

Discipline in the University Context: Measurement and Associations with Competitiveness and Productivity

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Dedication

When I had finally completed high school at the age of 20, after failing a grade twice and overstaying my summer trip to London by a year, the prospect of ever completing a degree seemed inconceivable. I would therefore like to thank Victoria and Andrew Hayes, who entrusted me with the care of their baby daughter when I was “on a break” from high school, firstly for insisting on me returning back to the Czech Republic and finally passing the equivalent of high school certificate; and secondly, for welcoming me back afterwards and planting the seeds of aspiring to complete an educational degree. I would also like to thank the teaching staff at Gymnazium Jakuba Skody Prerov for going the extra mile for me in my last year of high school. You had inspired me to look for ways to assist young students in achieving their potential.

My lack of aspirations and trust that I could learn and achieve in academia changed when I met my husband. With his never-ending support and encouragement, I have come to tackle course after course, book after book ever since arriving in Australia in 1999. It was Craig and also my late father-in-law Ernie, who encouraged me to enrol in my first educational course. I will be forever grateful to them for igniting my love of learning. I will also be forever grateful to my parents for sparking my love of books when I was little by buying a hard copy of an encyclopaedia and subsequently letting me spend endless afternoons in the town library learning how to search paper-form databases.

It is, however, the understanding, smiles and cheering on of my amazingly caring eight-year-old daughter Lily that nudged me on through this last degree. It was her who made sure that I had a daily to-do list. Her daily summing up of both of our learning accomplishments and making sure that we both “learnt something” each day pushed me through.

I feel blessed and very grateful to be surrounded by family and friends that have made this adventure possible.

I would therefore like to dedicate this thesis to Lily, Craig, Ernie and my beautiful friends and family.

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My heartfelt thanks also go to Glyn Mather, an editor extraordinaire, for her guidance about journal article structure and writing; and to Associate Professor Peter Petocz, from the Department of Statistics, for helping me to untangle the results of my statistical analysis. You have both inspired me to learn much more in both fields.

I am also very grateful for the support of many others: Associate Dean HDR Professor Lorne Cummings, Head of Marketing Department Professor Aron O'Cass, Head of Management Department Professor Grant Michelson, HDR Manager Lin Bai, Research Manager Agnieszka Baginska and many other amazing staff at the Faculty of Business and Economics and in the Central HDR team at Macquarie University.

I would also like to thank my examiners for the sheer generosity of their feedback and the many suggestions that will guide my future research.

I will pay all your help, advice and kindness forward.

Declaration

I certify that the work in the thesis titled “*Discipline in the university context: Measurement and associations with competitiveness and productivity*” has not been previously submitted for a degree nor has it been submitted as a part of requirements for a degree to any other university or institution other than Macquarie University.

I also certify that the thesis is an original piece of research and it has been written by me. Any help and assistance that I have received in my research work and the preparation of the thesis itself have been properly acknowledged.

In addition, I certify that all information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by the Macquarie University Ethics Review Committee as follows:

- Qualitative study - *Discipline as a driver for performance in tertiary education: Measurement and associations'* (Ref: 5201700175) approved on 8 March 2017
- Quantitative study - *Discipline as a driver for performance in tertiary education: Measurement and associations'* (Ref: 5201700956) approved on 30 October 2017, with an amendment approved 14 February 2018

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Statement of Authorship

While I am the principal author of the thesis including the three academic papers, which were prepared for publication in high quality journals, my supervisors (Associate Professor Chris Baumann – principal supervisor, Professor Leigh Wood – associate supervisor and Dr Yvonne Breyer – associate supervisor) will be listed as co-authors on the publications:

- i. F.I.R.S.T. Discipline towards work readiness – Investigation of university student perceptions of discipline**
- ii. The F.I.R.S.T discipline principles - Measuring student discipline at university**
- iii. The role of discipline, parental expectations and sport involvement in explaining individual competitiveness and productivity: moderating effects of country of birth**

In terms of contribution I, Hana Krskova, collected the data, performed the data analyses and interpretations and I developed the conceptual model underpinned by theoretical concepts, wrote the manuscripts and acted as the corresponding author (80% of the work).

Associate Professor Chris Baumann proposed the competitiveness and productivity angle for my investigation into discipline; guided the survey development, quantitative statistical analysis and development of the manuscripts; and provided regular face-to-face advice as well as suggestions for improvement of the research (10% of the work).

Dr Yvonne Breyer assisted with preparation of the PhD protocol documentation and ethics applications as well as unpacking and addressing feedback from qualitative paper reviewers along with providing guidance on structural aspects of journal article and thesis writing (5%).

Professor Leigh Wood provided guidance in relation to the theoretical underpinnings of the research, qualitative analysis and selection of suitable journals for publication (5%).

I would also like to acknowledge Glyn Mather for professionally copy editing the thesis in accordance with the Australian Standards for Editing Practice; and Associate Professor Peter Petocz, from the Department of Statistics, for reviewing my quantitative statistical results.

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(Awarded Highly Commended Paper Award in 2017 Emerald Literati Network Awards for Excellence)

Abstract

The role of discipline in achieving higher academic and workplace performance is receiving increasing attention, however, research into student discipline has been predominantly centred on schools. Research to date in the university sector has focused on a single country (the United States) and has utilised a definition of academic discipline with reference to schools and school work. Furthermore, research into the links between student discipline, individual competitiveness and productivity has been limited.

This thesis is novel in that it investigates the role of student discipline in the university sector from three angles. Firstly, it examines how university students from multiple faculties and at different stages of their academic progression understand and define discipline in higher education. Secondly, it explores the construct of discipline in university context in multiple countries. Thirdly, it illuminates the impact of discipline on individual competitiveness and individual productivity.

Semi-structured interviews were conducted with students at Macquarie University in Sydney to gain a better understanding of the concept of discipline and five main themes emerged: ‘focus’, ‘intention’, ‘responsibility’, ‘structure’ and ‘time’ (F.I.R.S.T.). Subsequently, a quantitative instrument was developed and administered to a sample of current students and recent graduates from China, South Korea and the United States. The data were analysed to probe for country as well as gender-related similarities and differences. The effects of discipline, high parental expectations, the degree of importance discipline played in their school education and participation in sport and music on the levels of individual competitiveness and productivity were also investigated.

This thesis puts forward a new concept of discipline, underpinned by a theoretical principles of *Self-determination*, *Goal-setting*, *Self-efficacy*, *Self-regulation* and *Time management*. This novel concept of discipline holds across the multi-country sample under examination. A new ‘Threshold of Discipline’, a hierarchical four-layered concept that develops over time for every individual with the ultimate level being ‘creative discipline’, is also presented. The findings show that increasing individual levels of discipline can lead to a more competitive and productive workforce.

TABLE OF CONTENTS

Dedication.....	i
Acknowledgements.....	ii
Declaration.....	iii
Statement of Authorship	iv
Curriculum Vitae	v
Abstract.....	vii
Table of Contents.....	ix
List of Figures.....	xii
List of Tables	xiii
Glossary.....	xiv
1. Chapter 1 - Introduction.....	1
1.1.Setting the scene	1
1.2.The role of discipline in education	5
1.2.1 Discipline at the school level	6
1.2.2 Discipline at the university level.....	7
1.2.3 Meanings of discipline	10
1.3.Suggested areas for further research from the literature.....	12
1.4.Human capital.....	16
1.4.1 Increases in human capital through cognitive skills.....	18
1.4.2 Increases in human capital through non-cognitive skills	20
1.5.Competitiveness and productivity	22
1.6.Methodology.....	26
1.7.Thesis overview	31
Appendix 1.A Overview of discipline management approaches	51

Appendix 1.B Overview of instruments used in assessing school climate/environments.....	52
Appendix 1.C Overview of interpretations of discipline.....	56
Appendix 1.D Overview of questions to explore perceptions of discipline.....	58
2. Chapter 2 – Paper 1.....	59
Introduction to Paper 1 - Perceptions	59
Paper 1 - <i>F.I.R.S.T. Discipline towards work readiness – Investigation of university student perceptions of discipline</i>	60
Appendix 2.A: Overview of participants’ demographic characteristics	94
Appendix 2.B: Interview questions – ‘Perceptions of discipline questionnaire’	95
Appendix 2.C: Alignment of F.I.R.S.T. discipline dimensions and participants’ responses	96
3. Chapter 3 – Paper 2.....	103
Introduction to Paper 2 - Measurement.....	103
Paper 2 - <i>The F.I.R.S.T discipline principles - Measuring student discipline at university</i>	104
Appendix 3.A: Sample overview	139
4. Chapter 4 – Paper 3.....	141
Introduction to Paper 3 - Associations	141
Paper 3 - <i>The role of discipline, parental expectations and sport in explaining individual competitiveness and productivity: Moderating effects of country of origin</i>	142
Appendix 4.A: Summary of construct measurements	185
Appendix 4.B: Overview of relationships between hypotheses and prior research	187
5. Chapter 5 - Conclusion	189

5.1.Contribution.....	190
5.2.1 Contribution to theory	190
5.2.2 Contribution to methodology	193
5.2.3 Contribution to practice.....	194
5.2.Implications	196
5.2.1 For educational providers.....	196
5.2.2 For industry	198
5.2.3 For individuals (students and workforce participants alike)	199
5.2.4 For parents.....	200
5.3.Limitations and future research	200
5.4.Concluding remarks.....	203
6. Appendices	209
Appendix A: Ethics approval (Ref: 5201700175)	209
Appendix B: Ethics approval (Ref: 5201700956)	212
Appendix C: Ethics approval (Ref: 5201700956 – amendment)	215
7. Full list of references	216

LIST OF FIGURES

Figure 1.1: Conceptual Framework: linking discipline outcomes to academic performance (in secondary education context)	3
Figure 1.2: Effects (outcomes) of school discipline impacting on performance and competitiveness	4
Figure 1.3: Model of Human Capital Theory	17
Figure 1.4: The stages of the ‘funnel structure’ of the research design	27
Figure 2.1: Conceptual framework of theories explaining discipline in education	79
Figure 2.2: Threshold Concept of Discipline	80
Figure 3.1: Proposed model of student discipline	113
Figure 4.1: The Individual Competitiveness model	154
Figure 4.2: The Individual Productivity model	155
Figure 4.3: Smooth fitted lines (Loess fit) for competitiveness vs years of sport by country	167
Figure 4.4: Interaction effects of country of birth and sport on competitiveness	168
Figure 5.1: Overview of potential flow-on effects from increases in the levels of discipline	202

LIST OF TABLES

Table 1.1: Academic discipline scale developed by Le <i>et al.</i> (2005).....	8
Table 1.2: Overview of suggested areas for future research in the field of discipline	13
Table 1.3: Steps undertaken in the qualitative study described in Chapter 2	29
Table 1.4: Structure of the thesis	32
Table 2.1: Summary of participants' discipline self-reported assessment	68
Table 2.2: Thematic representation of coding analysis	71
Table 2.3: Relationship of theoretical foundations to discipline themes.....	79
Table 3.1: Overview of theoretical foundations explaining discipline in education	113
Table 3.2: Survey measures.....	119
Table 3.3: ANOVA testing of discipline dimensions across country groups.....	121
Table 3.4: <i>T-test</i> of discipline dimensions across gender	124
Table 3.5: Membership profile of discipline clusters	115
Table 3.6: Summary of hypotheses (Paper 2).....	126
Table 4.1: Overview of sample (Paper 3).....	160
Table 4.2a: Discipline, expectations and participation in sport explaining competitiveness – main effects.....	163
Table 4.2b: Discipline, expectations and participation in sport explaining competitiveness – father expectations excluded from regression	164
Table 4.3: Discipline, expectations and competitiveness explaining productivity	164
Table 4.4: Interaction effects of country of birth in Individual Competitiveness model	166
Table 4.5: Summary of hypotheses (Paper 3).....	169

Glossary

Coding ‘Involves noting patterns in the data and dividing the data to give greater clarity regarding their detailed content’ (Joffe and Yardley, 2004, p. 59).

College In the United States, a college is a higher educational institution offering courses of general studies leading to degrees.

Concept ‘An abstract idea or mental representation that facilitates the recognition of and reference to objects in a specific area of interest’ (Katzan, 2008, p. 141).

Competitiveness at the individual level is a desire to excel aimed at personal development or improving one’s skills (Ryckman *et al.*, 1996).

Competitiveness at the national level is defined by the World Economic Forum as ‘the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be earned by an economy’ (Schwab and Sala-i-Martin, 2011, p. 4).

Construct The latent variable (one that is not directly observable) or the underlying phenomenon ‘that a scale is intended to reflect’ (DeVellis, 2017, p. 24).

Convergence-divergence-crossvergence (CDC) framework A theoretical framework used in cross-cultural research to guide the assessment of the impact of national culture (Ralston *et al.*, 1997).

Dimension A measurable data property that ‘represents some aspect of the data’ (Laranjeiro *et al.*, 2015, p. 179).

Discipline Discipline is viewed as an internal mechanism propelling individuals towards achieving their objectives: ‘a very effective and useful tool to enhance learning, personal development and overall human betterment’ (Baumann and Krskova, 2016, p. 1021).

Human capital The stock of all ‘the knowledge, skills, and competencies that lead an individual to greater workforce productivity’ (Kell *et al.*, 2018, p. 2).

Moderation or the interaction effect ‘The combined effect of two variables on another’ (Field, 2013, p. 395).

Principle ‘A rule of personal conduct or standard of good behavior’ (Coughlin, 2008, p. 1).

Productivity As the fundamental goal of higher education is learning, productivity in the context of students relates to working hard towards achieving specific course goals (McKeachie, 1982).

Productivity at the individual level ‘Productivity is the amount of goods and/or services produced per hours of human labor’ (Muckler, 1982, p. 13).

Thematic analysis ‘An organic approach to coding and theme development’ (Clarke *et al.*, 2015, p. 223).

Theme ‘Refers to a specific pattern found in the data in which one is interested’ (Joffe and Yardley, 2004, p. 57).

Theory ‘A set of principles (laws) that together help us describe, explain and predict natural events and phenomena’ (Collins, 2002, p. 4).

Work readiness The level of preparedness of graduates for success in the workplace, ‘believed to be indicative of graduate potential in terms of long term job performance and career advancement’ (Cabellero and Walker, 2010, p. 13).

1. Introduction

1.1. Setting the scene

The concept of discipline is seen as critical in education, because it is essential to learning (Knight, 1988). It is also deemed to be an important aspect of parenting (e.g. Baumrind, 1966; Pellerin, 2005) and of society in general (Charles and Barr, 1992). At the macroeconomic or national level, literature highlights the links between school discipline and academic performance as well as competitiveness (Krskova and Baumann, 2017); however, in the university context, there has been little research into the meaning of student discipline and its relationship with individual competitiveness and ultimately with individual productivity. This thesis proposes that *‘the higher the level of discipline a student has, the more he or she will be competitive and also productive’*.

The purpose of this thesis is to investigate the meaning of discipline for students in the university context in order to enhance the understanding of the construct of discipline, with the overarching aim of examining the relationship between discipline, individual competitiveness and individual productivity of university students. The research is underpinned by recent concerns in three areas: work readiness of graduates, the need to address changing demands for skills following the accelerated automation of jobs in the 21st century and reports of diminishing productivity in developed countries.

