the items of the other remaining latent variables were analysed, namely strengths use behaviour (SUB) and deficit correction behaviour (DCB), student engagement, and study-course fit. For these items the following item factor loadings were established: regarding SUB, all of the items loaded positively on this factor ($\lambda \geq 0.73$), implying that these items measured a construct very similar to that of the intended measurement construct. Furthermore, considering DCB, the majority of the items displayed sufficiently high loadings ($\lambda \geq 0.74$). All of the items on the student engagement factor indicated high loadings ($\lambda \geq 0.65$) as well, and this latent variable explained sufficient variance in the related items. Finally, the item factor loadings for the study-course fit factor were found to be high as well ($\lambda \geq 0.77$).

This study further investigated the remaining hypotheses related to the latent variables. In this regard, Cronbach's alpha reliability coefficients were calculated as a measure of internal consistency, with the results provided in Table 6 below. Acceptable reliability coefficients ($\alpha \geq 0.70$) were found for all latent variables, thus providing evidence to support H_2 . Table 6 below also presents the correlation matrix for the mentioned variables.

Table 6
Reliabilities and correlation matrix for the latent variables

Variables	A	1	2	3	4	5	6	7
1. Applying internal resources	0.83	1.00	-	-	-	-	-	-
2. Seeking lecturer support	0.85	0.58 ^c	1.00	-	-	-	-	-
3. Seeking peer support	0.71	0.45 ^b	0.37 ^b	1.00	-	-	-	-
4. Student engagement	0.92	0.73 ^c	0.47 ^b	0.39 ^b	1.00	-	-	-
5. Strengths use behaviour	0.87	0.68 ^c	0.35 ^b	0.35 ^b	0.65 ^c	1.00	-	-
6. Study-course fit	0.88	0.48 ^a	0.28 ^a	0.28 ^a	0.71 ^c	0.50 ^c	1.00	-
7. Deficit correction behaviour	0.86	0.69 ^c	0.45 ^b	0.43 ^b	0.61 ^c	0.69 ^c	0.44 ^b	1.00

Notes: All correlations $p < .001$; α = Cronbach's alpha reliability; a, Small effect; b, Medium effect; c, Large effect.

Table 6 above, indicates that the study crafting factors were all reliable (α 's > 0.70) and all factors correlated positively with one another with either a medium or a large effect. Specifically, the correlation matrix showed that AIR does have a positive relationship with SLS ($r = 0.58$; large effect) and with SPS ($r = 0.45$; medium effect). Furthermore, SLS also correlated positively with SPS ($r = 0.37$; medium effect). Likewise, a significant relationship was found between the three respective study-crafting factors and SUB. This means that SUB was found to be correlated positively with AIR ($r = 0.68$, large effect), with SLS ($r = 0.35$, medium effect), and with SPS ($r = 0.35$; medium effect). All three study-crafting factors also correlated positively with the outcome of DCB, as was expected. In particular, AIR correlated positively with DCB ($r = 0.69$; large effect), SLS also correlated positively with DCB ($r = 0.45$, medium effect), and finally SPS correlated positively with DCB ($r = 0.43$; medium effect). The results, therefore, support H_3 , implying that the SCS did show sufficient convergent validity.

In terms of discriminant validity, the correlations were also considered and found to be below the 0.85 guideline (r 's ≤ 0.85 ; Brown, 2015). Thus, all the correlations were found to be within acceptable constraints, providing evidence and support for H_4 . However, a series of models were also tested where the correlations between the factors were determined as constrained to 1.00, and then compared to the unconstrained models. For all of these models, it was found that the constrained model did not perform better than the unconstrained one (p 's < 0.05), providing further support for H_4 . Therefore, the SCS factors showed discriminant validity.

Structural regressions: Total sample

Finally, the structural model was specified by using the final three-factor measuring model and inserting structural paths. This allowed for the investigation of the criterion validity of the SCS. This assessment was done by taking into account not only the statistical significance of the structural paths, but also the size and direction of the standardised beta coefficient values (β). The statistical significance level for all parameters was set at $p < 0.05$. Consequently, the structural paths were inserted in line with the study's hypotheses. The following result was evident: the study crafting model presents an acceptable fit.

Table 7 below displays the results of the regressions for the structural model.

Table 7

Regression results for the structural model

Structural path	β	S.E.	p	Result
Applying internal resources → Student engagement	0.78	0.03	0.001*	Significant
Applying internal resources → Study-course fit	0.56	0.04	0.001*	Significant
Seeking lecturer support → Student engagement	-0.01	0.03	0.880	Not significant
Seeking lecturer support → Study-course fit	-0.07	0.05	0.126	Not significant
Seeking peer support → Student engagement	0.05	0.30	0.098	Not significant
Seeking peer support → Study-course fit	0.08	0.04	0.055	Not significant

Notes: β = beta coefficient; S.E. = Standard error; p = Two-tailed statistical significance; * = $p < 0.001$

Regrading AIR, this factor positively predicted student engagement ($\beta = 0.78$, $SE = 0.03$, $p = 0.001$). AIR also positively predicted study-course fit ($\beta = 0.56$, $SE = 0.04$, $p = 0.001$). Furthermore, SLS did not significantly predict student engagement ($\beta = -0.01$, $SE = 0.03$, $p = 0.880$) or study-course fit ($\beta = -0.07$, $SE = 0.05$, $p = 0.126$). Finally, SPS did not positively predict student engagement ($\beta = 0.05$, $SE = 0.30$, $p = 0.098$). Moreover, SPS also did not impact study-course fit significantly. However, the cut-off for significance was close to the threshold of 0.05, and the relationship was interpreted as being not too rigid in considering the significance ($\beta = 0.08$, $SE = 0.04$, $p = 0.055$). These results in Table 7 above, therefore, provide partial evidence to support H_5 and H_6 .

DISCUSSION

The present study aimed to validate a newly-developed study crafting scale (SCS) within the South African higher education context. To achieve this aim, the factorial validity, reliability, as well as convergent, discriminant, and criterion validity of the SCS were examined. Although crafting has been researched within the organisational context, to date crafting among students and within HEIs has not been researched previously. The present study thus contributes to the field of Industrial Psychology by making information available on the crafting topic by examining the validity of a new SCS in the context of higher education.

Summary of the findings

To investigate the first hypothesis, this study intended to demonstrate that the SCS contains a four-factor structure similar to that of job crafting (Tims et al., 2012). However, the findings

from the EFA provided evidence of a three-factor structure rather than a four-factor solution. This three-factor model proved to fit the data more suitably in light of better-fit indices and further evidence obtained with the CFA. Consequently, *Hypothesis 1 (H₁)*, stating that study crafting will comprise a four-factor structure, was rejected. This result is in contrast with certain existing literature on job crafting within the organisational context where a four-factor crafting structure was pointed out (Akin et al., 2014; Tims et al., 2012). However, Tims et al. (2012) originally proposed that job crafting consists of three dimensions instead of four. Additionally, in a South African study on job crafting within the mining and manufacturing industry, a three-factor structure was applied. The reason was the concern about the discriminant validity of two of the original dimensions (De Beer, Tims & Bakker, 2016). Therefore, deviation from the four-factor structure is not unique to the current study.