The first area of concern relates to graduate employability. Work readiness of graduates has received considerable attention in recent decades, partially due to concerns about their long-term employability prospects as well as the apparent mismatch between what employers need and what universities are providing (e.g. Jackson, 2013). Research suggests that, despite all the recent efforts of educational providers to equip graduates with the most up-to-date and in-demand skills to optimise future outcomes for their graduates in the global marketplace, the expectations of industry are not yet being fully met (Jackson, 2014). Thus, with industry seeking ways to alleviate the pressure ‘to increase productivity in a competitive global market’ (Tran,

2016, p. 62), work readiness has become a priority for universities worldwide.

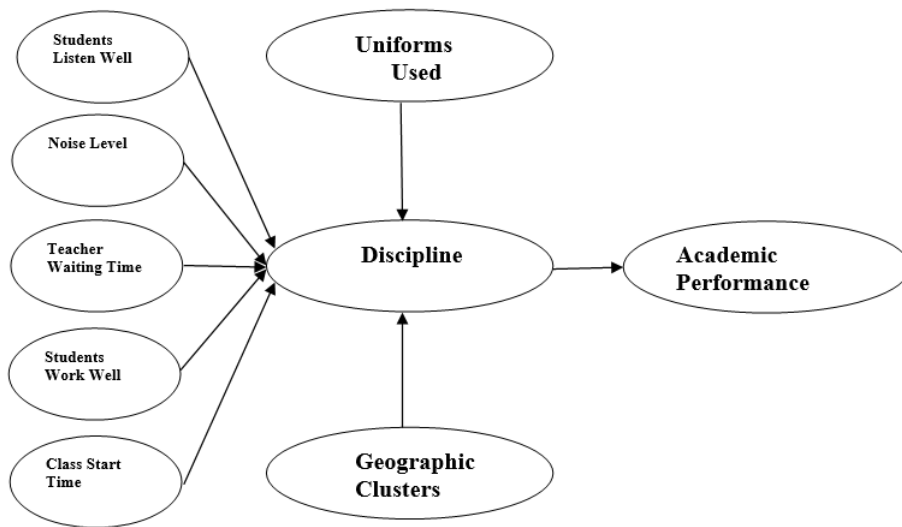
The second area of concern rests with the changing landscape of the global competitive marketplace. Business consulting houses around the world are calling for an increase in human capital through building human capabilities (e.g. Deloitte, 2018; PwC, 2018), with a premium being put on skills and abilities, such as grit, that ‘cannot be fully mimicked by machines’ (World Bank, 2019, p. 50). In an era of a constant search for ways to increase efficiency and to continuously improve service, there is a need to ‘find new skills’ (Deloitte, 2018, p. 25) to respond to the ever-increasing demands of industry. In other words, the search is on for skills that support agility of learning.

Thirdly, concerns are being raised about diminishing productivity in the workforce in Western countries such as the United States (e.g. Barro, 2016; U.S. Government, 2018). In keeping with the notion of human capital that enhancements of skills and knowledge lead to people becoming ‘more productive, flexible, and innovative’ (World Bank, 2019, p. 2), gaining further understanding of the drivers of competitiveness and productivity is important in order to ensure that organisations ‘remain competitive in a new global economy’ (Zula and Chermack, 2007, p. 245).

Probing one of the potential drivers, a recent study (Baumann and Krskova, 2016) examined discipline in the school sector by analysing data from over 500,000 15-year old students from 64 countries in reading, mathematics, science and problem solving from the three-yearly Programme for International Student Assessment (PISA) administered by the Organisation for Economic Co-operation and Development (OECD). The five discipline dimensions (students listen well, noise levels, teacher waiting time, students working well, class start time) measured as part of the standardised PISA assessment provide information about disciplinary climate in terms of, for example, how often teachers have to wait for students to participate in learning.

This study into the role of school discipline in achieving academic performance not only found that ‘good discipline allows students to work well and this ultimately leads to better academic performance’ (p. 1020) but it also illuminated geographical differences in school discipline. The conceptual framework developed in that particular study is detailed in Figure 1.1.

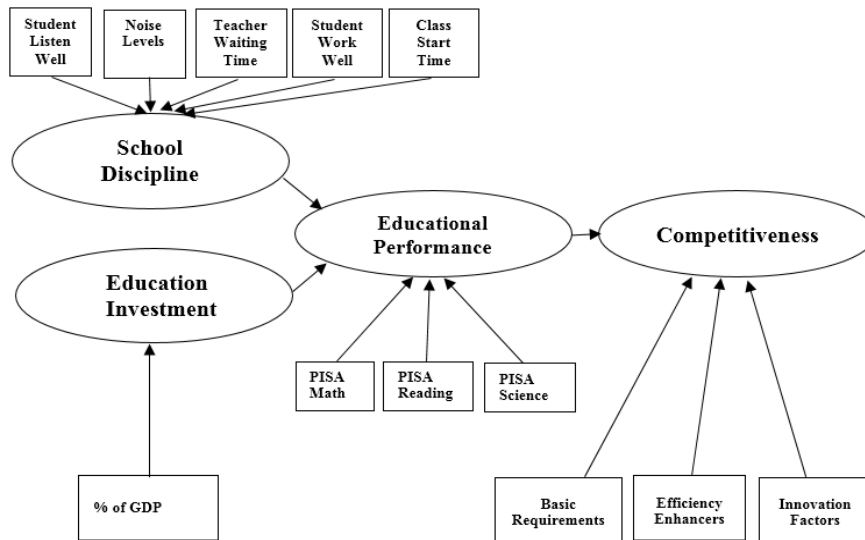
Figure 1.1: Conceptual Framework: Linking discipline outcomes to academic performance (in secondary education context). Source: Baumann and Krskova (2016, p. 1008)



A subsequent study by Krskova and Baumann (2017) extended the investigation into school discipline by combining school discipline, education investment, educational performance and competitiveness into one model (see Figure 1.2). The findings illuminated the relative importance of discipline in contrast to investment in education on educational performance as a ratio of 88 and 12 percent respectively. The authors also found that school discipline and education investment affect competitiveness, with the association being mediated by educational performance; and that discipline has a direct effect on educational performance and an indirect effect on competitiveness.

Figure 1.2: Effects (outcomes) of school discipline impacting on performance and competitiveness.

Source: Krskova and Baumann (2017, p. 301)



However, these past studies focused on school discipline. The role of discipline in explaining competitiveness and productivity at the microeconomic individual level has remained underexplored. Furthermore, while there have been several studies probing discipline in the university context (e.g. Robbins et al., 2006; Ndum et al., 2018) such research has utilised a definition of discipline that refers to schoolwork (Le et al., 2005).

To address these concerns; to enhance our understanding of the discipline construct; and to ascertain if the relationship between discipline and competitiveness also applies in the university context – thus adding to the body of knowledge in the area of theorising and conceptualisation of discipline at university - the particular objectives of this thesis are as follows:

- i) To conduct qualitative interviews at an Australian university to explore the perceptions of university students of what discipline at university is.
- ii) To develop a discipline measurement survey, based on the students' perceptions of discipline and a review of the literature. Then to administer it in South Korea (from here onwards simply Korea), China and the United States in order to test the findings of the interviews; that is, to ascertain whether such an instrument is applicable not

only in an English-speaking country but is also suitable for multi-country comparisons.

- iii) To probe the role of discipline in explaining individual competitiveness and productivity in the university context, thus contributing to the literature on the importance of discipline, in education and beyond.

By gaining a better understanding of discipline as a driver of individual competitiveness and productivity, targeted action could be taken by individuals, educational institutions, parents and employers alike to increase personal and economic growth through enhancing levels of discipline. Establishing a link between discipline and individual competitiveness and in turn with individual productivity among university students could not only assist educational institutions in implementing learning and teaching strategies to boost graduate work readiness; such findings would also be applicable to individuals (students or workforce participants alike at any stage of their life) wishing to increase their levels of discipline, to become more productive and to achieve more. Furthermore, it would also enable employers to implement targeted training and development sessions for staff with a specific focus on increasing the levels of discipline in their workforce.

This section has introduced the research and established the foundations of the thesis. The remainder of the chapter outlines the role of discipline in education, at the school and in the higher education context, as well as detailed suggestions drawn from the literature for future research in the field of discipline. The theoretical foundations of this research underpinned by the notion of human capital formation are provided. The methodology and specific techniques used in the research are also briefly discussed, and an overview of the structure of the thesis is presented.

1.2. The role of discipline in education

Teachers, parents and the popular press as well as educational leaders have been discussing

‘discipline’ - or the lack thereof - among school students for decades (e.g. Dettman, 1972; Slee, 1988; Pasternak, 2013), particularly as lack of discipline has been linked to lower academic achievement (Cohen et al., 2009). While discipline has also been researched in other areas, such as parenting (e.g. Arnold et al., 1993; Irvine et al., 1999; Capaldi et al., 2008), the majority of work in the field of discipline focuses on discipline in education. Research into discipline in education can be classified into two main groups – discipline at the school level and discipline at the university or college level. The bulk of the literature on discipline has so far focused on school level. It will now be discussed briefly in order to set the scene of research at the university level, before university level discipline will be discussed in more detail. A distinction between the meaning of discipline at the two educational levels will be drawn in the section “Meanings of discipline”.

1.2.1. Discipline at the school level

At the school level, discussions about discipline can be traced back to at least the early 20th century, when Allen (1918) highlighted differences in approaches to discipline across teachers at a New England grade school in the United States, and alluded to gains to be had should discipline be increased in classrooms. Since then, discipline has been discussed under many headings including classroom management, classroom discipline or behaviour management, with classroom management remaining a ‘key feature’ of teacher education (Millei et al., 2010a, p. 2). Over the years there have been countless models, methods and behavioural techniques aimed at increasing discipline in schools; such approaches are often conceptualised along a continuum with control and influence located at opposite ends¹ (Tauber, 2007). An overview of some of the most prominent discipline and classroom management perspectives discussed in the

¹ For a discussion of models along a continuum of the Skinner – Rogers dichotomy, see Tauber, R. T. 2007. *Classroom management: Sound theory and effective practice*, Greenwood Publishing Group.

literature² is provided in Appendix 1.A (Approaches)³, which highlights the many efforts of theorists and practitioners alike to direct the field of school discipline towards greater learning and higher achievement of students.

There has also been many an attempt to measure discipline⁴ (or constructs related to school discipline, such as discipline climate) to inform, for example, policy decisions by educational authorities aimed at addressing concerns with the level of discipline among students (e.g. Dettman, 1972). The abundant body of literature on this topic illuminates the richness of the research into the subject of discipline as well as the importance attributed to gaining further understanding of the overall concept. A preview of measurement instruments on this topic is presented in Appendix 1.B (Instruments).

1.2.2. Discipline at the university level

While there is a wealth of literature around discipline at the school level, discipline in the university context, as a driver of academic outcomes, appears to have been researched to a lesser extent. The emergence of investigations of the role of discipline in college settings in the United States followed the development of a 10-item discipline questionnaire by Le et al. (2005), detailed in Table 1.1. This instrument, however, somewhat adds to the ambiguity around measurement of discipline, as it is called ‘academic discipline’ even though it refers to schoolwork.

² For a comprehensive discussion of frameworks and discipline models see, for example, Charles, C. M. & Barr, K. B. 1992. *Building classroom discipline*, New York, Longman.

³ Appendix 1.A and Appendix 1.B have been provided to illustrate the wealth of literature available about discipline at the school level.

⁴ For a collection of multiple measures used to assess school climate see Freiberg, H. J. 1999. *School climate: Measuring, improving, and sustaining healthy learning environments*, Abington, RoutledgeFalmer.

Table 1.1: Academic Discipline Scale⁵ developed by Le et al. (2005)

ACT Engage Academic Discipline	
1	I'm not performing to the best of my academic abilities
2	I'm a disciplined student
3	I turn in my assignments on time
4	I'm satisfied with my academic performance
5	I do my best in my classes
6	Others consider me a hard-working student
7	I take good notes in class
8	I consistently do my school work well
9	If I don't feel like going, I skip classes
10	I miss deadlines

Note: Table was reproduced with permission from ACT Engage under a licensing agreement granted for the purpose of inclusion in this thesis, for comparison purposes only.

The subsequent use by other researchers of the discipline construct as put forward by Le et al. (2005) is an indication of the increased interest in the role of discipline in higher education. Studies into discipline in the university context include:

- Robbins et al. (2006) confirmed that 'Academic Discipline' can predict academic performance (as measured by GPA or grade-point average). They also invited further work on discipline: 'The question of whether Academic Discipline is best understood as a measure of intrinsic motivation or a measure of engagement or self-regulatory behaviors awaits further investigation' (p. 613). Robbins and his colleagues also noted that 'although Academic Discipline demonstrates incremental validity across college outcomes, its relationship to work performance and persistence is unknown' (p. 615).
- Komarraju et al. (2013) conducted a study into identifying the best predictors of academic performance and found that the degree of discipline significantly predicted college GPA.

⁵ The 108-item Student Readiness Inventory (inclusive of 10 questions about discipline) is offered by ACT Engage and is used by assessment centres in the United States. For further details or a licensing agreement for usage of the survey, please visit www.ACT.org.

- Mattern et al. (2017) found in a study of almost 10,000 students across post-secondary institutions, in the context of college admissions, that female students had higher levels of discipline.
- Ndum et al. (2018) confirmed, in a study into gender gaps in college algebra and English composition, that female students scored higher on discipline. Greater discipline was also found to have a strong association with success in both composition and algebra.

While such previous work has highlighted the important role discipline also plays in higher education, it is built on the following definition of discipline in the university context: *'the extent to which students value schoolwork and approach school-related tasks conscientiously'* (Le et al., 2005, p. 494). The utilisation of such a definition and the 10-item academic discipline questionnaire (detailed in Table 1.1), used in the United States by assessment centres to identify students - from middle school to college - at risk of low grades and potential dropout from studies, would suggest the possibility of this definition not capturing the full extent of discipline in university students. Thus, this thesis offers an alternative perspective as to how discipline is perceived by those students.

In order to highlight the specific differences between the work of Le et al. (2005) and the research discussed in this thesis, the following should be noted:

- When developing the discipline measurement instrument, the focus of Le and his colleagues was not only on the investigation of discipline in higher education. Their goal was to construct an extensive Student Readiness Inventory, of which academic discipline was only a small part.
- The academic discipline construct (a subset of the 108-question Student Readiness Inventory) was developed from data collected not only from university students, but also from school students, even though high school students and students at university could be expected to view discipline somewhat differently. The former might potentially still view

discipline as something that is enforced in schools externally, while the latter could potentially see discipline as something they have control over.

- Items such as ‘I do best in my class’ might not be sufficiently specific to measure the discipline of university students, because ‘maximum effort is not aroused under a do best goal’ (Latham and Locke, 1991, p. 215); that is, general goals have the potential to indicate success at any performance level, allowing individuals to justify possibly poor performance.
- It is also important to note that, so far, research into discipline in the university sector has been carried out with a focus on one particular country: the United States.

1.2.3. Meanings of discipline

In addition to examining discipline at the two educational levels – both school and university levels – it is important to also note that there are multiple meanings associated with discipline⁶, with the term having been used, for example, in the following ways⁷:

- (i) as a synonym for control; such a meaning is well known to teachers, who use discipline to create and maintain order in their classrooms and therefore it is linked with rules and regulations (e.g. Smith, 1984);
- (ii) a deliberate action of ‘a person who is trained to consider his actions’ (Dewey, 1916, p. 135);
- (iii) to signify a field of study at an educational institution, such as accounting, economics or medicine; or
- (iv) what is commonly known as ‘self-discipline’, or the capacity to alter behaviour and responses in order to achieve a higher goal, such as controlling one’s anger or not rushing to answer questions in a test before reading instructions (Duckworth and

⁶ For a comprehensive discussion of various meanings of ‘discipline’ see Millei, Z., Griffiths, T. G. & Parkes, R. J. (eds.) 2010b. *Re-theorizing discipline in education: Problems, politics, & possibilities*, New York: Peter Lang.