Regarding the reliability of the SCS, the findings showed Cronbach's alpha reliability coefficients ($\alpha \geq 0.70$) to be acceptable (Nunnally & Berstein, 1994; Tabachnick & Fidell, 2001). Specifically, acceptable reliability was found for all three factors: for applying internal resources (AIR) ($\alpha = 0.83$); seeking lecturer support (SLS) ($\alpha = 0.85$); and seeking peer support (SPS) ($\alpha = 0.71$). This finding provided evidence to accept *Hypothesis 2 (H₂)*, explaining that the scale would show acceptable reliability. The research of De Beer et al. (2016) and Akin et al. (2014) also found acceptable reliability results pertaining to the JCS, ($\alpha \geq 0.70$) and ($\alpha = 0.84$) respectively.

The convergent validity of the SCS was also investigated by correlating study crafting with theoretically similar proactive behaviour constructs of strengths use behaviour (SUB) and deficit correction behaviour (DCB) (Van Woerkom et al., 2016), as well as by investigating the strength of the relationships between the latent variables. All three study crafting factors of AIR, SLS and SPS correlated with one another, where the relationship effect sizes ranged from medium to large (refer to Table 6 above). In addition, all three study crafting factors correlated positively with one another. These results provide sufficient evidence to accept *Hypothesis 3 (H₃)*. This is in line with previous research on job crafting which showed that the JCS has acceptable convergent validity with theoretically similar constructs. In particular, the study by Tims et al. (2012) found evidence that the original four job crafting dimensions are related positively to the proactive behavioural constructs of proactive personality and personal initiative (Demerouti & Bakker, 2014). A further study confirmed that job crafting is correlated

negatively with the theoretically different and “inactive construct of cynicism” (Demerouti & Bakker, 2014, p. 422).

In terms of discriminant validity, the present study’s results were examined further to provide evidence for *Hypothesis 4 (H₄)*. The results demonstrated that the SCS do show acceptable and sufficient discriminant validity, seeing that the correlations between the latent variables are within Brown’s guideline of below 0.85 (Brown, 2015). The correlations between the latent variables of AIR, SLS, SPS, SUB and DCB, student engagement, as well as study-course fit, scored all well below the guideline, ranging from 0.37 to 0.65. Additionally, the tests of constrained versus unconstrained models also showed acceptable discriminant validity when correlations between variables were forced to unify and became free again. Therefore, these tests provided evidence to accept *H₄*. Similarly, previous research in the South African context showed that the JCS did show acceptable discriminant validity since the inter-correlations between the tested scales were reasonable (Nielsen & Abildgaard, 2012).

In a separate analysis in this study, the researcher investigated the criterion validity of the SCS to determine whether study crafting was a significant predictor of other outcome variables. The present study expanded by including the variables of student engagement and study-course fit. In establishing the criterion validity, a final structural model was created and regression paths inserted. The results of the regression analysis showed that the study crafting dimension of AIR was a significant predictor of student engagement and study-course fit. This finding suggested that AIR predicts student engagement positively. Existing literature supports this finding: It was established that the crafting of resources and challenges did result in higher engagement levels (Bakker et al., 2012), whilst daily job crafting also related to engagement on a daily basis (Petrou et al., 2012). However, the study crafting dimensions of SLS and SPS both were non-significant predictors of student engagement, providing partial evidence to support *Hypothesis 5 (H₅)*.

AIR also were found to predict study-course fit positively, for which there are supporting research findings. These literature findings reported repeatedly that better person-job fit is a product of job crafting (Berg et al., 2013; Wrzesniewski & Dutton, 2001). Chen, Yen and Tsai (2014) stated further that job crafting is related positively to person-job fit. Thus, research provides evidence that crafting behaviour patterns are related to enhanced fit, be it between demands and abilities or needs and supplies (Lu et al., 2014). The regression results

demonstrated that the study crafting behaviour of SLS did not relate significantly to study-course fit. SPS was also not viewed as a significant predictor of study-course fit, although the result bordered on being statistically significant ($p = 0.055$). Consequently, *Hypothesis 6 (H₆)* was supported only partially.

In summary, the results indicated that the SCS is a valid and reliable scale. Specifically, a three-factor model is accepted, which suggests that study crafting consists of three independent factors, namely applying internal resources (AIR), seeking lecturer support (SLS) and seeking peer support (SPS). Additionally, positive results were found for the reliability and internal consistency of the SCS. For convergent and discriminant validity, acceptable and sufficient results were obtained when study crafting was correlated with the proactive behaviour types of SUB and DCB. Finally, regarding criterion validity, it was found that certain study crafting dimensions predict engagement as well as study-course fit.

Practical implications

The validated SCS from the present study provides higher education institutions (HEIs) with a measure to examine their students' crafting behaviour patterns. In this way, HEIs will gain much-needed insight into whether students are provided with adequate resources to meet their study needs. Where institutions notice that their students have insufficient study resources, the institutions could develop and implement supporting interventions. For instance, offering training in interventions on crafting could enhance the proactive behaviour patterns of students with the goal of increasing their study resources. Likewise, it is expected that engagement will increase when students are able to meet their study demands with their increased study resources. Based on the findings, it can be assumed that the more engaged students become, the more they will relate to their studies.

The present study's results can also help HEIs and their staff members improve their understanding of study crafting and its connection to student engagement and study-course fit. In terms of success, the gathered information may help institutions deliver more graduates while reducing dropout rates. Students who commit them proactively to their studies can achieve academic excellence. In this regard, HEIs will be able to fulfil their role as knowledge distributors (Teferra & Altbach, 2004). The present study's findings and resultant interventions could help HEIs deliver more work-ready graduates who are appropriately educated, skilled

and trained to meet the expectations of a competitive marketplace. Such outcomes can have a positive influence on the South African higher education context as well as on the country's future workforce.

Finally, the results of this research study provided information about the possible use of a validated SCS in the higher education context. HEIs may use this scale to assist their students, particularly since students often have to cope with excessive demands despite having insufficient resources available to deal with their studies (Salanova et al., 2010). This scale can, therefore, be used to help students gain improved insight and awareness about the types of study crafting behaviour patterns that they can adopt.

Limitations and recommendations for future research

Even though this study has provided evidence to support its aim, certain limitations must be pointed out.

Firstly, only first-year students were included in the sample. Therefore, the study crafting and relevant findings may not be applied as readily to other student population groups. Future researchers should consider expanding the norm sample group used, incorporating students from other academic year groups as well. Such groups could comprise pre-graduate and post-graduate students. By including a more diversified sample group, the study will present a more comprehensive view of the study crafting phenomenon.

Secondly, the study was conducted at one specific HEI, and not across different institutions, nationally or internationally, which further limits the applicability of the findings. It is recommended that this study is replicated across different HEIs in South Africa, and even internationally. The SCS could thus be applied within other HEIs across South Africa and globally in similar higher-educational settings. Such replications of the present study will add to the existing literature by generalising the findings, when other HEIs are included, thus, providing richer information.

Thirdly, the research approach was a cross-sectional design, where data were gathered only at a single point in time (De Vos et al., 2011). Furthermore, a cross-sectional design makes it difficult to draw causal inferences, seeing that it provides “only a snapshot” of the phenomenon

(Levin, 2006, p. 25). Thus, the results may differ when study crafting is investigated at another point in time. To address this limitation, researchers can adopt a longitudinal approach when researching study crafting in the higher education context.

Finally, seeing that the SCS is a self-reporting measure, response bias may be a concern (Rosenman, Tennekoon & Hill, 2011). Response bias refers to a participant's "tendency to respond in a certain way", irrespective of the actual questions posed (Demetriou, Özer & Essau, 2015, p. 1). Respondents may, for instance, respond to the survey's questions in a socially desirable manner (Wetzel, Böhnke & Brown, 2016). Therefore, with the self-report SCS used in the present study, certain students may possibly have provided invalid responses (Demetriou et al., 2015). Even though self-reporting measures may lead to participant response bias, the measures still enable researchers to gather large volumes of quantifiable data and allow for the generalisation of research results (Demetriou et al., 2015). For future research, close attention should be paid to implementing well-designed research procedures, which outline the points of data collection and analysis (Smith & Noble, 2017). A further recommendation is to utilise mixed research methods. For example, utilising a quantitative self-report survey along with qualitative interviews or focus groups may help reduce the potential of measurement error as well as that of non-measurement error (Dillman, Smyth & Christian, 2014; Tourangeau & Plewes, 2013).

Conclusion

Based on the findings for both research articles, evidence was found for a valid and reliable scale to measure crafting behaviour patterns in HEIs. This research study is topical and applicable, as necessary insight was gained which could, in due course, help improve the management of HEIs and their student base. In addition, HEIs are viewed increasingly as business units, with their core dealings centring on students (Habib, 2016). On the whole, Industrial Psychology focuses on people's behaviour in business enterprises and as aspects such as social, economic, industrial and political factors, impinge on this behaviour (Bisen & Priya, 2010). Therefore, it has also become part of the industrial psychologist's role to understand these HEIs' work environments, along with understanding their stakeholders comprising students and academic staff. The SCS, proposed in the present study, provides a scale that will assist with this function.

Author's note

The material presented in this article is based on work supported by the office of the Deputy Vice-Chancellor: Teaching and Learning, North-West University. The views and opinions expressed in this research are those of the researcher and do not necessarily reflect the opinion or views of the funder.

REFERENCES

- Akin, A., Sariçam, H., Kaya, Ç., & Demir, T. (2014). Turkish version of job crafting scale (JCS): The validity and reliability study. *International Journal of Educational Researchers*, 5(1), 10-15.
- American Psychological Association (APA). (2008). Reporting standards for research in psychology: Why do we need them? What might they be? *American Psychologist*, 63, 839-851. doi: 10.1037/0003-066X.63.9.893
- Ashford, S. J., & Black, J. S. (1996). Proactivity during organizational entry: Antecedents, tactics, and outcomes. *Journal of Applied Psychology*, 81(2), 199-214. doi: 10.1037/0021-9010.81.2.199
- Ashford, S. J., Blatt, R., & Van de Walle, D. (2003). Reflections on the looking glass: A review of research on feedback-seeking behaviour in organizations. *Journal of Management*, 29(6), 769-799. doi: 10.1016/S0149-2063(03)00079-5
- Association of American Colleges and Universities. (2002). *Greater expectations: A new vision for learning as a nation goes to college*. Washington, DC: Author.
- Bakker, A. B. (2011). An evidence-based model of work engagement. *Current Directions in Psychological Science*, 20, 265-269. doi: 10.1177/0963721411414534
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, 22, 309-328. doi: 10.1108/02683940710733115
- Bakker, A. B., & Demerouti, E. (2017). Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22, 273-285. doi: 10.1037/ocp0000056
- Bakker, A. B., Rodríguez-Muñoz, A., & Vergel, A. I. S. (2016). Modelling job crafting behaviours: Implications for work engagement. *Human Relations*, 69, 169-189. doi: 10.1177/0018726715581690
- Bakker, A. B., Tims, M., & Derks, D. (2012). Proactive personality and job performance: The role of job crafting and work engagement. *Human Relations*, 65, 1359-1378. doi: 10.1177/0018726712453471
- Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2008). *What is job crafting and why does it matter*. Retrieved from <http://www.centerforpos.org/>

- Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2013). Job crafting and meaningful work. In B.J. Dik, Z. S. Byrne, & M. F. Steger (Eds.), *Purpose and meaning in the workplace* (pp. 81-104). Washington, DC: American Psychological Association.
- Bindl, U. K., & Parker, S. K. (2010). Proactive work behavior: Forward-thinking and change-oriented action in organizations. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology* (Vol. 2, pp. 567-598). Washington, DC: American Psychological Association.
- Bisen, V., & Priya (2010). *Industrial psychology*. [ProQuest Ebook Central]. Retrieved from <https://ebookcentral-proquest-com.nwulib.nwu.ac.za>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). New York, NY: Guilford Press.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Thousand Oaks, CA: Sage.
- Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality & Social Psychology*, 65(5), 1061-1070.
- Burnett, S. A., & Huisman, J. (2010). Universities' responses to globalisation: The influence of organisational culture. *Journal of Studies in International Education*, 14(2), 117-142. doi: 10.1177/1028315309350717
- Byrne, B. M. (2010). *Structural equation modelling with AMOS: Basic concepts, applications and programming* (2nd ed.). New York, NY: Routledge.
- Byrne, B. M. (2016). *Structural equation modelling with AMOS: Basic concepts, applications, and programming* (3rd ed.). New York, NY: Routledge.
- Chen, C., Yen, C., & Tsai, F. C. (2014). Job crafting and job engagement: The mediating role of person-job fit. *International Journal of Hospitality Management*, 37, 21-28.
- Cohen, J. (1977). *Statistical power analysis for the behavioural sciences* (rev. ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. Hillsdale, NY: Erlbaum.
- Crant, J. M. (2000). Proactive behavior in organizations. *Journal of Management*, 26, 435-462. doi: 10.1177/014920630002600304
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 22, 297-334.

- De Beer, L. T., Tims, M., & Bakker, A. B. (2016). Job crafting and its impact on work engagement and job satisfaction in mining and manufacturing. *South African Journal of Economic & Management Sciences*, *19*, 400-412. doi: 10.17159/2222-3436/2016/v19n3a7
- Demerouti, E. (2014). Design your own job through job crafting. *European Psychologist*, *19*(4), 237-247. doi: 10.1027/1016-9040/a000188
- Demerouti, E., & Bakker, A. B. (2014). Job crafting. In M. C. W. Peeters, J. De Jonge, & T. W. Taris (Eds.), *An introduction to contemporary work psychology* (pp. 414-433). Chichester: Wiley-Blackwell.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*, 499-512. doi: 10.1037//0021-9010.86.3.499
- Demetriou, C., Özer, B. U., & Essau, C. A. (2015). Self-reported questionnaires. In R. L. Cautin & S. O. Liliendfeld (Eds.), *The encyclopedia of clinical psychology* (pp. 1-6). Hoboken, NJ: John Wiley & Sons.
- De Vos, A., & Soens, N. (2008). Protean attitude and career success: The mediating role of self-management. *Journal of Vocational Behavior*, *73*(3), 449-456. doi: 10.1016/j.jvb.2008.08.007
- De Vos, A. S., Strydom, H., Fouché, C. B., & Delport, C. S. L. (2011). *Research at grassroots: For the social sciences and human service professions* (4th ed.). Pretoria: Van Schaik.
- DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, NJ: John Wiley & Sons.
- Engle, J., & O'Brien, C. (2007). *Demography is not destiny: Increasing the graduation rates of low-income college students at large public universities*. Washington, D. C.: The Pell Institute.
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Thousand Oaks, CA: Sage.
- Fletcher, J. M., Sindelar, J. L., & Yamaguchi, S. (2011). Cumulative effects of job characteristics on health. *Health Economics*, *20*(5), 553-570. doi: 10.1002/hec.1616
- Fook, C. Y., & Sidhu, G. K. (2015). Investigating learning challenges faced by students in higher education. *Procedia-Social & Behavioural Sciences*, *186*, 604-612. doi: 10.1016/j.sbspro.2015.04.001
- Foxcroft, C. D. (2004). Planning a psychological test in the multicultural South African context. *South African Journal of Industrial Psychology*, *30*(4), 8-15.