⁷ Such interpretations of discipline are closely aligned with the official definitions that can be found in *The Oxford English Dictionary* available at <https://en.oxforddictionaries.com/definition/discipline>.

Seligman, 2006); self-discipline is also known by synonyms such as ‘self-control’ or ‘self-regulation’ (Duckworth, 2011).

Appendix 1.C (Definitions) presents some of the various definitions of discipline available in the literature, with the focal point of these interpretations being the theme of control. This interpretation would appear especially pertinent in the context of schools, where discipline is used to ‘control’ students and is often enforced externally. However, for the purposes of this research, a distinction between the two meanings of discipline at the two educational levels needs to be noted. While at the school level, the discussion in the literature relates more to external discipline or behaviour management (e.g. Lundell, 1982), studies at the university level have focused more on investigation of discipline as being more aligned with the term internal or self-discipline (e.g. Le et al., 2005).

The numerous interpretations of the word ‘discipline’ in the literature and in common language underscore an interesting issue of a lack of agreement on a common definition or a shared meaning (e.g. Blandford, 1998; Millei et al., 2010a).⁸ In the school environment, discipline is seen as ‘the natural follow-through of getting in trouble’ and is used as a ‘tool of power’ to control students and keep order; the underlying ‘assumption is that students must be controlled, implying that without this control, the class would not be a success’ (Steinberg, 2010, p. xi). In contrast, viewing discipline as ‘a very effective and useful tool to enhance learning, personal development and overall human betterment’ (Baumann and Krskova, 2016, p. 1021), this study is focused on shedding light on the personal (internal) discipline of university students. In an attempt to minimise confusion with studies around self-discipline (e.g. Duckworth and Seligman, 2005; Duckworth and Seligman, 2006), which – as will be explained later in this

⁸ For additional discussion of the meanings of discipline, including differences in views of discipline between female and male principals, see Oplatka, I. & Atias, M. 2007. Gendered views of managing discipline in school and classroom. *Gender and Education*, vol. 19, no. 1, pp. 41-59.

Chapter - used measurement instruments focused on control and impulsiveness, terms such as ‘personal discipline’, or ‘internal discipline’ have been utilised in this study.

1.3. Suggested areas for further research from the literature

The previous sections illustrated the importance of discipline in education and the need for gaining a greater understanding of the concept. Examples of the challenges in the field of discipline research were provided and distinctions between the various meanings of discipline were drawn. Inspired by a recent review of what is known about the role of culture in international business research and what should be investigated in the future (Tung and Stahl, 2018), Table 1.2 provides an overview of calls in the literature for further research of:

- (i) the definition of discipline;
- (ii) conceptualisation of discipline;
- (iii) measurement of discipline;
- (iv) potential geographical differences; and
- (v) a possible link between discipline and competitiveness and productivity at the university level.

Table 1.2: Overview of suggested areas for future research in the field of discipline

Issue	Reference	Context	Challenges and calls for future research	Contribution of this thesis (Chapter location)
1. Definition	Blandford (1998)	Schools	‘Defining discipline sounds easy ... [however] ... Whether there is a shared meaning is doubtful’ (p. 1)	New definition of discipline with reference to what university students perceived as important <i>Chapter 2</i>
	Millei et al. (2010a)	Schools	Acknowledged the need to ‘have a shared understanding of discipline’ (p.1) and ‘the lack of a single definition of discipline’ (p. 9)	
	Le et al. (2005)	College and high school	Developed a 10-item questionnaire for capturing ‘academic discipline’, defined as ‘the extent to which students value schoolwork and approach school-related tasks conscientiously’ (p. 494) Called for further exploration of ‘noncognitive factors’ (p. 505) such as discipline	Items for measuring discipline developed with reference to university students only <i>Chapter 3</i>
2. Conceptualisation of discipline	Robbins et al. (2006)	Colleges	Raised a question about how best to understand Academic Discipline; suggested ‘further investigation’ (p. 613)	New conceptual model of discipline <i>Chapter 2</i>

	Millei et al. (2010a)	Schools	<p>Attempted to make ‘discipline in education an object of social inquiry’ (p. 178)</p> <p>Called for discipline to be ‘considered from new perspectives, without remaining constrained by the prior baggage the idea of ‘discipline’ carries’ (p. 176)</p>	<p>University students’ perceptions of what discipline is</p> <p><i>Chapter 2</i></p>
3. Measurement of discipline	Furtwengler and Konnert (1982)	Schools	Acknowledged that ‘discipline effectiveness is not an easy matter to define or measure’ (p. 4).	<p>New survey for measuring discipline, focusing on items aimed at propelling individuals towards achievement</p> <p><i>Chapter 3</i></p>
	Le et al. (2005)	College and high school	Put forward an ‘Academic Discipline’ scale ‘constructed with the goal of identifying at-risk college students’ (p. 489)	
4. Potential geographical differences	Le et al. (2005)	College and high school	Acknowledged that they ‘were unable to make group comparisons’ (p. 490) as sample was from the United States only, with participants mostly female and Caucasian	<p>Extrapolated research from Australia to the United States and two Asian countries</p> <p><i>Chapter 3 & 4</i></p>
	McInerney (2012)	Education in general	Discussed the historical predominance of theoretical work on learning and self-regulation being often approached ‘from a Western perspective’ (p. 392)	

	Baumann and Krskova (2016)	School	'Demonstrate differences in school discipline across five geographic clusters' (p. 1003)	Demonstrated differences in levels of discipline between countries at university level <i>Chapter 3</i>
5. Association between discipline and competitiveness	Baumann et al. (2016)	School	Argued that pedagogical approach with focus on strict discipline contributes 'to the formation of work ethic, and that in turn will impact a country's workforce and ultimately economic competitiveness' (p. 15) Called for testing for 'a potential moderating effect' (p. 16). Also suggested testing for gender differences	Moderation <i>Chapter 4</i> Gender differences <i>Chapter 3</i>
	Krskova and Baumann (2017)	School	Used secondary data and 'provided empirical support for the proposition that school discipline has indirect impact on competitiveness' (p. 308) Suggested 'using a survey instrument to focus on examining the links between school discipline and academic achievement at a more granular level' (p. 308)	F.I.R.S.T. Measurement instrument was developed <i>Chapter 2</i> Investigated association between discipline and competitiveness as well as with productivity <i>Chapter 4</i>

This thesis attempts to address those areas suggested for further research, thus contributing to the body of knowledge in the field of discipline.

The theoretical underpinnings that could be applied to researching discipline in the university context include:

- *Self-Efficacy Theory* (Bandura, 1986) or the concept of *Academic Self-Efficacy* (Honicke and Broadbent, 2016) illuminates the role of the behaviour that people choose to adopt; for example, how long they dedicate to a task and how persistent they are in pursuit of a certain activity in relation to their judgement of their personal efficacy. On the one hand, self-doubt might cause individuals to ease off their efforts and ‘abort their attempts prematurely and quickly settle for mediocre solutions’ (Bandura, 1989, p. 1176). On the other hand, students with higher levels of self-efficacy and willingness to take responsibility for their academic performance will display higher levels of perseverance;
- *Behaviourist Theories* that focus on the role of reinforcement in establishing, modifying and maintaining behaviour through control (e.g. Skinner, 1974); or
- *Cognitive Theories*, which view learning as an internal cognitive-process transformation and focus on the transmission and processing of information through, for example, communication, explanation or problem solving (e.g. Wenger, 1987).

For the purposes of this research, however, discipline has been explored through the lens of human capital. Influential research into human capital formation of relevance will be discussed in the following section.

1.4. Human capital

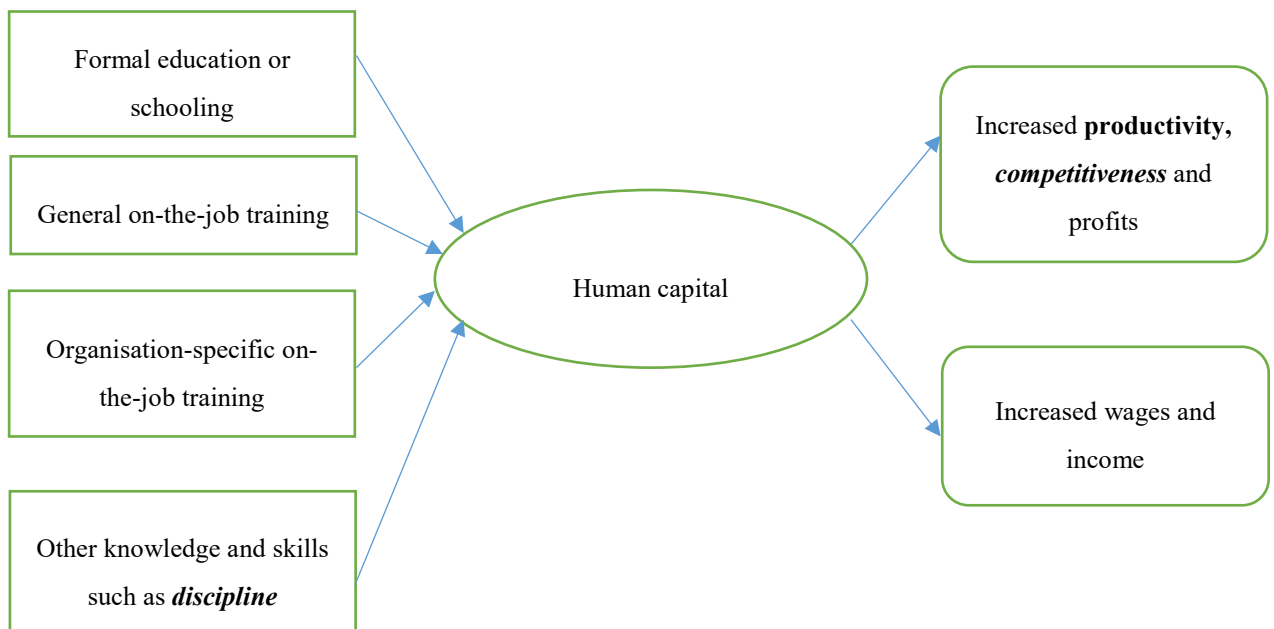
‘Human capital theory suggests that education, training, and development, and other knowledge have a positive impact on productivity and wages.’

(Zula and Chermack, 2007, p. 249)

Human Capital Theory highlights the value of skills and knowledge and their contribution to

economic growth (Schultz, 1963) through increases in individual-level productivity (Becker, 1993), which can impact future earnings, both at the macro and microeconomic level. Figure 1.3 depicts the various contributors to human capital formation, outlining the link between human capital and economic growth as suggested by theorists such as Becker (1993). The figure has been amended from a Model of Human Capital Theory - depicted by Zula and Chermack (2007) as an interplay of various investment inputs and outputs or returns – to underscore the position of discipline and competitiveness, with the focus of this thesis highlighted in bold.

Figure 1.3: Model of Human Capital Theory (adapted from Zula and Chermack (2007))



Note: The focus of this thesis is highlighted in bold, with text in italics indicating the specific contribution of this research to the adapted model of human capital.

For decades, researchers have been broadening our understanding of the links between human capital and economic prosperity (Schultz, 1971; Barro, 1991; Hanushek and Kimko, 2000; Keller, 2006; Li et al., 2017), including the relationship between formal skills, knowledge - as measured, for example, by PISA - and competitiveness (Krskova and Baumann, 2017); or probing the role of non-cognitive abilities on explaining competitiveness and productivity (e.g. Baumann and Harvey, 2018). This thesis contributes to the discussion of the associations between various contributing factors in the conceptual model of human capital formation by

positioning discipline as an input into the model.

In line with Kautz et al. (2014), this thesis posits that discipline has the potential to build the stock of human capital and the competitiveness and productivity of individuals in two ways: firstly, indirectly, by contributing to and enhancing the use of cognitive skills; and secondly, directly, as a non-cognitive skill. The following discussion of relevant human capital research is divided into two sections based on the work of two Nobel Prize winners, Gary Becker and James Heckman, who represent two views about the drivers of human capital formation:

- the initial, and more numerous, investigations focusing on the role of cognitive skills in enhancing the stock of human capital (e.g. Becker, 1962; Becker, 1964; Becker, 1993); and
- the more recent investigations concentrating on the role of non-cognitive skills in human capital creation (e.g. Heckman and Kautz, 2012; Kautz et al., 2014).

1.4.1. Increases in human capital through cognitive skills

The concept of human capital can be traced back to 1776 when Adam Smith published *The Wealth of Nations* (Smith, 1817). However, it was not until the mid-20th century that it began to gain popularity in the field of economics, as initially there was controversy around the usage of the term “human capital”, with the economists referring to people as units of production. Schultz (1961, p. 2) noted the criticism about individuals being alluded to in a manner similar to that for ‘property or marketable assets’ in his December 1960 presidential address at the American Economic Association.

Similar concerns were also noted by the winner of the 1992 Nobel Prize in Economics, Gary Becker. His concern about a backlash for his work on human capital, when he first published his seminal piece *Human Capital* in 1964, is reflected in the long subtitle ‘*A Theoretical and Empirical Analysis with Special Reference to Education*’. This subtitle was articulated as an attempt to hedge the risks associated with using the term human capital, as ‘many people were

criticising this term and the underlying analysis because they believed it treated people like slaves or machines' (Becker, 1993, p. 16).

Despite these initial concerns, the interest in human capital kept rising. This was partly due to the discovery of unexplainable variances in economic growth after physical capital and hours of workers were accounted for (Solow, 1957). In his study of data for the period between 1909 and 1949, Solow uncovered that while the output doubled per man hour during the 40 years under examination, only 11.5 percent was attributable to an increased use of physical capital. Solow attributed the remaining 87.5 percent to 'technical change', prompting questions about other possible contributors to this large increase or 'residual'.

Since the identification of the residual notion, the field of research into human capital has grown significantly. Long gone is the initial controversy associated with depicting humans as production units. The subsequent widespread use of the term human capital as well as the applicability of the theory's perspectives to many domains followed the pioneering work of seminal economists such as Theodore Schultz, Gary Becker and Jacob Mincer. For example, Mincer (1962) highlighted the role of on-the-job training in human capital formation; Schultz (1964) offered investment in human capital as an explanation behind the increases in productivity in agriculture; and Becker (1975) advanced the links between Human Capital Theory and college education by investigating rates of return from investment into college education. Many studies followed that used the theory as a framework for investigating the impact of cognitive skills and related factors on economic growth (e.g. Barro and Lee, 1996; Hanushek and Kimko, 2000; Becker and Murphy, 2007).

Recently, criticism of the human capital perspective has re-emerged. This time it relates to the notion that higher education leads to better opportunities, better job prospects and, in turn, higher earnings - a premise which might no longer apply for every individual. For example, in China,

university education is viewed as the way to improve social standing; however, in 2013, nearly seven million fresh graduates sought graduate positions but only one-third of them secured a job upon graduation (Mok et al., 2016). Additionally, the role of cognitive skills and increased school attainment has been found to not always result in improved economic conditions (Hanushek and Woessmann, 2008).