- Foxcroft, C. D., & Roodt, G. (2013). What the future holds for psychological assessment. In C. D. Foxcroft & G. Roodt (Eds.), *Introduction to psychological assessment in the South African context* (pp. 287-302) (4th ed.). Cape Town: Oxford University Press.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (1993). *How to design and evaluate research in education* (2nd ed). New York, NY: McGraw-Hill.
- Frederickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218-226. doi: 10.1037/0003-066X.56.3.218
- Frese, M., & Fay, D. (2001). Personal initiative: An active performance concept for work in the 21st century. In B. M. Staw & R. I. Sutton (Eds.), *Research in Organizational Behaviour*, (pp. 133-187). Amsterdam: Elsevier.
- Frese, M., Kring, W., Soose, A., & Zempel, J. (1996). Personal initiative at work: Differences between East and West Germany. *Academy of Management Journal*, *39*, 37-63.
- Furr, R. M., & Bacharach, V. R. (2014). Validity: Estimating and evaluating convergent and discriminant validity evidence. In R. M. Furr (Ed.), *Psychometrics: An introduction* (pp. 191-235). Thousand Oaks, CA: Sage.
- Gefen, D., & Straub, D. (2005). A practical guide to factorial validity using PLS-graph: Tutorial and annotated example. *Communications of the Association for Information Systems*, *16*(1), 91-109.
- Ghitulescu, B. E. (2006). *Shaping tasks and relationships at work: Examining the antecedents and consequences of employee job crafting*. Unpublished doctoral dissertation, University of Pittsburgh, PA.
- Gravetter, F. J., & Forzano, LA. B. (2012). *Research methods for the behavioral sciences*. Belmont, CA: Wadsworth, Cengage Learning.
- Gu, Q. (2011). An emotional journal of change: The case of Chinese students in UK higher education. In L. Jin & M. Cotazzi (Eds.), *Researching Chinese learners* (pp. 212-232). New York, NY: Palgrave Macmillan.
- Gu, Q., & Schweisfurth, M. (2006). Who adapts? Beyond cultural models of “the” Chinese learner. *Language, Culture, & Curriculum*, *19*, 74-89. doi: 10.1080/07908310608668755
- Habib, A. (2016). Transcending the past and reimagining the future of the South African university. *Journal of Southern African Studies*, *42*, 35-48. doi: 10.1080/03057070.2016.1121716

- Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. In *Organizational Research Methods*, 7, 191-205. doi: 10.1177/1094428104263675
- Hoyle, R. H. (1995). The structural equation modelling approach: Basic concepts and fundamental issues. In R. H. Hoyle (Ed.), *Structural equation modelling: Concepts, issues and applications* (pp. 1-15). Thousand Oaks, CA: Sage.
- Hurley, A. E., Scandura, T. A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vandenberg, R. J., et al. (1997). Exploratory and confirmatory factor analysis: Guidelines, issues, and alternatives. *Journal of Organizational Behavior*, 18, 667-683.
- Ivan, I., Herteliu, C., & Nosca, G. (2008). Text entities' metrics. *Journal of Applied Quantitative Methods*, 3(1), 1-120.
- JASP Team. (2018). *JASP (Version 0.9.2.0)* [Computer software]. Retrieved from <https://jasp-stats.org/>
- Kahn, P. E. (2014). Theorising student engagement in higher education. *British Educational Research Journal*, 40, 1005-1018. doi: 10.1002/berj.3121
- Kanten, P. (2014). The antecedents of job crafting: Perceived organizational support, job characteristics and self-efficacy. *European Journal of Business & Social Sciences*, 3(5), 113-128.
- Kanungo, R. N. (1982). Measurement of job and work involvement. *Journal of Applied Psychology*, 67, 341-349.
- Kantanis, T. (2000). The role of social transition in students' adjustment to the first-year of university. *Journal of Institutional Research*, 9(1), 100-110.
- Kline, R. B. (1998). *Principles and practice of structural equation modelling*. New York: NY, Guilford Press.
- Krause, K. L., & Coates, H. (2008). Students' engagement in first-year university. *Assessment & Evaluation in Higher Education*, 33, 493-505. doi: 10.1080/02602930701698892
- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology*, 49, 1-49.
- Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, 58, 281-342. doi: 10.1111/j.1744-6570.2005.0672.x

- Kuh, G. D., Cruce, T., Shoup, R., Kinzie, J., & Gonyea, R. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *Journal of Higher Education, 79*(5), 540-563. doi: 10.1080/01421590701721721
- Kuh, G. D., Kinzie, J., Cruce, T., Shoup, R., & Gonyea, R. M. (2006). *Connecting the dots: Multi-faceted analyses of the relationships between student engagement results from the NSSE, and the institutional practices and conditions that foster student success*. Bloomington, IN: Indiana University.
- Lawler, E. E., & Hall, D. T. (1970). Relationships of job characteristics to job involvement, satisfaction and intrinsic motivation. *Journal of Applied Psychology, 54*, 305-312.
- Leana, C., Appelbaum, E., & Shevchuk, I. (2009). Work process and quality of care in early childhood education: The role of job crafting. *Academy of Management Journal, 52*(6), 1169-1192. doi: 10.5465/amj.2009.47084651
- LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stressor-hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. *Academy of Management Journal, 48*(5), 764-775.
- Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-based Dentistry, 7*, 24-25.
- Lu, C., Wang, H., Lu, J., Du, D., & Bakker, A. B. (2014). Does work engagement increase person-job fit? The role of job crafting and job insecurity. *Journal of Vocational Behavior, 84*, 142-152. doi: 10.1016/j.jvb.2013.12.004
- Morrison, E. W. (1993). Longitudinal study of the effects of information seeking on newcomer socialization. *Journal of Applied Psychology, 78*(2), 173-183. doi: 10.2307/257011
- Mostert, K., Theron, B., & De Beer, L. T. (2017). Validating strengths use and deficit correction behaviour scales for South African first-year students. *South African Journal of Industrial Psychology, 43*, 1-12. doi: 10.4102/sajip.v43.1395
- Murphy-Lejeune, E. (2003). An experience of interculturality: Student travellers abroad. In G. Alred, M. Byram, & M. Fleming (Eds.), *Intercultural experience and education* (pp. 101-113). Clevedon: Multilingual Matters.
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Los Angeles, CA: Muthén & Muthén.
- Nunnally, J. C. (1978). *Psychometric theory*. New York, NY: McGraw-Hill.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.

- Nielsen, K., & Abildgaard, J. S. (2012). The development and validation of a job crafting measure for use with blue-collar workers. *Work & Stress: An International Journal of Work, Health, & Organisations*, 26(4), 365-384. doi: 10.1080/02678373.2012.733543
- Nielsen, K., Antino, M., Sanz-Vergel, A., & Rodríguez-Muñoz, A. (2017). Validating the job crafting questionnaire (JCRQ): A multi-method and multi-sample study. *Work & Stress*, 31(1), 82-99. doi: 10.1080/02678373.2017.1293752
- Olsen, C., & St. George, D. M. M. (2004). *Cross-sectional study design and data analysis*. Retrieved August 5, 2019, from http://yes-competition.org/media.collegeboard.com/digitalServices/pdf/yes/4297_MODULE_05.pdf
- Parker, S. K., & Collins, C. G. (2010). Taking stock: Integrating and differentiating multiple proactive behaviors. *Journal of Management*, 36(6), 633-662. doi: 10.1177/0149206308321554
- Payton, M. E., Miller, A. E., & Raun, W. R. (2000). Testing statistical hypotheses using standard error bars and confidence intervals. *Communications in Soil Science & Plant Analysis*, 31(5), 547-551. doi: 10.1080/00103620009370458
- Petrou, P., Demerouti, E., Peeters, M. C. W., Schaufeli, W. B., & Hetland, J. (2012). Crafting a job on a daily basis: Contextual correlated and the link to work engagement. *Journal of Organizational Behavior*, 33(8), 1120-1141. doi: 10.1002/job.1783
- Quaye, S. J., & Harper, S. R. (Eds.). (2009). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. London, UK: Routledge.
- Rajasingham, L. (2011). New challenges facing universities in the internet-driven global environment. *European Journal of Open, Distance & E-learning* (Vol. 1). Retrieved from <https://search-ebshost-com.nwulib.nwu.ac.za/login.aspx?direct=true&db=eric&AN=EJ936391&site=eds-live>
- Rosenman, R., Tennekoon, V., & Hill, L. G. (2011). Measuring bias in self-reported data. *International Journal of Behavioural & Healthcare Research*, 2, 320-332.
- Saks, A. M., & Ashforth, B. E. (1997). A longitudinal investigation of the relationships between job information sources, applicant perceptions of fit, and work outcomes. *Personnel Psychology*, 50, 395-426. doi: 10.1111/j.1744-6570.1997.tb00913.x
- Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management*, 19, 116-131. doi: 10.1080/09585190701763982

- Salanova, M., Schaufeli, W. B., Martínez, I., & Bresó, E. (2010). How obstacles and facilitators predict academic performance: The mediating role of study student burnout and student engagement. *Anxiety, Stress & Coping: An International Journal*, *23*, 53-70. doi: 10.1080/10615800802609965
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross-national study. *Journal of Cross-cultural Psychology*, *33*(5), 464-481. doi: 10.1177/0022022102033005003
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytical approach. *Journal of Happiness Studies*, *3*, 71-92. doi: 10.1023/A1015630930326
- Shevlin, M., & Miles, J. N. V. (1998). Effects of sample size, model specification and factor loadings on the GFI in confirmatory factor analysis. *Personality & Individual Differences*, *25*, 85-90. doi: 10.1016/S0191-8869(98)00055-5
- Slemp, G. R., & Vella-Brodrick, D. A. (2013). The job crafting questionnaire: A new scale to measure the extent to which employees engage in job crafting. *International Journal of Wellbeing*, *3*(2), 126-146. doi: 10.5502/ijw.v3i2.1
- Speier, C., & Frese, M. (1997). Generalized self-efficacy as a mediator and moderator between control and complexity at work and personal initiative: A longitudinal study in East Germany. *Human Performance*, *10*, 171-192.
- Smith, J., & Noble, H. (2017). Bias in research. *Evidence-Based Nursing*, *17*(4), 100-101. doi: 10.1136/eb-2014-101946
- Stander, F. W., Diedericks, E., Mostert, K., De Beer, L. T. (2015). Proactive behaviour towards strengths use and deficit improvement, hope and efficacy as predictors of life satisfaction amongst first-year university students. *South African Journal of Industrial Psychology*, *41*(1), 1-10. doi: 10.4102/sajip.v41i1.1248
- Struwig, F. W., & Stead, G. B. (2013). *Research: Planning, designing and reporting*. Cape Town: Pearson Education.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). New York, NY: Harper & Row.
- Teferra, D., & Altbach, P. (2004). African higher education: Challenges for the 21st century. *Higher Education*, *47*, 21-50.
- Tims, M., & Bakker, A. B. (2010). Job crafting: Towards a new model of individual job redesign. *South African Journal of Industrial Psychology*, *36*, 1-9. doi: 10.4102/2Fsajip.v36i2.841

- Tims, M., Bakker, A. B., & Derks, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behavior, 80*, 173-186. doi: 10.1016/j.jvb.2011.05.009
- Tims, M., Derks, D., & Bakker, A. B. (2016). Job crafting and its relationships with person-job fit and meaningfulness: A three-wave study. *Journal of Vocational Behavior, 92*, 44-53. doi: 10.1016/j.jvb.2015.11.007
- Tourangeau, R., & Plewes, T. J. (Eds.). (2013). *Nonresponse in social science surveys: A research agenda*. Washington, DC: The National Academies Press.
- Van den Heuvel, M., Demerouti, E., & Peeters, M. C. W. (2015). The job crafting intervention: Effects on job resources, self-efficacy, and affective well-being. *Journal of Occupational & Organizational Psychology, 88*(3), 511-532. doi: 10.1111/joop.12128
- Van Niekerk, G., Mostert, K., & De Beer, L. T. (2016). Strengths use and deficit improvement: The relationship with engagement and fit with study course amongst first-year students. *Journal of Psychology in Africa, 26*, 43-48. doi: 10.1080/14330237.2015. 1124610
- Van Woerkom, M., Mostert, K., Els, C., Bakker, A. B., De Beer, L. T., & Rothmann, S. (2016). Strengths use and deficit correction in organizations: Development and validation of a questionnaire. *European Journal of Work and Organizational Psychology, 25*, 1-16. doi: 10.1080/1359432X.2016.1193010
- Vogt, K., Hakanen, J. J., Brauchli, R., Jenny, G. J., & Bauer, G. F. (2016). The consequences of job crafting: A three-wave study. *European Journal of Work & Organizational Psychology, 25*, 353-362. doi: 10.1080/1359432X.2015.1072170
- Wetzel, E., Böhnke, J. R., & Brown, A. (2016). Response biases. In F. T. L. Leong, D. Bartram, F. M. Cheung, K. F. Geisinger, & D. Iliescu (Eds.), *The itc international handbook of testing and assessment* (pp. 349-363). New York, NY: Oxford University Press.
- Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review, 26*(2), 179-201. doi: 10.5465/AMR.2001.4378011
- Wu, W., & Little, T. D. (2011). Quantitative research methods. In B. B. Brown & M. J. Prinstein (Eds.), *Encyclopedia of adolescence* (Vol. 1, pp. 287-297). Lawrence, KS: Academic Press.
- Zakarevičius, P., & Župerka, A. (2010). Expression of emotional intelligence in development of students' entrepreneurship. *Economics & Management, 15*, 865-873.
- Zepke, N. (2017). Student engagement and neoliberalism: An elective affinity? In *Student engagement in neoliberal times* (pp. 77-93). Singapore: Springer.

CHAPTER 3
CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter presents the conclusions, limitations and recommendations of the present study. Particularly the conclusions were drawn based on the results of the study in accordance with the general and specific research objectives. The limitations and shortcomings of this study are pointed out, and finally, recommendations are made for practice and future research on study crafting.