More or less simultaneously, the focus of investigations into human capital contributions to economic growth has shifted towards non-cognitive skills. Schultz (1961) referred to human capital as skills and knowledge, meaning that human capital encompasses all skills embedded in the workforce. While human capital studies have for long focused on economic gains through education (and the associated cognitive skills gained through formal education) (Schultz, 1960; Barro, 2013; Ding and Knight, 2011), a growing body of literature indicates that it is skills in general, both cognitive and non-cognitive, that increase productivity. For example, in a study into the effects of cognitive and non-cognitive abilities on outcomes in the labour market, Heckman et al. (2006) challenged the then prevalent view in the fields of economics and psychology about the dominance of cognitive skills in explaining personal achievement. In fact, Heckman and colleagues argued that *‘non-cognitive ability is as important, if not more important, than cognitive ability’* (p. 477).

1.4.2. Increases in human capital through non-cognitive skills

The human capital research that most inspired the focus of this thesis is the work of a prominent and highly influential economist and the 2000 winner of the Nobel Prize in Economics, James Heckman. Particularly relevant here is his work on increasing the understanding of the gains flowing on from non-cognitive skills, with one such skill potentially being discipline.

Cognitive skills (thinking skills) are widely understood as inclusive of ‘verbal, reading, and writing abilities as well as those in mathematics, science, music, and art’ (Farkas, 2003, p. 543). In contrast, non-cognitive skills ‘go by many names in the literature, including soft skills,

personality traits, non-cognitive abilities, character skills, and socio-emotional skills’ (Kautz et al., 2014, p. 8). They include, for example, ‘perseverance (grit), conscientiousness, self-control ... self-efficacy, resilience to adversity ... and the ability to engage productively in society’ (p. 2), all of which are valued not only in the labour market but also by society in general.

Heckman et al. (2006, p. 413) found that non-cognitive skills ‘raise wages through their direct effect on productivity’, with these skills playing an important role in the creation of a productive member of society. The so-called soft skills (character or non-cognitive skills) are essential not only in academia but also in life success. In other words, both cognitive and non-cognitive skills contribute to human capital formation and yet, while research into non-cognitive skills has been conducted by, for example, sociologists (e.g. Farkas et al., 1990) and psychologists (e.g. Tracey and Sedlacek, 1987; Duckworth and Seligman, 2005; Duckworth and Seligman, 2006)⁹ for some time, non-cognitive skills have become a topic of inquiry in the field of economics relatively recently, as pointed out by Kautz et al. (2014). Such an observation seems surprising as non-cognitive skills have been deemed to be ‘especially critical for entry level and hourly workers’ (p. 29).

⁹ In relation to non-cognitive skills, the positioning of self-discipline in the context of this thesis should also be clarified. The work of psychologist Angela Duckworth (a co-researcher with James Heckman) has been influential on this research. Duckworth has been investigating the role of non-cognitive skills (or character skills) extensively over the past two decades, with her focus being on grit, perseverance and self-discipline among other non-cognitive skills. However, in this thesis discipline is positioned as a separate concept to self-discipline. In contrast to the research into discipline of university students discussed here, Duckworth focused her investigation initially on eighth-grade school students and utilised multiple lenses - such as reports from parents, teachers and the individuals - to assess the role of self-discipline in academic success. The two scales she utilised to assess levels of self-discipline did however inform the development of the discipline questionnaire discussed in this thesis. The two scales were a 23-question Impulsiveness Subscale of the Eysenck I.6 Junior Impulsiveness Questionnaire (see: Eysenck, S. B., Easting, G. & Pearson, P. R. 1984. Age norms for impulsiveness, venturesomeness and empathy in children. *Personality and Individual Differences*, vol. 5, no. 3, pp. 315-321.); and a 13-item Brief Self-Control Scale (see: Tangney, J. P., Baumeister, R. F. & Boone, A. L. 2004. High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, vol. 72, no. 2, pp. 271-324.).

While the research into the links between non-cognitive skills and economic growth is more recent than the research into the links with cognitive skills, the evidence of the positive impact of non-cognitive skills is growing. One example is an analysis of the effects of both cognitive and non-cognitive skills on wages, schooling, work experience, occupational choice, and participation in a range of adolescent risky behaviors, where Heckman et al. (2006, p. 478) found that non-cognitive skills ‘promote success in social and economic life’ because, for example, they can boost academic achievement and reduce dropout rates. Furthermore, a recent empirical investigation into the impact of early childhood education on economic growth (Elango et al., 2015) illuminated the links between non-cognitive skills and increased positive outcomes in life in the areas of health and employment as well as reduced criminal activity.

In summary, Heckman and his colleagues argue that non-cognitive skills, being skills, can be learnt; they can be shaped over one’s life as they are influenced from many domains, for example, at schools and in families as well as by social environments:

‘For many outcomes, the predictive power of non-cognitive skills rivals that of measures of cognitive ability.’ (Kautz et al., 2014, p. 20)

1.5. Competitiveness and productivity

There is an abundance of literature on the topics of competitiveness and productivity. They have been extensively researched both separately, with much written about each concept in their respective research domains, as well as together, for instance in relation to human capital. Commonly, these concepts are discussed at many levels. They may be studied either at a single level, at the individual¹⁰ (e.g. Skirbekk, 2003; Lyons, 2006), organisational (e.g. Goodman et al., 1994; Kamukama, 2013), industry (e.g. OECD, 2001; Zhang and London, 2013) or national

¹⁰ For a detailed discussion of research into the variability of productivity with age, see Skirbekk, V. 2003. Age and individual productivity: A literature survey. Rostock: Max Planck Institute for Demographic Research.

levels (e.g. Coccia, 2011; Yeganeh, 2013). Alternatively, they can be examined across multiple levels – microeconomic, meso or macroeconomic level¹¹ (e.g. Baumann et al., 2019). These constructs have also been discussed in terms of comparisons across countries (e.g. Krskova and Baumann, 2017) or in terms of their various determinants, such as education in relation to productivity (e.g. Becker, 1993).

In terms of meaning or definitions, when it comes to competitiveness, some authors view it from a positive angle, as illustrated by a statement that ‘competitiveness is not that bad...at least in the East’ (King et al., 2012, p. 446). However, when it comes to competitiveness at the individual level, it can also have a negative connotation (similarly to discipline), especially, when it comes to, for example, gambling (Parke et al., 2004). As is often the case with concepts, there are numerous definitions available in the literature, depending on the relevant realm of research. For example, in the area of entrepreneurship, ‘competitiveness can be defined as the drive to win against others and obtain some form of dominance over them through winning’ (Lynn, 1991, p. 60). Alternative way to view competitiveness is as ‘the ability and willingness to outperform others – or at least better one’s own performance – at the individual micro level’ (Baumann and Harvey, 2018, p. 189). Such a view would appear relevant in the context of education.

In relation to productivity, there are also many definitions available in the literature, depending on a particular context. One of such definitions state that ‘productivity is the amount of goods and/or services produced per hours of human labor’ (Muckler, 1982, p. 13). Productivity in the workforce is often simply referred to as the ‘output divided by hours’ (Hansen, 1985, p. 321). Alternatively, in the area of sales, for example, individual productivity can then be calculated as

¹¹ For a detailed discuss of competitiveness and productivity constructs, please see, for example, Baumann, C., Cherry, M. & Chu, W. 2019. Competitive Productivity (CP) at macro–meso–micro levels. *Cross Cultural & Strategic Management*, vol. 26, no. 2, pp. 1-28.

a total individual sales in dollar terms divided by the associated payroll of the individual (Muckler, 1982). Another definition of productivity is expressed in terms of efficiency and effectiveness (Teng, 2014, p. 251): *'Productivity = Efficiency (Doing Things Right) + Effectiveness (Doing The Right Things')*. With so many definitions available, it is unsurprising that OECD (2001, p. 11) acknowledged that 'a look at the productivity literature and its various applications reveals very quickly that there is neither a unique purpose for, nor a single measure of, productivity'¹².

In terms of investigating competitiveness or productivity in the context of education, researchers have been met with some challenges. On the one hand, there have been studies investigating the differences between the levels of competitiveness of students across countries, such as between American and Dutch (Ryckman et al., 1992) or Chinese and American students (Tang, 1999). On the other hand, while there have been attempts to measure productivity of students, for example, in a study into student classroom and career success, when productivity of undergraduate students was 'calculated as the product of a student's course load (measured in credit hours) and term GA for the previous academic term' (Allison et al., 2001); productivity in education has been acknowledged as a hard construct to measure. According to McKeachie (1982, p. 460), in the context of higher education, the 'basic output is learning – students becoming lifelong learners and faculty carrying out scholarly research'. Thus much of the research into productivity in education focuses, for example, on the benefits of supervisory mentoring for doctoral students and the impact on research publication productivity (Green and Bauer, 1995; Paglis et al., 2006).

Over the years, the interrelationship between competitiveness and productivity has become more prominent, with, for example, higher productivity becoming acknowledged as 'the synonym of

¹² For an overview of various productivity measures, please see: OECD 2001. Measuring productivity: Measurement of Aggregate and Industry-Level Productivity Growth (OECD Manual). Paris: OECD Publishing .

improved competitiveness’ (Wysokińska, 2003, p. 12). More recently, there has been the development of a new construct. The concept of Competitive Productivity (CP) (Baumann et al., 2019, p. 1) has been introduced by combining competitiveness and productivity into one new construct and has been defined as ‘both an attitude and a behaviour directed at beating the competition’ (Baumann and Pintado, 2013, p. 10) by generating ‘high-quality products, services and experiences’ (p. 11).

Regardless of what definition or approach to measurement is adopted when examining competitiveness or productivity, individually or combined, what the studies investigating these constructs tend to have in common is the quest for increasing the levels of productivity. As any increase in productivity is associated with improvements in ‘output generated by each unit of effort, with concomitant reduction in unit costs’ (Fleishman, 1982, p. xv) with any such improvements being in line with the notion of ‘bettering one’s own performance’ (Baumann et al., 2019, p. 1).

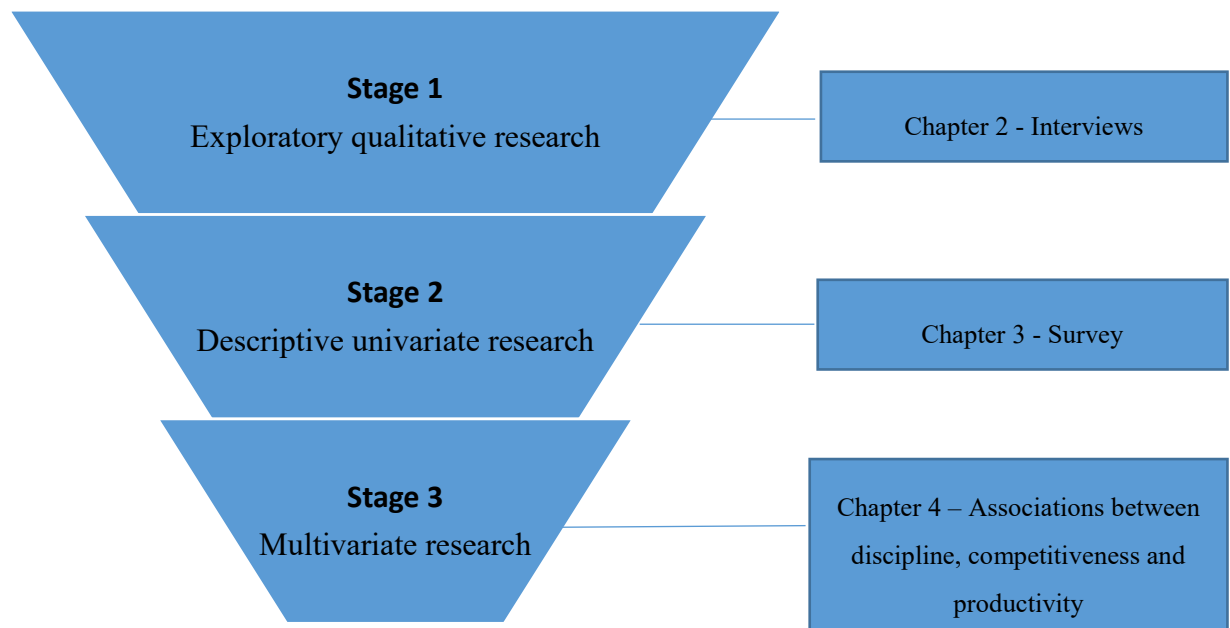
The relationships between human capital and competitiveness (e.g. Sahlberg, 2006) and human capital and productivity (e.g. Becker, 1993) are well documented. With the links between discipline and competitiveness (Krskova and Baumann, 2017) also established at the school level, what remains to be seen, and will be addressed by this research, is the potential association between the levels of student discipline (a non-cognitive skill) and the competitiveness and productivity of university students.

1.6. Methodology

The paradigm guiding any research study is ‘the basic belief system or worldview that guides the investigator’ (Guba and Lincoln, 1994, p. 105). The majority of this research was investigated under the positivist worldview, with the aim of inquiry being explanation and prediction (Guba and Lincoln, 1994). Alternative research paradigms were also considered, particularly with respect to ontological (objective versus subjective views of reality) and epistemological (views on obtaining information) assumptions (O’Gorman and MacIntosh, 2014).

In an attempt to select the most appropriate way of investigating the topic of discipline in the university context, and guided by the ‘*Mapping Research Methods*’ framework (O’Gorman and MacIntosh, 2014, p. 51) for setting up research design, this thesis follows a mixed research methodology. Such a design is ‘typically used to develop quantitative instruments’ (Swanson and Chermack, 2013, p. 103) when an initial exploratory study with the associated qualitative data collection) is ‘followed up with a phase of quantitative data collection’ (p. 103). The aim was to collect sufficient data to enable the development of a survey instrument that will be ‘understood by hundreds of people in a uniform way’ (Rubin and Rubin, 2011, p. 72). Using qualitative and quantitative methods in sequence (with the associated inductive and deductive data analysis approaches) allowed for a staged progression of the overall study. The stages of the research design are summarised in Figure 1.4, with the specific steps undertaken in the qualitative Stage 1 outlined in Table 1.3. The techniques used in this study depended on the research questions guiding the overall investigation (Sarstedt and Mooi, 2014), which are detailed in Table 1.4.

Figure 1.4: The stages of the 'funnel structure' of the research design, adapted from Sarstedt and Mooi (2014)



In Stage 1 (Chapter 2), when not much detail was known about how students at university perceive discipline, the 'funnel' in Figure 1.4 was entered by asking participants exploratory open-ended questions, with the interviews being conducted at an Australian metropolitan university. To ensure that data collected during the qualitative interviews at one university campus in Australia are generalisable to students from other countries, in the quantitative stage participants from a number of other countries were surveyed.

A qualitative method of data collection was adopted as 'the approach of choice' (Trochim et al., 2016, p. 57) for the first stage, in the study discussed in Chapter 2 (Paper 1), as the aim was to find a new way to 'describe a phenomenon [and to] achieve a deeper understanding' (p. 57) of discipline in the university sector. However, while using qualitative interviews is a way to find out 'what others feel and think about their worlds' (Rubin and Rubin, 2011, p. 1), it was important for the researcher to ensure that biases were not introduced into the study by accidentally guiding the interviewees in their answers.