3.1 CONCLUSIONS

Existing research on crafting is limited to the organisational and work context. As a result, the crafting construct to date has previously not been examined within the higher education setting. Thus currently, to the researcher's knowledge, no scale exists through which to measure crafting behaviour patterns within the higher education context. This represents a predominant gap in the literature, seeing that crafting behaviour is important for students and higher education institutions (HEIs) alike.

Crafting is important for the higher education context since it can help students alter the design of their studies to achieve positive results (Tims, Derks & Bakker, 2016). Proactive crafting behaviour can help students foster positive study outcomes such as intentional behaviour, increased motivation, enhanced engagement, greater study satisfaction, improved study-fit and suitability, stronger persistence despite study difficulties, and greater social relatedness (Association of American Colleges and Universities, 2002; Berg, Dutton & Wrzesniewski, 2013; Crant, 2000; Lu, Wang, Lu, Du & Bakker, 2014; Salanova & Schaufeli, 2008; Slemp & Vella-Brodrick, 2014; Tims, Bakker & Derks, 2012; Tims, Bakker & Derks, 2013). Students can also utilise proactive crafting strategies to deal more efficiently with study-related stress (Clark, 2005; Terenzini, Rendon, Upcraft, Millar, Allison ..., Jalomo, 1994).

Objective 1

The first objective of the present study was to conceptualise crafting according to the literature. This objective was achieved by completing an in-depth literature study and review. In summary, crafting can be described as the ability to shape and influence the design of one's work (Tims et al., 2016). The construct of crafting refers to individuals changing aspects of

their job demands and job resources to succeed, whilst being involved actively in their work (Tims & Bakker, 2010; Tims et al., 2012). More specifically, crafting is conceptualised as self-initiated changes made to a job with the intent to attain “personal and work-related goals” (Tims et al., 2012, p. 173). These changes could entail the following: increasing structural job resources, decreasing hindering job demands, increasing social job resources, and increasing challenging job demands (Tims et al., 2012). On the other hand, crafting within the higher education context provides students with the opportunity to alter their studies actively by showing self-initiative to achieve success. Thus, study crafting in this sense can be explained as the concept of crafting applied by students in the higher education context.

Objective 2

The second objective was to determine the factorial validity of the newly-developed study crafting scale (SCS). The aim was, therefore, to determine the factor structure of the scale. The first hypothesis (H_1) postulated that study crafting comprises a four-factor structure, namely increasing structural study resources, increasing social study resources, decreasing hindering study demands, and increasing challenging study demands. However, H_1 was rejected. Instead, a three-factor measuring model fitted the data the best. Both the results from the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) provided evidence that the SCS consists of three factors instead of the hypothesised four factors. The three factors found by investigating the research results, are: applying internal resources (AIR), seeking lecturer support (SLS) and seeking peer support (SPS). Specifically, a range of fit indices was investigated, verifying that the three-factor measuring model showed acceptable fit to the data (CFI = 0.94; TLI = 0.93; RMSEA = 0.06).

Objective 3

Furthermore, the reliability, or internal consistency, of the three-factor SCS was determined by calculating Cronbach’s alpha reliability coefficients. This was done to achieve research objective three. The second hypothesis (H_2) stated that the new SCS shows acceptable reliability coefficients. This study’s reliability results did provide evidence indicating that the scale’s internal consistency is acceptable. All of the reliability coefficients of the three factors were found to be above the standard guideline of 0.70 ($\alpha \geq 0.70$) (Panayides, 2013). Therefore, H_2 was accepted.

Objective 4

In the fourth objective, the aim was to establish whether there is convergent validity between the SCS and the theoretically-similar constructs of proactive strengths use behaviour (SUB) and proactive deficit correction behaviour (DCB). The third hypothesis (H_3), relating to this objective, stated that the new SCS shows acceptable convergent validity with SUB and with DCB. Furthermore, the present study's results indicated that the three study crafting factors of AIR, SLS and SPS intercorrelate positively, demonstrating acceptable convergent validity. More evidence of convergent validity was found as the three study crafting factors indicate a positive relationship with SUB and independently with DCB, where the correlation effect sizes ranged from medium to large. Therefore, suitable evidence of convergent validity was found to accept H_3 .

Objective 5

The fifth objective was to investigate the discriminant validity of the SCS. The hypothesis (H_4) formulated in accordance with the fifth objective was that the new crafting scale shows acceptable discriminant validity. The present study's results indicated that the three study crafting factors correlated with one another, where inter-correlational values of below 0.85 were found. Additionally, the inter-correlations between the study crafting factors and the other latent variables in this study, namely SUB and DCB, student engagement and study-course fit, were all found to be below the 0.85 guideline for discriminant validity (Brown, 2015). The new SCS thus shows acceptable discriminant validity. In addition, the present study tested constrained versus unconstrained models where the correlations between the variables were constrained to unity (1.00) and then compared to the unconstrained. The results again showed evidence of discriminant validity. Consequently, H_4 was accepted.

Objective 6

The sixth objective was to investigate the criterion validity of the newly-developed SCS. Criterion validity refers to whether a scale explains variance in other latent variables, providing evidence of its ability to predict future behaviours (Fraenkel, Wallen & Hyun, 1993). The literature links the crafting construct theoretically to various positive outcome variables, including meaning, engagement and person-job fit (Lu et al., 2014; Tims et al., 2013; Tims et

al., 2016). Regarding meaning, Wrzesniewski and Dutton (2001) explain that when individuals deliberately alter their work tasks and relationships, changes take place in their surroundings. It is argued that such alterations can sequentially lead to changes in work-identity and meaning. Consequently, crafting can be used as a means to revise the meaning that students attach to their studies. For purposes of the present study, the variables of student engagement and study-course fit were included to investigate criterion validity. The applicable hypotheses for this research objective were two-fold. The first part, hypothesis five (H_5), stated that study crafting explains a significant amount of variance in student engagement, whilst the second part, the sixth hypothesis (H_6), stated that study crafting explains a significant amount of variance in study-course fit.

The criterion validity was determined by inserting structural regression paths, added to the final measuring model. In this calculation, the significance of each path was considered as well as the size and direction of the standardised beta coefficient values (β). Based on the study's results, the study crafting factor of AIR positively predicts both student engagement and study-course fit. However, the two remaining study crafting factors of SLS and SPS did not significantly predict student engagement nor study-course fit. Thus, only partial evidence of criterion validity was found. As a consequence, H_5 and H_6 were accepted partially. Similar results have been found in studies organisational where the crafting of job resources positively related to engagement (Tims et al., 2013) and "higher levels of person-job fit" (Tims et al., 2016, p. 44)

According to the literature, proactive crafting has a strong link with engagement. Job crafting has been found to predict work engagement positively (Bakker, Tims & Derks, 2012). Therefore, when employees alter their work environments proactively to be more challenging and resourceful, they show stronger engagement levels (Bakker et al., 2012). This finding provides evidence of the positive relationship between crafting and engagement. Researchers also confirmed the positive relationship between crafting and increased person-job fit (Berg et al., 2013; Wrzesniewski & Dutton, 2001). Crafting behaviour patterns and interventions were found to be effective when used as a tool to increase person-job fit (Kooij, Van Woerkom, Wilkenloh, Dorenbosch & Denissen, 2017). Several correlational studies confirmed that crafting behaviour leads to greater person-job fit (Chen, Yen & Tsai, 2014; Lu et al., 2014; Tims et al., 2016).