Furthermore, the researcher had to be prepared to deal with inconsistencies in responses and to probe further when responses were not forthcoming, while being gentle and comfortable with long pauses. Open-ended questions were asked – that is, semi-structured interviews were conducted - to ensure that the participants could share their experiences and viewpoints in ways ‘not constrained and dictated by the researcher’ (Wilkinson et al., 2004, p. 39), while providing insights into the phenomenon under investigation. However, while searching for meaning in order to present suitable interpretations of participants’ insights, it was important to recognise that ‘we are not indifferent to the subject matter of our inquiries’ (Peshkin, 2000, p. 6), as each researcher is guided by their own experiences and views of knowledge generation.

The design of Stage 1, and also Stage 2, was guided by previous research (Rowe and Wood, 2007; Rowe and Wood, 2009) into the perceptions of students about teachers’ feedback, where they developed a new questionnaire from themes identified in the literature and during a thematic analysis of interview transcripts. While some of the discipline interview questions were adapted from the perceptions of feedback study (Rowe and Wood, 2007), most interview questions were developed afresh to suit this particular research (see Appendix 1.D. for a list of interview questions mapped to Rowe and Wood (2007)’s questions about perceptions of feedback). The thematic analysis of the interview transcripts and a subsequent mapping of the five main themes identified by students as pertinent to discipline (*focus, intention, responsibility, structure and time*) led to the development of a new conceptual model of discipline. Armed with sufficient material to formulate items in order to construct a quantitative measurement instrument, the research progressed on to Stage 2 (described in Chapter 3).

Table 1.3: Steps undertaken in the qualitative study described in Chapter 2

Steps in the qualitative stage of the research	
Step 1	Research questions were defined
Step 2	Literature review was undertaken
Step 3	Interviews questions were designed
Step 4	Sample requirements were determined
Step 5	Interviews were conducted
Step 6	Interviews were transcribed
Step 7	Transcripts were coded to determine patterns in the data
Step 8	Frequency of the identified themes was quantified
Step 9	Literature review was undertaken to investigate the emerged themes
Step 10	Model of theoretical foundations was developed
Step 11	Suitable titles for the identified categories were chosen, resulting in the F.I.R.S.T. acronym

Note: Following Step 11, the study progressed on to Stage 2 of the research, when quantitative survey was developed.

The purpose of Stage 2 was to test the findings of the qualitative interviews as well as to ascertain whether the measurement instrument developed for this investigation - based on students' perceptions of discipline and a review of the literature – would be applicable not only to one English-speaking country but could also be utilised for multi-country comparisons. Therefore, the research was extrapolated from Australia to China, Korea and the United States, three countries that have been the subject of cross-cultural research in the educational context (e.g. Miura et al., 1994; McMullen et al., 2005) and business (e.g. Kim et al., 1998; Suh et al., 2013).

Principal Component Analysis was applied to test for the five hypothesised dimensions of discipline; Analysis of Variance with *post hocs* was utilised to probe for similarities and differences between respondents; and Cluster Analysis was conducted to identify any distinct segments among the respondents. Aligned to a new conceptual model of discipline, a decision was made to conduct analysis at the granular level of five discipline dimensions (*focus, intention, responsibility, structure and time*).

Upon ascertaining that the measurement instrument is suitable for use with a multi-country sample, the research continued on to Stage 3. Chapter 4 provides details of the investigation of interrelationships between the key variables - namely discipline, competitiveness and productivity - using multiple Regression Analyses. As the scope of the research was intended to probe for moderation or interaction effects of country of birth¹³, a conscious decision was made to first examine the explanatory powers of discipline and other independent variables in this study on competitiveness (the Individual Competitiveness model) and then subsequently to examine the interaction of independent variables (including competitiveness as an independent variable) on productivity in a separate model (the Individual Productivity model). The investigation was therefore guided by past research into modelling and testing for associations between various independent variables with competitiveness and productivity (Baumann and Harvey, 2018) and studies utilising moderation (e.g. Shao et al., 2004; Zong et al., 2018).

Chapter 4 provides details of the two models utilised, with analysis conducted by SPSS deemed to be the most suitable for addressing the particular research questions. In contrast to Chapter 3, when more granular dimensions of discipline (*focus, intention, responsibility, structure and time*) were retained for analysis, in Chapter 4 the analysis was carried out at the composite

¹³ Consideration was given to options for measuring cultural influence on survey respondents. The initial intention was to include ethnicity as 'a proxy for racial classification or immigrant status' (Helms and Talleyrand, 1997, p. 1246), as it is a variable commonly used in cross-cultural research in a variety of disciplines. An attempt was therefore made to follow a methodology used by the Census Bureau in the United States, which must adhere to the 1997 Office of Management and Budget (OMB) standards to guide the classification of federal data on race and ethnicity (https://obamawhitehouse.archives.gov/omb/fedreg_1997standards) for household surveys or on administrative forms. As many categories are required to capture respondents' cultural background, such as American Indian or Alaska Native, or White, Hispanic or Latino; a large sample would have been required for meaningful survey outcomes about differences between ethnic groups in the United States alone. In addition, such categories could not be matched with Korea or China. A decision was therefore made to use 'country of birth' as 'a reasonable proxy for cultural differences' (p. 657), see: McMurray, A. & Scott, D. 2013. Work values ethic, GNP per capita and country of birth relationships. *Journal of Business Ethics*, vol. 116, no. 3, pp. 655-666.

discipline level (created by combining the five discipline dimensions).

In addition to considering alternative research paradigms and design, each paper individually and the study overall were designed to form a valid and reliable whole. Firstly, credibility of the qualitative study was ensured by structuring the interview process to meet standards of ‘transparency, consistency-coherence, and communicability’ (Rubin and Rubin, 2011, p. 85). Secondly, as discipline is a variable ‘that can’t be directly measured’ (Muijs, 2011, p. 57), issues of both validity - to ensure we measured what we intended to measure in the relevant context (DeVellis, 2017) - and reliability were addressed during developing and testing the new discipline measurement instrument described in Chapters 3 and 4. Cronbach’s coefficient alpha was used to assess internal consistency to test the reliability of the instrument, that is, one that performs in predictable, consistent ways (DeVellis, 2017) and is able to produce similar or the same results (Streiner and Norman, 1995). This coefficient reports on ‘the degree to which the items that make up the scale are all measuring the same underlying attribute (i.e. the extent to which the items ‘hang together’)

(Pallant, 2016, p. 6) and it was well in excess of the suggested lower level for alpha of .70 (Nunnally and Bernstein, 1994).

1.7. Thesis overview

Table 1.4 outlines the various analysis techniques that were used to address the research questions and that were applied in the three stages of the research. It also provides an overview of the whole thesis.

Table 1.4: Structure of the thesis

Chapter 1	Chapter 2	Chapter 3	Chapter4	Chapter 5
Introduction	Paper 1 <i>F.I.R.S.T. Discipline towards work readiness – Investigation of university student perceptions of discipline</i>	Paper 2 <i>The F.I.R.S.T discipline principles - Measuring student discipline at university</i>	Paper 3 <i>The role of discipline, parental expectations and sport involvement in explaining individual competitiveness and productivity: Moderating effects of country of birth</i>	Conclusion
	Research questions			
	(1) What do university students perceive discipline at university to be? (2) What, if any, themes, or discipline dimensions, emerge from how students perceive discipline at university to be? (3) Is discipline at university the same as discipline at school?	(1) How to measure student discipline with reference to university students? (2) Are there differences in the levels of discipline across respondents from China, Korea and the United States? (3) Are there gender differences in the levels of discipline? (4) Are there distinct segments of individuals with similar levels of discipline across the three societies?	(1) Does discipline drive competitiveness, productivity, or both? (2) Does individual competitiveness explain individual productivity? (3) Is country of origin a moderator in the individual competitiveness and productivity models?	
	Methodology			
	Exploratory research using qualitative interviews	Quantitative survey	Quantitative survey	
	Analysis			
	Thematic analysis	Principal component analysis, Analysis of variance (ANOVA) with <i>post hoc</i> , t-test analysis and cluster analysis	Multiple regression analysis and moderation analysis	

While Table 1.4 provides an overall summary of the three papers included in this thesis - including research questions, methodology and analysis techniques - in terms of the overall alignment of each paper with the overarching objective of this thesis (to investigate discipline in the university context and to examine the relationship between discipline and individual competitiveness and productivity), the flow of the overall narrative is as follows:

- Chapter 1 outlines the specific theoretical foundations of this thesis. While there were several theoretical perspectives guiding the examination of discipline, the interplay between the human capital perspective and the impact of cognitive and non-cognitive skills on human capital formation was particularly influential in prompting the investigations of the relationships between the three main constructs under examination. Guided by Human Capital Theory, discipline was identified as a possible skill with the potential to impact human capital formation. Informed by the literature, individual competitiveness and productivity were also recognised as constructs of interest, because increases in human capital boost national productivity and economic growth.
- The aims of Chapter 2 were to investigate how graduates could become more disciplined and more work ready. Semi-structured interviews were conducted with university students and examined using thematic analysis, with five main themes being identified as “focus”, “intention”, “responsibility”, “structure” and “time” (F.I.R.S.T.). These themes were subsequently mapped to five theoretical perspectives (*self-determination*, *goal-setting*, *self-efficacy*, *self-regulation* and *time management*), as identified in the literature following the analysis of the interview transcripts. While Chapter 2 (Paper 1) focuses mainly on the five themes that emerged in the student interviews, sport and music were also themes uncovered. While these two themes did not contribute to the overall narrative of Paper 1, they are revisited again in Chapter 4 (Paper 3).
- Chapter 3 focuses on a survey developed to capture the five themes in an attempt to verify that the findings from the interviews are applicable across multiple countries. In order to extrapolate from interviews conducted at an Australian university, the quantitative phase

of this research was extended to Korea, China and the United States. The chapter presents evidence in support of the conceptual model of discipline (outlined in Figure 3.1). The results confirm that discipline is a combination of five dimensions: *focus, intention, responsibility, structure and time*.

- Chapter 4 presents an analysis of survey data from 537 current university students and recent graduates from China, Korea and the United States, with the aim of testing the explanatory power of independent variables in the individual competitiveness and productivity models, including testing for interaction or moderation effects of country of birth. By introducing sport and music, two themes identified in the interviews (discussed in Chapter 2), as independent variables into the individual competitiveness and productivity models, the themes were revisited again in Chapter 4 with sport found to be significantly associated with competitiveness.
- The main contributions and the implications of the three papers and the thesis overall, followed by a discussion of the limitations of this research and suggestions for future research, are presented in Chapter 5.

In other words, progressing from qualitative interviews, to designing and testing the questionnaire, to examining the survey data in order to make predictions, this research contributes to the debate about the role of discipline, a non-cognitive skill, in human capital formation, through the impact on competitiveness and productivity. The intention was for each paper to contribute to the overall research question (to investigate discipline in the university context), with each paper contributing to the overall study in a unique way, each building on the previous paper.

In summary, in the context of this thesis, discipline is viewed as an internal mechanism that drives individuals forward, towards an achievement. Viewing discipline as a skill that has the potential to be ‘a tool of power’ (in a positive sense) (Steinberg, 2010, p. x) and guided by work

in the field of human capital (Schultz, 1961; Becker, 1964; Barro, 2001; Heckman et al., 2006), this thesis has been designed to make the following main contributions:

- (i) to gain a better understanding of the construct of discipline underpinned by the perceptions of students about what discipline at university is;
- (ii) to ascertain whether the newly developed discipline measurement survey is applicable not only in one English-speaking country but is also suitable for multi-country comparisons; and
- (iii) to provide empirical evidence for the importance of discipline in explaining individual competitiveness and productivity in the university context.

This chapter has offered the aims and background for the research such as the limitations of previous research and the areas suggested in the literature for future work on discipline. The theoretical underpinnings have been discussed and the methodology and structure of the thesis outlined. Chapter Two presents the first paper included in the thesis, a qualitative study of students' perceptions of discipline.

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Appendix 1.A: Overview of discipline management approaches¹⁴

Approach / model	Central theme (Seminal text)	Reference
Rogers' humanistic approach	Client-centred therapy and empathetic understanding (<i>Freedom to Learn</i>)	Rogers (1951) Rogers (1969)
The Glasser Model	Reality orientation to classroom management and involvement in learning (<i>Schools Without Failure</i>) (<i>Control Theory in the Classroom</i>)	Glasser (1969) Glasser (1986)
The Dobson Model	Place for punishment (<i>Dare to Discipline</i>)	Dobson (1970)
The Kounin Model	Ripple effect and classroom management through withitness, alerting (<i>Group Management</i>)	Kounin (1970)
Skinner's behavioural approach¹⁵	Shaping desired behaviour through reinforcement (<i>Beyond Freedom and Dignity</i>)	Skinner (1974) Skinner (1989)
The Dreikurs Model	Confronting mistaken goals (<i>Discipline Without Tears</i>)	Dreikurs et al. (1974)
The Gordon Model	Teacher effectiveness (<i>Teacher Effectiveness Training</i>)	Gordon and Bruch (1974)
The Canter Model	Assertively taking charge (<i>Assertive Discipline</i>)	Canter and Canter (1976)
The Jones Model	Discipline through body language, incentive system and providing efficient help (<i>Positive Classroom Discipline</i>)	Jones (1987)

¹⁴ Approaches are listed in date order of the first listed publication of the authors.

¹⁵ 'Skinner never proposed a model of school discipline. Other writers [...] have taken his ideas on learning and adapted them to controlling behaviour of students in school' (Charles and Barr, 1992, p. 34).

Charles, C. M. & Barr, K. B. 1992. *Building classroom discipline*, New York, Longman.

Appendix 1.B: Overview of instruments used in assessing school climate/environments¹⁶

References	Instrument label	Instrument title	Number of items	Instrument readily available
Panel A – Focus on environment				
Aldridge et al. (2006)	SLEQ – SA (South Africa)	School-Level Environment Survey	80	Yes
Aldridge and Ala'l (2013)	WHITS	What's Happening in This School questionnaire	49	Yes
Baek and Choi (2002)	KCES	Korean Classroom Environment Scale	62	No
Cushing et al. (2003)	SCS (revised)	School Climate Survey	37	No
Fraser (1999)	CLES (original)	Constructivist Learning Environment Survey	30	Yes
Fraser (1999)	ICEQ	Individualised Classroom Environment Questionnaire	Long version – 50 items Short version – 25 items	No Yes
Furlong et al. (1991)	CSCSS	Californian School Climate and Safety Survey	102	No
Furlong et al. (2005)	CSCSS-SF	Californian School Climate and Safety Survey – Short form	33	Yes
Goodenow (1993)	PSSM	Psychological Sense of School Membership Scale	18	Yes
Gottfredson (1985)	ESB	Effective School Battery	118	Yes
Halpin and Croft (1962)	OCDQ	Organisational Climate Description Questionnaire	64	Yes

¹⁶ References are listed in alphabetical order.