Objective 7

Finally, the remaining objective of this research study was to make recommendations for future research and practice. When determining recommendations for future research, certain limitations and shortcomings of the present study were identified. These limitations and the subsequent recommendations are outlined in the sections below.

3.2 LIMITATIONS OF THE RESEARCH

This present study did show limitations, which should be acknowledged.

Firstly, the research sample was limited since only certain student groups were included as participants. In particular, the sample comprised first-year students, registered for the first time at an HEI. All other student groups were thus excluded from participating due to the inclusion criteria. Thus, it is suggested that the applicability of the research findings may be limited to first-year student population groups. As a result, it is necessary to seek a more complete view of the study crafting phenomenon within the higher education context.

Secondly, the applicability of the research findings and conclusions seemed to be limited further to a single, specific HEI. Data were collected at the campuses of this particular South African HEI and not across multiple institutions nationally or even internationally. Specifically, the decision to include research participants in this study was based on their availability and willingness to partake, their geographical proximity (on the campus) as well as the available time frame.

Thirdly, the cross-sectional research approach followed in this study only permitted data to be collected at a single point in time (De Vos, Strydom, Fouché & Delport, 2011). The researcher was therefore only able to capture a “snapshot” of the study crafting phenomenon at a single stage, making it difficult to infer causality (Levin, 2006). It is explained that “only an association, and not causation, can be inferred from a cross-sectional study” such as used in the present research (Sedgwick, 2014, p. 2).

Finally, a self-report questionnaire was used to gather the responses to the research. Since the SCS is a self-reporting measure, the possibility of response bias must be given due

consideration and be controlled (Rosenman, Tennekoon & Hill, 2011). The reason is that participants may distort their responses to self-report questions in an attempt to provide socially appropriate answers (Wetzel & Brown, 2016). Thus, a possible limitation of utilising self-reporting instruments is that respondents can provide invalid responses (Demetriou, Özer & Essau, 2015). Although “bias in self-rating is a concern” in research, self-report measures have the benefit of requiring less effort and allow for large volumes of quantitative data to be collected from respondents (Demetriou et al., 2015; Rosenman et al., 2011, p. 8). Certain researchers also argue that since respondents are closest to the subject in question, they can essentially provide more accurate responses through self-report measures (Demetriou et al., 2015). Nevertheless, these identified limitations need to be controlled in future research endeavours.

3.3 RECOMMENDATIONS

Despite the identified limitations, this study also presented valuable findings on the measurement of study crafting behaviour patterns at an HEI. Furthermore, recommendations are provided for the practical use and application of the SCS by HEIs and for purposes of future research in this field.

3.3.1 Recommendations for practice

The present study aimed to validate a SCS for use within the South African higher education context. By employing this scale, student crafting behaviours can be investigated empirically. The SCS shows promising potential to be used by institutions to assist their students. The reason is clear: students often need to deal with excessive study demands and insufficient resources. HEIs can thus employ this newly-developed and validated scale to determine the degree to which first-year students proactively initiate changes in their studies. Such information will allow institutions an improved understanding of study crafting behaviour and help these institutions determine whether they provide their students with sufficient resources to balance the study-related demands that students face. Moreover, the results obtained from applying the SCS could be used to foster recurrent proactive crafting behaviour among first-year students.

Research findings could even, in due course, be applied and used to improve the management of HEIs. In addition, as HEIs are viewed increasingly as business units, with their core dealings centring on students (Habib, 2016), Industrial Psychologists have accepted the responsibility to understand these institutions' work environments. This includes gaining an understanding of and supporting the HEI's primary stakeholder, namely the students. These institutions can, for instance, offer support and assistance to their student stakeholders by introducing intervention programmes. Assistance may include interventions such as workshops on how to 'craft' to encourage proactive crafting behaviour patterns. A study crafting workshop can, for instance, focus on encouraging students to view their studies in a different way, whilst helping them apply and change aspects of their studies resourcefully, in order to make it more meaningful and engaging (Berg et al., 2013). In return, these interventions could result in improved insight and awareness among students. Insight into the types of behaviour that drive study crafting as well as about their choice to initiate changes in their studies. This insight could help first-year students take the first step towards adopting proactive crafting behaviour patterns in their studies to achieve academic success.

Consequently, through the above-mentioned intervention programmes, students can identify probable study resources of which they previously might have been unaware. They can use these study resources to help them adapt more readily to their studies and related tasks. By adapting in this way, students may become more engaged and involved in their studies. Ultimately, increased involvement can lead to students enjoying stronger study-course fit. Based on such involvement, students may actively begin to achieve their academic study goals. Positive after-effects could be higher graduation rates and lower dropout rates among first-year students. Finally, by fostering study crafting behaviours, students can grow throughout the process into individuals adept at dealing with challenging study circumstances since they will have internalised the necessary insight on crafting.

3.3.2 Recommendations for future research

As mentioned, to date previous research has not focused on crafting among students at HEIs. Thus, the present study contributes to the field of Industrial Psychology by making available information on the crafting topic within the higher education context. Since this research validated a scale on study crafting, it may help researchers to analyse the phenomenon of study crafting empirically. Furthermore, the results help increase knowledge about the precursors and

outcomes of study crafting in similar and dissimilar contexts. The present study offers further insight as to why study crafting is a relevant research area. This study's focus is significant, seeing that crafting can be an important strategy for higher education contexts. The significance can further be found in examining the potential effect that study crafting has on both students and HEIs as institutions.

In addition, certain recommendations are made based on aspects of the previously discussed limitations.

Firstly, for future research practices, it is recommended that researchers collect data across varied student groups to include those from diverse academic year groups, such as undergraduate and postgraduate students. Researchers can also replicate the present study at different HEIs, colleges, universities and Technikons across South Africa and even internationally. These suggestions will help deliver more generalised research findings. Eventually, such research outcomes would provide a comprehensive picture of the study crafting phenomenon across various student population groups and HEIs.

Secondly, future researchers should consider using a longitudinal approach rather than a cross-sectional design when determining the outcomes of motivation. In longitudinal studies, researchers employ continuous measures to collect data on the same variables over a "prolonged period of time" from particular research participants (Badmus, Okonkwo & Okoh, 2012; Caruana, Roman, Hernández-Sánchez & Solli, 2015, p. E537). This repeated measurement is recommended since it can provide a thorough investigation of study crafting behaviour, allowing for a more in-depth understanding of changes taking place over time (Caruana et al., 2015).

Finally, researchers should use mixed research methods to counter the potential bias and measurement error of the self-reporting SCS (Dillman, Smyth & Christian, 2014). Mixed methods refer to researchers combining "elements of qualitative and quantitative research approaches" (Johnson, Onwuegbuzie & Turner, 2007, p. 123). The suggestion would thus be to combine quantitative and qualitative approaches, permitting data to be collected using a multi-perspective method (Brenner, 2015; Petros, 2012).

3.4 CONCLUSION

This present study validated a newly-developed scale to assess study crafting behaviours within the South African higher education context. As no such scale existed before, the resultant SCS could be useful for assessing the proactive crafting behaviour patterns of students at HEIs nationally and internationally. The findings derived from these assessments can be used by the educational institutions to come up with interventions to better assist their students, driving academic success. Study crafting is thus a topical and relevant research study topic for the field of Industrial Psychology.