References	Instrument label	Instrument title	Number of items	Instrument readily available
Hart et al. (2000)		School Organisational Health Questionnaire	54	Yes
Hoy and Clover (1986)	OCDQ – RE (revised)	Organisational Climate Description Questionnaire	42	Selected items only
Hoy et al. (1991)	OCDQ – RE (revised)	Organisational Climate Description Questionnaire	42 items – elementary schools 34 items – secondary schools	Yes Yes
Hoy et al. (1991)	OHI- RE (revised)	Organisational Health Inventory	34 items – elementary schools 44 items – secondary schools	Yes Yes
Johnson and McClure (2004)	CLES (revised): CLES (30) and CLES (20)	Constructivist Learning Environment Survey	30 20	Yes Yes
Rentoul and Fraser (1983)	SLEQ	School-Level Environment Survey	56	Yes
Panel B – Focus on efficacy and interaction				
Emmer and Hickman (1991)		Teacher Efficacy in Classroom Management and Discipline	36	Yes
Fraser (1999)	QTI	Questionnaire on Teacher Interaction	77 items (Original) 48 items (economical version)	No Yes

References	Instrument label	Instrument title	Number of items	Instrument readily available
Gibson and Dembo (1984)		Teacher Efficacy Scale	30	Yes
Jinks and Morgan (1999)	MJSES	The Morgan-Jinks Student Efficacy Scale	34	Yes
Panel C – Focus on discipline				
Curwin and Mendler (1988)		School Discipline Survey	9 scales	Yes
Dettman (1972)		High School Discipline Questionnaire (Staff)	49	Yes
		School Administrator' Questionnaire	131	Yes
		Parents' Questionnaire	52	Yes
		Case Study Report	65	Yes
		High School Students Questionnaire	123	Yes
Furtwengler and Konnert (1982)		Discipline Position Effectiveness	58	Yes
Furtwengler and Konnert (1982)		Discipline Organisation Effectiveness Inventory	56	Yes
Le et al. (2005)		Academic discipline	10	No*

References	Instrument label	Instrument title	Number of items	Instrument readily available
Lewis (2001)		Classroom Discipline (original)	35	No
Osler (2000)		Pupil questionnaire on school discipline	27	Yes
Romi et al. (2009)		Classroom Discipline (revised)	24	No
This thesis	F.I.R.S.T.	Discipline measurement instrument	23	Yes

*Note: *Available upon request.*

Appendix 1.C: Overview of interpretations of discipline¹⁷

Reference	Definition
MacKechnie (1967, p. 3)	<i>'Discipline in relation to education, then, must be thought of in terms of behaviour which advances all three aspects of the process – knowledge, skills and attitudes'.</i>
Stenhouse (1967, p. 43)	<i>'If we mean by discipline, as I think we should, an acceptance of certain goals and hence of the order and organization necessary to achieve them, then discipline is part of life outside of school as well as inside it'.</i>
Brown (1971, p. 23)	<i>'Discipline involves all those techniques utilized in the classroom with the aim of controlling student behaviour'.</i>
Dettman (1972, p. 7)	<i>'The discipline of a school is the state or condition of order or good behaviour among students. The term also refers to the procedures by which this state of order is maintained in the school'.</i>
Furtwengler and Konnert (1982, p. 4)	<i>'Discipline [...] includes the roles of principals, teachers, parents and students in establishing and implementing a discipline program, as well as the program itself – the process designed to aid students to develop social behaviors and attitudes for appropriate participation in an adult democratic culture'.</i>
Smith (1984, p. 1)	<i>'Discipline merely means that there is order among pupils so learning can take place without competition from unproductive factor. It is a system of rules for conduct and mechanism for ensuring that conduct codes are followed'.</i>
Jones (1987, p. 8)	<i>'Discipline [...] is the business of enforcing classroom standards and building patterns of cooperation in order to maximize learning and minimize disruptions.</i>
Charles and Barr (1992, p. vi)	<i>'Discipline 'is used to refer to steps taken to cause students to behave acceptably in school'.</i>
Romi and Freund (1999, p. 54)	<i>'Discipline is a system of sanctions that addresses the breakdown when the code of conduct is broken'.</i>
Le et al. (2005, p. 494)	<i>Academic discipline is 'the extent to which students value schoolwork and approach school-related tasks conscientiously'.</i>

¹⁷ Publications are listed in date order.

Reference	Definition
Cameron (2006, p. 219)	<i>'School discipline is defined as school policies and actions taken by school personnel with students to prevent or intervene with unwanted behaviors'.</i>
Oplatka and Atias (2007, p. 48)	<i>'School discipline refers to pupils' ability to obey, or follow the rules and desired behaviors accordingly'.</i>
Ferreira et al. (2009, p. 159)	<i>'Discipline at school has two key goals, namely to ensure the safety of educators and learners and to create an environment conducive to teaching and learning'.</i>
Millei et al. (2010a, p. 7)	<i>'Discipline is a synonym for control, and embodies a sense of creating or maintaining order'.</i>
Steinberg (2010, p. xi)	<i>'Discipline is a tool of power. Built upon a deficit model, where transgression is expected, discipline is the natural follow-through of getting into trouble'.</i>
Baumann and Krskova (2016, p. 1021)	<i>Discipline is 'a very effective and useful tool to enhance learning, personal development and overall human betterment'.</i>
This thesis	<i>Discipline is a combination of five dimensions – Focus, Intention, Responsibility, Structure and Time (F.I.R.S.T.).</i>

Appendix 1.D: Overview of questions to explore perceptions of discipline, as adapted from questions used during focus groups in a study into university students' perceptions of feedback (Rowe and Wood, 2007)

No	Perceptions of discipline questionnaire (Chapter 2 / Paper 1)		Perceptions of feedback questionnaire Rowe and Wood (2007)
1	What do you think discipline is?	1	<i>What do you think feedback is?</i> To reveal differences in students' perception of the role and purpose of feedback
2	What is the difference between being disciplined and not disciplined?	2	<i>What is the difference between "good and poor feedback"?</i>
3	Is being disciplined important to you?	3	<i>Is feedback important to you?</i>
4	Do you believe that being disciplined will help you achieve your goals?*		
5	Do you believe that there is a link between discipline and academic performance?*		
6	How does discipline impact academic performance?*		
7	How is your academic performance affected by your level of discipline?*		
8	Are you disciplined enough?	4	<i>Do you receive enough feedback?</i>
9	How can you become more disciplined?*		
10	How will discipline affect your performance in the workplace?*		
		5	<i>Is the feedback provided in timely manner?</i>
		6	<i>What sort of feedback do you prefer?</i>
11	How can university help you become more disciplined? Any suggestions?	7	<i>How can we improve feedback?</i>

*Note: *Questions were developed afresh to suit this particular research*

Introduction to Paper 1 – Perceptions

The first paper in this thesis, *F.I.R.S.T. Discipline towards work readiness – Investigation of university student perceptions of discipline*, offers original insights into the perceptions of university students about what discipline in the university context is and how graduates could become more disciplined and hence more work ready. This paper reports on the initial qualitative phase of the research in which semi-structured interviews were conducted at an Australian university with students from a wide range of cultural backgrounds, at different stages of their studies and from a variety of faculties in order to shed light on the construct of discipline.

Five main discipline themes emerged during the interviews and the subsequent thematic analysis. Mapped to five theoretical perspectives identified in the literature, these themes offer a novel understanding of discipline and provide a conceptual foundation for future quantitative exploration.

The data collected indicate that students themselves recognise the importance of discipline in their quest for greater achievement, empowering those who aspire to perform at a higher level. The findings of this phase of the research hint at the notion of productivity as, presumably, a graduate who is more work ready will also be more productive in the workplace. The findings lead to the conclusion that discipline might potentially play an important role not only in educational settings but also in the work readiness of students, suggesting that discipline could also be positively associated with productivity.

Under review in *Higher Education, Skills and Work-based Learning*

F.I.R.S.T. Discipline towards work readiness – Investigation of university student perceptions of discipline

Abstract

Purpose – The role of discipline in achieving higher academic and workplace performance is receiving increasing attention, however, research into student discipline has historically centred on schools. This paper takes a new approach – it explores how university students from multiple faculties and at different stages of academic progression understand discipline in higher education, with the aim to investigate how graduates could become more disciplined and more work ready.

Design/methodology/approach – This study adopted qualitative exploratory approach. Semi-structured interviews were conducted with university students and analysed using thematic analysis.

Findings – The students viewed discipline as internally driven as opposed to being enforced externally, which is often the case in schools. Five main themes were identified as discipline dimensions: “focus”, “intention”, “responsibility”, “structure” and “time” (F.I.R.S.T.).

Originality/value – A new concept of discipline is presented, underpinned by a conceptual framework comprised of *Self-determination*, *Goal-setting*, *Self-efficacy*, *Self-regulation* and *Time management* principles. A “Threshold Concept of Discipline”, a hierarchical four-layered concept that develops over time for every individual with the ultimate level being “Creative Discipline”, is proposed. These findings illuminate learning strategies that higher education institutions can use to further enhance learning and increase the work readiness of their graduates. Such strategies can empower students who aspire to perform at a higher level and to become true professionals.

Keywords – Academic performance, creative discipline, F.I.R.S.T. discipline, liminal space, discipline definition, qualitative research, higher education, work readiness

Paper type - Research paper

1. Introduction

Discipline is a critical factor in academic achievement. It is not only ‘essential to effective teaching and learning’ (Knight, 1988, p. 326) but it is viewed as important for society in general (Charles and Barr, 1992). It is acquired across a long time span and, in the educational context, it is often imposed on students externally for the purposes of classroom management (e.g. Kounin, 1970; Cohen and Romi, 2010) or behaviour management (e.g. Lundell, 1982; Rogers, 2015) in order to minimise disruptions and to improve the learning environment, with the goal of increasing academic achievement. Unfortunately, discipline is often thought of as having negative connotations of punishment and following rules, for example: ‘ranging from all activities that are implemented to control learner behaviour, to enforcing compliance and order’ (Bechuke and Debeila, 2012, p. 243).

While discipline in schools has been the subject of many an inquiry over the years, at tertiary level it is yet to receive a similar degree of attention and has been examined mainly through the lens of student conduct, rule following or student discipline systems (e.g. Cazier, 1973; Dannells, 1997). Some studies highlight the positive side of discipline, with Le et al. (2005) defining it as ‘the extent to which students value schoolwork and approach school-related tasks conscientiously’ (p. 494). In another study across 48 tertiary institutions, academic discipline was found to be predictive of academic performance as well as of student retention (Robbins et al., 2006). Academic discipline was also found to significantly predict the grade point average of tertiary students (Komarraju et al., 2013). These studies, however, relied on the “academic discipline” definition proposed by Le and his colleagues, with reference to “schoolwork”. In schools, discipline is often enforced externally, but on entering university students move from this environment to one where they are more likely to be expected to discipline themselves. The question of how to best understand and measure “Academic Discipline” (Robbins et al., 2006) remains to be answered. If discipline at university is no longer imposed on students externally, presumably it is a different construct to discipline as defined and measured at school level.

This investigation of discipline is underpinned by recent concerns in several domains. In an era when the appropriate work readiness of graduates continues to be debated (e.g. Jackson and Chapman, 2012), business consulting houses have highlighted the imperative for employees of the future to be equipped with a ‘blend of skills, [and] not [only] pure technical competency’ (Deloitte, 2018, p. 42); skills ‘that cannot be mimicked by machines’ (World Bank, 2019, p. 50) are in high demand. The search for ways to increase work readiness in order to improve the productivity of graduates has become even more urgent, especially as productivity of the workforce, for example in the United States, appears to be diminishing (e.g. Barro, 2016; U.S. Government, 2018). Guided by Human Capital Theory (Becker, 1975) and one of its underlying notions that skills¹ impact human capital formation as well as productivity, this research was designed to gain greater understanding of one particular skill that has a potential to increase graduate achievement and work readiness: discipline.

In particular, our study was designed to answer a number of specific questions:

- (i) What do university students perceive discipline at university to be?
- (ii) What, if any, themes, or discipline dimensions, emerge from how students perceive discipline at university?
- (iii) Is discipline at university the same as discipline at school?

¹ More specifically, this research was guided by the work of the 2000 winner of the Nobel Prize in Economics, James Heckman in the realm of human capital about the importance of non-cognitive skills in many domains (e.g. Heckman, J. J. 2006. Skill formation and the economics of investing in disadvantaged children. *Science*, vol. 312, no. 5782, pp. 1900-1902.).

Non-cognitive skills ‘go by many names in the literature, including soft skills, personality traits, non-cognitive abilities, character skills, and socio-emotional skills’ (p. 8) (see: Kautz, T., Heckman, J. J., Diris, R., Ter Weel, B. & Borghans, L. 2014. Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success. Cambridge MA: National Bureau of Economic Research.) and include, for example, ‘perseverance (grit), conscientiousness, self-control ... self-efficacy, resilience to adversity ... and the ability to engage productively in society’ (p. 2). In contrast, cognitive skills (thinking skills) refer to ‘verbal, reading, and writing abilities as well as those in mathematics, science, music, and art’ (p. 543) (see: Farkas, G. 2003. Cognitive skills and noncognitive traits and behaviors in stratification processes. *Annual Review of Sociology*, vol. 29, no. 1, pp. 541-562.).

This paper reports on a qualitative exploration of the construct of discipline in a higher education setting. There are many factors that influence student achievement such as procrastination, persistence, attitudes to learning or the influence of family. However, the focus of this study is on discipline only. Gaining insight into what discipline means to students at university and how their level of discipline influences their academic achievement could assist universities in developing strategies so that students will be able to take more responsibility for their own learning and achievement. Increasing their levels of discipline could lead to better performing students and work-ready graduates, especially as discipline strengthens their work ethic (Baumann et al., 2016), which in turn is valued by employers (Porter, 2005).

2. Theoretical foundations

There are many theories that are used to explain the way people approach learning. For example, *Behaviourist Theories* focus on the modification of behaviour while using reinforcement (Skinner, 1974) and *Cognitive Theories* view learning as an internal cognitive-process transformation (Wenger, 1987), while *Self-Efficacy Theory* (Bandura, 1986) relates to the behaviour that people choose to adopt, how persistent they are and the choices they make about how long to pursue a certain activity in relation to their judgement of their personal efficacy. In education this concept ‘is frequently described in terms of *Academic Self-Efficacy*’ (Honick and Broadbent, 2016, p. 64). Because acquisition of knowledge requires sustained effort, when a student is faced with difficulties and setbacks in their learning, those beset by self-doubt about their capabilities might be tempted to ease off their efforts and ‘abort their attempts prematurely and quickly settle for mediocre solutions’ (Bandura, 1989, p. 1176); while students with higher levels of self-efficacy and willingness to take responsibility for their academic performance will persist and persevere with the pursuit of academic attainment.

In addition to the influence of Human Capital Theory on this study as discussed earlier, other relevant theoretical perspectives are detailed further in the discussion section.

3. Methodology

Student perceptions are commonly utilised in examining phenomena in educational settings (e.g. Bowden and Wood, 2011; Caldwell and Cattermole, 2015; Hemsley-Brown and Oplatka, 2010) and we adopted the approach of exploratory research using qualitative interviews to investigate students' perceptions about: what discipline at university is; how degrees of discipline impact performance (both educational and in the workplace); how they intend to improve their own discipline; and how universities could assist them to increase their discipline. By exploring how discipline is viewed 'by others from their perspective' (Trochim et al., 2016, p. 61) and focusing on a small pool of respondents using qualitative interviews, we were able to look for consistent patterns (Collis and Hussey, 2013).