REFERENCES

- Association of American Colleges and Universities. (2002). *Greater expectations: A new vision for learning as a nation goes to college*. Washington, DC: Author.
- Badmus, G. A., Okonkwo, C. A., & Okoh, N. (2012). *Advanced educational research method*. Nigeria: National Open University of Nigeria. Retrieved from https://www.academia.edu/36648434/EDU_921_ADVANCED_EDUCATIONAL_RESEARCH_METHODS_NATIONAL_OPEN_UNIVERSITY_OF_NIGERIA_COURSE_GUIDE
- Bakker, A. B., Tims, M., & Derks, D. (2012). Proactive personality and job performance: The role of job crafting and work engagement. *Human Relations, 65*, 1359-1378. doi: 10.1177/0018726712453471
- Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2013). Job crafting and meaningful work. In B.J. Dik, Z. S. Byrne, & M. F. Steger (Eds.), *Purpose and meaning in the workplace* (pp. 81-104). Washington, DC: American Psychological Association (APA).
- Brenner, P. S. (2015). Narratives of response error from cognitive interviews of survey questions about normative behaviour. *Sociological Methods & Research, 46*(3), 540-564. doi: 10.1177/0049124115605331
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). New York, NY: Guilford Press.
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease, 7*(11), E537-E540. doi: 10.3978/j.issn.2072-1439.2015.10.63
- Chen, C., Yen, C., & Tsai, F. C. (2014). Job crafting and job engagement: The mediating role of person-job fit. *International Journal of Hospitality Management, 37*, 21-28.
- Clark, M. R. (2005). Negotiating the freshman year: Challenges and strategies among first-year college students'. *Journal of College Student Development, 46*(3), 216-316. doi: 10.1353/csd.2005.0022
- Crant, J. M. (2000). Proactive behavior in organizations. *Journal of Management, 26*, 435-462. doi: 10.1177/014920630002600304
- Demetriou, C., Özer, B. U., & Essau, C. A. (2015). Self-reported questionnaires. In R. L. Cautin & S. O. Liliendfeld (Eds.), *The encyclopedia of clinical psychology* (pp. 1-6). Hoboken, NJ: John Wiley & Sons.
- De Vos, A. S., Strydom, H., Fouché, C. B., & Delpont, C. S. L. (2011). *Research at grassroots: For the social sciences and human service professions* (4th ed.). Pretoria: Van Schaik.

- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, NJ: John Wiley & Sons.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (1993). *How to design and evaluate research in education* (2nd ed). New York, NY: McGraw-Hill.
- Gefen, D., & Straub, D. (2005). A practical guide to factorial validity using PLS-graph: Tutorial and annotated example. *Communications of the Association for Information Systems, 16*(1), 91-109.
- Habib, A. (2016). Transcending the past and reimagining the future of the South African university. *Journal of Southern African Studies, 42*, 35-48. doi: 10.1080/03057070.2016.1121716
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Towards a definition of mixed methods research. *Journal of Mixed Methods Research, 1*(2), 112-133.
- Kooij, D. T. A. M., Van Woerkom, M., Wilkenloh, J., Dorenbosch, L., & Denissen, J. J. A. (2017). Job crafting towards strengths and interests: The effects of a job crafting intervention on person-job fit and the role of age. *Journal of Applied Psychology, 102*(6), 971-981. doi: 10.1037/apl0000194
- Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-based dentistry, 7*, 24-25.
- Lu, C., Wang, H., Lu, J., Du, D., & Bakker, A. B. (2014). Does work engagement increase person-job fit? The role of job crafting and job insecurity. *Journal of Vocational Behavior, 84*, 142-152. doi: 10.1016/j.jvb.2013.12.004
- Panayides, P. (2013). Coefficient alpha: Interpret with caution. *Europe's Journal of Psychology, 9*, 687-696. doi: 5964/ejop.v9i4.653
- Petros, S. G. (2012). Use of a mixed methods approach to investigate the support needs of older caregivers to family members affected by HIV and AIDS in South Africa. *Journal of Mixed Methods Research, 6*(4), 275-293. doi: 10.177/1558689811425915
- Rosenman, R., Tennekoon, V., & Hill, L. G. (2011). Measuring bias in self-reported data. *International Journal of Behavioural and Healthcare Research, 2*, 320-332.
- Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management, 19*, 116-131. doi: 10.1080/09585190701763982
- Sedgwick, P. (2014). Cross-sectional studies: Advantages and disadvantages. *BMJ, 348*, 1-2. doi: 10.1136/bmj.g2276

- Slemp, G. R., & Vella-Brodrick, D. A. (2013). The job crafting questionnaire: A new scale to measure the extent to which employees engage in job crafting. *International Journal of Wellbeing*, 3(2), 126-146. doi: 10.5502/ijw.v3i2.1
- Terenzini, P. T., Rendon, L. I., Upcraft, M. L., Millar, S. B., Allison, K. W., Gregg, P. L., & Jalomo, R. (1994). The transition to college: Diverse students, diverse stories. *Research in Higher Education*, 35(1), 57-73. doi: 10.1007/BF02496662
- Tims, M., & Bakker, A. B. (2010). Job crafting: Towards a new model of individual job redesign. *South African Journal of Industrial Psychology*, 36, 1-9. doi: 10.4102%2Fsajip.v36i2.841
- Tims, M., Bakker, A. B., & Derks, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behavior*, 80, 173-186. doi: 10.1016/j.jvb.2011.05.009
- Tims, M., Bakker, A. B., & Derks, D. (2013). The impact of job crafting on job demands, job resources, and well-being. *Journal of Occupational Health Psychology*, 18, 230-204. doi: 10.1037/a0032141
- Tims, M., Derks, D., & Bakker, A. B. (2016). Job crafting and its relationships with person-job fit and meaningfulness: A three-wave study. *Journal of Vocational Behavior*, 92, 44-53. doi: 10.1016/j.jvb.2015.11.007
- Wetzel, E., Böhnke, J. R., & Brown, A. (2016). Response biases. In F. T. L. Leong, D. Bartram, F. M. Cheung, K. F. Geisinger, & D. Iliescu (Eds.), *The itc international handbook of testing and assessment* (pp. 349-363). New York, NY: Oxford University Press.
- Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, 26(2), 179-201. doi: 10.5465/AMR.2001.4378011

APPENDIX A: THE ADAPTED STUDY CRAFTING SCALE

The study crafting scale (SCS)

Component	Code	Item text
Applying internal resources	AIR1	I take the initiative to manage my time effectively if things get too hectic
	AIR2	I take the initiative to plan in advance to attain all of my academic goals
	AIR3	I take the initiative to proactively structure my study load to manage everything in time
	AIR4	I take the initiative to make sure that my studies are mentally not so intense
	AIR5	I take the initiative to use my study resources optimally (e.g. time, books, contact sessions, etc.)
	AIR6	I take the initiative to develop my capabilities
	AIR7	I take the initiative to make sure that I use my capabilities in my studies to the fullest
	AIR8	I take the initiative to develop myself academically
Seeking lecturer support	SLS1	I take the initiative to ask if my lecturers are satisfied with my academic work
	SLS2	I take the initiative to ask lecturers for feedback on assessments in order to perform better
	SLS3	I take the initiative to proactively ask my lecturers for feedback
	SLS4	I take the initiative to approach my lecturers when I do not understand something
	SLS5	I take the initiative to ask my lecturer(s) to tutor/assist me
Seeking peer support	SPS1	I take the initiative to ask fellow students for help when I need it
	SPS2	I take the initiative to ask fellow students to collaborate on our studies
	SPS3	I take the initiative to ask fellow students for advice