3.1. Participants

'There are no rules for sample size in qualitative inquiry' (Patton, 2002, p. 244) and by the time participants started to provide limited additional insights, 21 students had consented to participate in individual interviews with 20 completing the entire interview. The distribution of the sample was equally split between females (n=10) and males (n=10) and students were sourced from various educational disciplines including arts, medical sciences, engineering, commerce and education, at both undergraduate (n=11) and postgraduate (n=9) levels, as outlined in Appendix A. The participants represented various stages in the life of a university student, from first to final semesters. Thirteen students were Australian residents and seven were international. Participants' country of birth was also noted during the interviews: 9 were born in Australia with 11 born overseas. The youngest participants were 18 years old (n=2) and the oldest was 38 years old. The diversity of the sample was considered valuable due to the aim of this research being to explore discipline in a broader sense. The data were de-identified and all students are referred to as a participant 'P1 to P20', in line with the university's Ethics Approval.

3.2. Procedure

Utilising the market research method of the mall intercept approach (Bush and Hair Jr, 1985), a face-to-face invitation to participate in this study was extended during Semester 1, 2017 by approaching potential participants in public areas of an Australian university at various times of the day (morning, afternoon and evening). They were invited to take part in one audio-recorded interview lasting approximately 20 minutes, based on a series of open-ended questions (for the “Perceptions of Discipline” questionnaire see Appendix B). The interviews took place on the university campus at a location that was convenient for the participants shortly after the consent was obtained. They received one free movie ticket upon successful completion of their interview. The audio-recorded interviews were transcribed by a professional transcription services company.

3.3. Coding and analysis

The focus of the interviews was on exploration and discovery, so thematic analysis, a method for ‘identifying, analysing and reporting patterns (themes) within data’ (Braun and Clarke, 2006, p. 6), was found to address the aims of this study most appropriately. NVivo and AntConc software (Anthony, 2004) were utilised to analyse data in order to identify discipline dimension themes. The progress through the data familiarisation, initial coding, search for themes, review of themes, defining and naming themes as well as interpretation was not linear but highly recursive. While themes were identified at both semantic (explicit) and latent (interpretive) levels (Braun and Clarke, 2006), our primary focus was on the semantic approach. Responses were initially coded using the participants’ own words. We therefore organised the data according to the explicit meanings, that is, by exactly what the participants stated.

Following a literature review to assist with mapping the participants’ words to existing theoretical perspectives, responses were re-examined and coded against five concepts that emerged: *self-determination*, *goal-setting*, *self-efficacy*, *self-regulation* and *time management*.

The conceptual framework of the interplay of these five perspectives is outlined in Figure 2.1 in the discussion section.

4. Findings

The findings of this study are discussed in two sections. First, participants' views on discipline in the higher education setting are summarised; second, the outcomes of a thematic analysis of discipline dimensions are presented.

4.1. Student responses to questions

4.1.1. What do you think discipline at university is?

Students' reaction to this question varied from not being able to put forward a statement about discipline (participant P3, P6 and P15) and finding it hard to articulate their answer thus keeping their responses relatively short (participants P4, P17 and P18), to elaborating further:

Working without distraction. (P7)

Spend enough time on studying. Prioritise our time to focus. (P10)

The force to push, push us to study harder. To work harder. (P18)

However, over half of the students provided insightful descriptions of what they believed discipline in the university context is:

Planning ahead of time. Being structured. You have to know when things are happening and when you need to get something done. (P1)

Getting your work done. Like organising your time. When they're competing interests, ability to choose the best and most appropriate one. Even [if] it's less enjoyable. (P5)

It's having self-responsibility for all of your studies. (P8)

4.1.2. Is being disciplined important to you?

While all students reported that being disciplined is important to them, their degree of enthusiasm varied. Their answers ranged from hesitant: “Yeah, I’d say so”, “Yeah, in a sense”; to answers provided with delighted exclamations such as: “Yes! Very much”, or “Yes, it makes a big difference. Definitely”, to more expansive responses:

Yes. I like to have a routine. It's very satisfying when you know you're on top of everything. And you can't achieve that without being disciplined. (P7)

I wouldn't get very far without it. I don't have anyone to push me. It's all on me and so it's important for me to be on top of things and scheduled. (P4)

4.1.3. Do you believe that there is a link between discipline and academic performance?

Similarly, all students reported that they believe there is a link between discipline and academic performance. It was the degree of certainty of that belief that again fluctuated among the respondents. Answers varied between “to a certain extent”, “I’d assume so”, or “I think so. I suppose”, to the high degree of conviction exhibited in these responses:

Yes, it seems like when I manage my time better I feel more disciplined and I perform better in my assessments. (P8)

Absolutely. Disciplined students are mostly the most successful students. (P17)

I think people that are more disciplined, and have everything planned out, and do things earlier, do definitely well, do better. (P20)

4.1.4. Are you disciplined enough?

The responses here also varied, from succinct answers of “Yeah” and “No”, to expanding on reasons why the participant felt they were not disciplined enough such as: “I don’t put enough time into it”. One interesting finding related to the desire to improve. Half of the participants - students from both sides of the discipline continuum (i.e. those who self-reported to be

disciplined enough and those who self-reported as not disciplined enough) - indicated a strong desire to improve their levels of discipline.

Table 2.1. Summary of participants' discipline self-reported assessment

Responses to question: Are you disciplined enough?							
Participant	Yes	Improvement desired	No	Participant	Yes	Improvement desired	No
P1*	✓	✓		P11*		✓	
P2	✓			P12	✓		
P3*	✓	✓		P13*	✓	✓	
P4*		✓	✓	P14*	✓	✓	
P5*		✓	✓	P15*	✓	✓	
P6	✓			P16*	✓	✓	
P7	✓			P17	✓		
P8			✓	P18			✓
P9*	✓	✓		P19			✓
P10			✓	P20			✓

*Note: *Participants indicated "room for improvement" and that they were keen to improve their levels of discipline.*

4.1.5. How can you become more disciplined?

Participants reported on areas of discipline which they believed could be improved. In line with previous answers, they displayed varied levels of awareness of opportunities for improvement. This ranged from several students reporting that they "want to improve" but unable to articulate what specifically they would like to improve, to all but one participant (P18) discussing the need to master or at least improve their time management skills. The older students, attempting to balance university study with work and family commitments (e.g. participant P1), reported that they were "trying to figure out when to squeeze in the little time for studying". In the case of young career-oriented professionals whose work plays a major part in their lives (e.g. participant P4), they were simply focusing on balancing "home, work, uni" to avoid "upsetting one of the others".

Interestingly, the students who self-reported lower levels of discipline (Table 2.1) considered this question only very briefly before providing short uncertain answers such as, “train myself to be more mindful” (participant P8); while students who self-reported being disciplined, took time before answering and were able to elaborate or discuss specific scenarios of how they could become more disciplined:

If you're goal-directed, maybe you make a timetable and you say, "Today, I'm gonna do this amount of time," and just switch off everything else, like electronics. Definitely remove a distraction [...] it takes a very long time to build up, it's not gonna happen overnight. (P16)

4.1.6. How does or will discipline affect your performance in the workplace?

The majority of students provided detailed examples of how discipline does or will influence workplace performance. They discussed, for example, the ability to take the initiative, being able to get everything done or meeting deadlines:

When you go to workforce, you suddenly have expectations from other people. They need a job done, at certain time. You need to stay on top of due dates and that sometimes you need to manage a few projects at the same time. So, if you are not disciplined, you might not get things done on time and you might get in lot of trouble for that. (P1)

Often you'll be seeing patients or clients at regular intervals. So it's important to keep up with the paperwork. [...] Especially if you run your own business you set your own rules, it's important to be disciplined. It's much easier if your employer sets all these guidelines for what you do when, it's easier just to follow. (P5)

4.1.7. How can university help you become more disciplined?

Students provided a variety of suggestions for universities to assist students to improve discipline. These ranged from tactical improvements such as providing students with planners as well as teaching them how to plan (P1) and incorporating time management into curricula (P4), to more detailed suggestions, such as a week-long induction and higher standards:

It is a big step between high school and university and I feel like the universities don't do enough. They need to sort of spoonfeed [students]. Be more specific. Especially for the first year students, those jumping from high school, they need to dedicate more time [...] maybe a week of three to six hours a day. If O-Week was, instead of an information giving, presented as an orientation because you always go through your orientation, because it's considered the first start of [work]. (P8)

Probably higher requirements [...] I'd say if just passing a unit was much more difficult, people, like students would have to be much more disciplined to achieve that. (P4)

4.1.8. Emerging themes

Participants' responses about what they perceived discipline at university to be, their suggestions about how to become more disciplined, or how universities might assist students to become more disciplined, were also coded quantitatively to uncover further patterns (Trochim et al., 2016). We identified five discipline dimensions as affecting their academic achievement, namely Focus, Intention, Responsibility, Structure and Time. In addition, two more patterns emerged during the analysis: that is, almost half of the participants indicated that they had either played a musical instrument or participated in sport activity during school years, or both. Table 2.2 provides a summary of the thematic coding analysis for the five discipline dimensions as well as for participation in sport and music across respondents.

Many other descriptors of discipline were mentioned by participants, from disciplined people being the more ambitious or hardworking ones, to disciplined people perhaps having had more experience with negative consequences of not meeting clearly set expectations (such as being reprimanded for not completing their school homework). However, the frequency of these other descriptors was low, therefore a decision was made to focus on the top five themes of focus, intention, responsibility, structure and time.

Table 2.2. Thematic representation of coding analysis as per Trochim et al. (2016).

Participant	Discipline dimension themes*					Additional dimensions	
	Focus	Intention	Responsibility	Structure	Time	Music	Sport
P1*	✓	✓	✓	✓	✓	*	*
P2	✓	✓			✓		
P3	✓	✓			✓		
P4	✓	✓	✓	✓	✓	✓	
P5	✓	✓		✓	✓	✓	✓
P6	✓	✓			✓		✓
P7	✓			✓	✓		✓
P8	✓				✓		
P9	✓	✓	✓	✓	✓	✓	✓
P10	✓	✓	✓	✓	✓	✓	
P11		✓	✓	✓	✓		✓
P12		✓	✓	✓	✓	✓	✓
P13	✓	✓		✓	✓	✓	✓
P14	✓	✓	✓	✓	✓	✓	✓
P15	✓		✓	✓	✓		✓
P16	✓	✓	✓	✓	✓	✓	
P17	✓	✓			✓		
P18		✓		✓			
P19	✓				✓		
P20	✓			✓	✓		

Note: *Participant P1 indicated that she did not get the chance to play sport nor music.

5. Discussion

This section presents findings of the qualitative exploration of the perceptions of university students about discipline in tertiary education. The discussion will be presented in four parts. First, students' views about what constitutes discipline at university will be discussed. Second, themes identified during thematic analysis will be explained in relation to theoretical perspectives available in the literature. Third, a conceptual framework of theories with the potential to enhance our understanding of discipline is presented in Figure 2.1. Fourth, a threshold concept of discipline (Figure 2.2), or the progression between the levels or degree of discipline, will be outlined.

5.1. Student views on discipline in higher education

In line with our expectation that students at university will turn their focus away from externally enforced discipline (such as at school level) towards more internally driven discipline, participant descriptions ranged from somewhat lower order discipline behaviour such as attendance at lectures and tutorials (n=8), to higher order behaviour, requiring a lot of internal control and assuming full responsibility for their actions and achievements. Each of the 20 participants appeared to be at a slightly different place in the 'Discipline Threshold' (a term which will be detailed shortly). On the one hand, the less disciplined students (as self-reported in Table 2.1) discussed more basic issues, such as what university should do for them to stay on track, and the basics of university etiquette, such as attending lectures and tutorials and completing continuous assessment during semester (*'I find weekly quizzes are quite good, even if they're only worth a couple of percent, but just gives you an idea of how much you know for that topic.'* (P13)). On the other hand, students who appeared to be more disciplined, discussed more advanced issues such as the need for managing time, removing distractions or having higher expectations of themselves. Such students articulated several discipline themes in detail (as discussed above) and perceived them to be instrumental in leading to high academic

achievement and high performance in general; the discipline students described was not viewed as externally enforced.

Participants in this study appeared to apply three very distinct meanings to the topic of discipline. Firstly, many considered the efforts of parents, family, community or schools as being influential in helping them to get a clearer understanding of what is required to achieve higher results academically and personally as well as in extracurricular activities. Conversely there were other participants whose immediate family or school experience had no apparent influence on their levels of discipline. Secondly, they also considered what it meant to them when they had gained more control over their own achievements and started to experience the feeling of ‘being disciplined’. Thirdly, the more mature (for example, in terms of age and experience) participants dived into discussing the internalised feeling of being disciplined, being in charge of one’s life course, and of understanding the link between the level of effort expended and the results achieved.

The three meanings or levels referred to by participants when recounting their experiences and perceptions of discipline can be summarised in the following ways:

- To discipline (external efforts of teachers, parents, society)
- To be disciplined (students become disciplined and they feel disciplined)
- Discipline (internal mechanism propelling individuals forward).

The first level “To discipline” describes efforts involving behavior management while the third level “Discipline” is referred to in this study as “internal discipline” or an “internal mechanism” for propelling individuals forward. In the context of this study, we do not refer to it as “self-discipline” (Duckworth, 2011), nor externally applied discipline, which we view as separate concepts for measuring achievement in education.

5.2. Discipline themes emerging – introducing F.I.R.S.T. Discipline dimensions

The themes identified by the interview participants as important components of discipline will now be considered in more detail. The structure of this discussion follows the order of the discipline dimension themes as outlined in Table 2.2.

5.2.1. Focus

The first theme that emerged from the qualitative interviews relates to focus. Multitasking and switching tasks while studying have been reported to impede academic performance (Rosen et al., 2013) with Junco (2012, p. 1) reporting that ‘time spent on Facebook was strongly and significantly negatively related to overall GPA’. In line with past findings, our participants perceived a disciplined student as one who is able to ignore distractions while studying and puts off instant gratification - for example, watching YouTube or TV - in order to achieve their goals.

Our findings would indicate there is an interrelationship² between the concepts of self-determination and discipline, as *Self-Determination Theory* (Deci and Ryan, 1985) explains how people’s choices and achievements play out when no external influence is present. The capacity of students to keep their attention firmly focused on what they are trying to achieve – as opposed to allowing study time to be disturbed by countless interruptions and succumbing to distractions and disruptions – influences levels of academic achievement.

5.2.2. Intention

The responses indicated that, on the one hand, students lacking in discipline appear not to have “purpose” while, on the other hand, disciplined students have a strong sense of purpose in their life, which helps them carry out tasks as and when required. Students who are disciplined also

² Such interrelationships between core properties of a theory with other domains is well documented. For example, Latham indicates that goal setting - a principle in Goal Setting Theory (Locke and Latham, 1990) is also ‘a core concept in social cognitive theory’ (p.76), which in turn deals with self-efficacy. See: Latham, G. P. 2012. *Work motivation: History, theory, research, and practice*, Los Angeles, Sage.

have high expectations of themselves: they appear to have clear goals that stimulate achievement.

Such a finding provides evidence that the principles of goal setting might also be at play when it comes to discipline as *Goal Setting Theory* emphasises the positive effects of setting goals (Locke and Latham, 1990) with goals being a powerful way to increase performance. The premise that ‘the harder the goal the higher the performance’ (Latham and Locke, 1991, p. 214) is equally relevant to endeavours in workplaces and in education. In particular, the important message for both domains is that ‘maximum effort is not aroused under a do best goal’ (p. 215), with general goals not appearing to function well as reference points because they might indicate success at any performance level, allowing individuals to justify poor performance.

5.2.3. Responsibility

The third discipline theme that emerged during our study relates to willingness to take responsibility for one’s actions and for the subsequent life outcomes. The more the participant perceived themselves as being disciplined, the more in control of their circumstances they appeared to be. The more disciplined students assumed responsibility for their achievements and also believed in their capacity to achieve their goals. These participants acknowledged experiencing a sense of urgency to complete tasks as opposed to those who were somewhat less disciplined, who did not mind how long tasks (including their degree) might take. This accords with *Self-Efficacy Theory* (Bandura, 1977), that is, the impact of the beliefs or judgements people have about their abilities to achieve a desired outcome. Self-efficacy, often also discussed in relation to goals and goal setting (e.g. Latham, 2012), would appear to be linked to discipline as well.

5.2.4. Structure

The fourth theme that emerged during the qualitative interviews relates to the ability to structure tasks well – being able to break down large tasks or projects into small components and to progress such small chunks regularly and finish them well before due dates. Routines (e.g. Brown et al., 1981) or creating habits have also been found to assist with ensuring that tasks are executed when and as required.

Drawing on theoretical work done in the field of *Self-Regulation* (e.g. Zimmerman and Schunk, 1989), it appears that structuring tasks contributes to how disciplined one is. Applied to education, self-regulation seeks to explain the drive behind approaching difficult tasks confidently and diligently (Zimmerman, 1990). This is particularly relevant when learners are seeking to acquire additional knowledge and skill and they decide to ‘structure, and create environments that optimize learning’ (Zimmerman, 1986, p. 308).

5.2.5. Time

In a study into teaching behaviour and student achievement, Fisher et al. (1981, p. 2) reported over three decades ago that ‘other things being equal, the more time allocated to a content area, the high[er] the academic achievement’, and, yet, so many students and workers find themselves not as disciplined in managing time as they would like. In fact, our qualitative study revealed that almost every participant (n=19) perceived that there appears to be a relationship between performance levels and time use. According to the participants, being able to manage time, allocate time and also to spend a sufficient amount of time on tasks can lead to higher performance.

Extensive research into *time management* (e.g. Britton and Tesser, 1991) confirms that it is important in academia and workplaces alike with, for example, Lay and Schouwenburg (1993) establishing that students who were more prone to procrastination not only utilised time management techniques less and were further behind on studies but also spent fewer hours

studying. In addition, Schuler (1979, p. 854) found that ‘time management means less stress for individuals, which means more efficient, satisfied, healthy employees, which in turn means more effective organizations’. As time is a finite resource, it is up to students to get the most out of the number of hours they have available.

5.2.6. F.I.R.S.T. discipline dimensions

In summary, we uncovered five prominent themes during the analysis of the interviews. All participants discussed, at a minimum, two themes. The interviews revealed an internal tension for those self-reporting as not disciplined enough about what they could do in order to for them to become more disciplined. The more disciplined participants, or those who appeared to have more clarity about what it means to be disciplined, perceived all five of the following themes as affecting the ability to perform at higher levels and to achieve better outcomes:

- Elimination of **disruptions** being instrumental to completing tasks
- Having clear **goals** as to what is being pursued
- Assuming **responsibility** for one’s actions
- Defining **structure** around what is required
- Managing **time** well to complete tasks.

The categorisation of these five themes has been through many iterations. The Appendix 2.C provides an overview of the alignment of F.I.R.S.T. discipline dimensions and participants’ responses. We initially considered labels more in line with various seminal theoretical pieces, such as *managing time* and *self-efficacy*, but during the later stages of the analysis we adopted terms raised by the students themselves, such as *structure* and *responsibility*. We also renamed goals as intention, in line with Locke and Latham (1990, p. 6), who use both terms when discussing goal-related concepts, before the following categories emerged, namely *Focus*, *Intention*, *Responsibility*, *Structure* and *Time* (F.I.R.S.T.):

F - Focus being instrumental to completing tasks

I - Having clear **intention** as to what is being pursued

R - Assuming **responsibility** for one's actions

S - Defining **structure** for what is required

T - Managing **time** well to complete tasks.

5.2.7. Additional themes – sport and music

In addition to the abovementioned discipline themes, a pattern of participation in sport or music activities during school years was also uncovered during the interviews. The more discipline-aware students appeared to have played either music or sport earlier in life, which is in line with previous research on music and sport having a positive impact on academic achievement (Broh, 2002). For example, playing piano can have a positive effect on primary children's self-esteem (Costa-Giomi, 2004). In fact, the five students who were the most articulate about what it means to be disciplined at university and who appeared to be the most disciplined (and who self-reported as disciplined) either played music or sport during their childhood and adolescence.

5.3. Conceptual framework

This study extends the application of the principles of *self-determination*, *goal-setting*, *self-efficacy* and *self-regulation* from investigating, for example, motivation in education or the application of these principles in sport (e.g. Moritz et al., 2000) and workplaces (e.g. Aquino et al., 1999) to illuminating student discipline in higher education. This study further builds on the previous collaborative work of the theorists mentioned above (e.g. Bandura and Schunk, 1981; Zimmerman et al., 1992; Bandura and Locke, 2003) and extends the use of their principles by presenting them, together with a fifth perspective *time management*, in a unified conceptual framework for investigating discipline.

Figure 2.1 outlines the conceptual framework of the interplay of the five theoretical perspectives that we have identified as relevant to developing discipline, both individually or synergistically.

The relationship between these theoretical foundations and the five themes identified by participants is provided in Table 2.3.

Figure 2.1 Conceptual framework of theories explaining discipline in education (Source: authors' original figure).

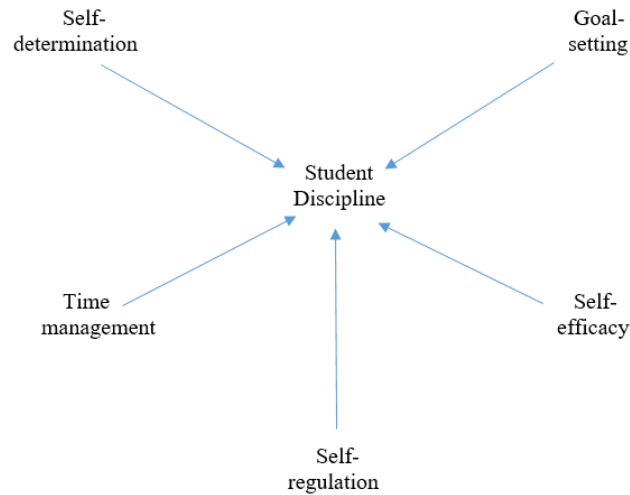


Table 2.3: Relationship of theoretical foundations to discipline themes

Theoretical foundations	Discipline dimensions	Supportive references
Self-determination	Focus	Deci and Ryan (1985) Ryan and Deci (2000)
Goal-setting	Intention	Locke and Latham (1990) Locke and Latham (2002)
Self-efficacy	Responsibility	Bandura (1977) Bandura (1997)
Self-regulation	Structure	Zimmerman and Schunk (1989) Schunk and Zimmerman (1998)
Time management	Time	Britton and Tesser (1991) Macan (1994)

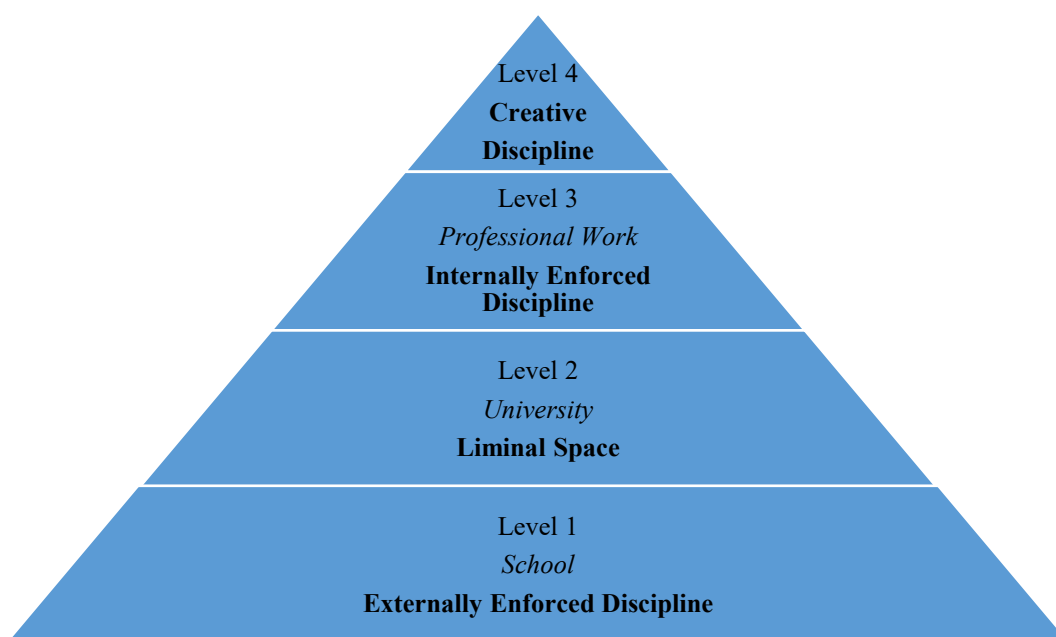
5.4. Introducing the threshold concept of discipline

We set out to examine discipline in the university context and to explore whether discipline at university could be different to discipline at school. What we uncovered is that participants thought of discipline in terms of levels or layers. By applying various meanings when discussing

discipline, participants shared their insights into different levels of discipline being applicable at different stages of their lives.

While unexpected, these findings about levels of discipline appear not too dissimilar to the notion of levels in the threshold concepts in learning. Meyer and Land (2006), for example, shed light on situations when some learners appear to have difficulty in progressing from a basic level of understanding to a deeper grasp of concepts, which might leave the learner suspended in a state of partial understanding. This “stuck place” or “liminal space” will require a shift in ways of thinking before moving on to the next level of learning and understanding (Meyer et al., 2010). Similarly, when participants discussed discipline, they indicated that an individual needs to progress from being disciplined externally, to feeling disciplined from time to time, and then finally being able to apply discipline internally to achieve one’s goals. Building on the idea of threshold concepts, a graphical representation of a ‘Threshold Concept of Discipline’ is depicted in Figure 2.2.

Figure 2.2 Threshold Concept of Discipline (Authors’ original figure).



It outlines the position some students at university occupy between Level 1 Discipline at School, where students are often reminded of what is due and when and are checked on regularly, and Level 3 Discipline at Professional Work, where a high degree of discipline is expected.

Level 1: At school, students are often reminded of what is due and when and are checked on regularly, with the term discipline being more often associated with behaviour management than with something that is internal to students.

At the school, the teachers were checking your homework almost every day. So when it came to your final exams, you knew that you had the knowledge. Whereas at uni, it's entirely up to you whether you do that process each week or you get to two weeks before your exams and go: "Okay. Time to start learning," and freak yourself out. (P13)

Level 2: It outlines the position some students at university occupy between Level 1 Discipline at School (somewhat more externally focused), and Level 3 Discipline at Professional Work, where a high degree of discipline is expected. When students arrive at university, some can find themselves unprepared for a world where nobody watches out for them, where they have to take responsibility for how they plan and manage their commitments.

In contrast, students who are more disciplined follow their own well-defined goals:

The more disciplined you are with going to classes or doing your assignments on time or doing the readings before class, the more likely you are to retain the knowledge better and to understand the content better and therefore you should be rewarded with a better mark at the end of the day. (P13)

First year university students and international students in general might experience additional difficulties while attempting to progress through Level 2: for example, due to lack of language competency. It is in the university's best interests to provide students with sufficient tools to negotiate this particularly anxiety-prone time (Bewick et al., 2010) and to achieve their potential.

Level 3: A high level of mastery of the five discipline dimensions (*Focus, Intention, Responsibility, Structure and Time*) has the potential to contribute to ‘a well-trained and disciplined labour force’ (Li et al., 2017, p. 610). That is, individuals who have high levels of all five dimensions, either at university or subsequently in the workplace, will be more productive.

In summary, the following comments illustrate the general consensus of participants about the importance of discipline beyond university:

If you learn discipline in school or in college, it definitely helps the rest of your life. (P1)

People who aren't disciplined don't do well. People who are, usually do well. (P2)

Level 4: The final stage in the Discipline Threshold (alluded to by a very small number of students) relates to a higher order of discipline, which is in line with work done by Napier and Nilsson (2008, p. 206) who found that ‘creative organizations have discipline at the heart of what they do’. This Level 4, which we have called ‘Creative Discipline’, might be viewed as somewhat of a paradox. On the one hand, a person at this level of discipline development is highly structured and organised, putting in a ‘*level of consistent effort*’ (P14) and in general displaying qualities not always associated with creativity. On the other hand, such highly disciplined individuals are able to immerse themselves in a state of disciplined creativity when they purely focus on harnessing the creative process. With distractions kept at an absolute minimum, the focus becomes all about making new connections around specific goals.

Seeking knowledge, and sort of striving for excellence, and not just being mediocre average. (P14)

6. Implications

6.1. Implications for practice

This study has a number of direct implications for students, educators and employers. We need work-ready graduates with students themselves recognising that when they transition from the university environment (Wood and Breyer, 2017; García-Aracil et al., 2018) to a workplace, there are shifts in expectations (e.g. Dinning, 2017). We, at universities, have a unique opportunity (and responsibility) to provide learners with a toolkit to enable them to master the five F.I.R.S.T. discipline dimensions identified in this study, namely *Focus*, *Intention*, *Responsibility*, *Structure* and *Time*. Increasing the levels of these dimensions could enable students to progress from being stuck in the liminal space of not fully understanding what is required of them in the workforce to not needing to look up to an authority figure for decisions and ‘taking initiative or going beyond the direct instructions of what to do’ (Porter, 2005, p. 340). We can assist students by equipping them with skills that not only enhance their work readiness but also increase their engagement in learning (Carroll, 1989).

By uncovering the five themes and subsequently mapping them to the five theoretical foundations, the doors have been opened for incorporating them into a structured program aimed at improving the levels of discipline. The discipline dimensions could be embedded in university programs, or a F.I.R.S.T Discipline subject could be established as a foundation unit for all students. Such a unit would be suitable for integration into curricula in schools as well as tertiary, vocational and professional education.

6.2. Implications for theory

Our study offers a new lens for investigating discipline with three implications for theory. Firstly, this study contributes to a better understanding of discipline in the tertiary education sector by extracting recurring discipline themes in the data collected during qualitative

interviews into students' perceptions of discipline in a higher educational setting. The five recurring discipline themes uncovered are *Focus*, *Intention*, *Responsibility*, *Structure* and *Time* (*F.I.R.S.T.*). Secondly, this study contributes with a framework of theoretical foundations for investigating discipline in higher education (Figure 2.1), filling a gap in the literature about discipline at university. The third implication for theory is our new 'Threshold Concept of Discipline' (Figure 2.2), a four-layered hierarchical concept that develops over time.

7. Future research and limitations

Prior research demonstrated clear differences across various geographical regions around the world in the levels of school discipline (Baumann and Krskova, 2016). The focus of future research could be on investigating demographic variations in the concept of discipline in a tertiary context. Empirical studies are needed to investigate how the five discipline dimensions we have identified (*Focus*, *Intention*, *Responsibility*, *Structure* and *Time*) are associated with levels of performance both in tertiary education and in workplaces. The present study has explored how university students perceive discipline and how discipline will influence their performance in the workplace, and future research could build on our qualitative analysis by constructing and empirically verifying a Discipline Measurement instrument.

Challenges inherent in this study included: relying on the willingness of the interview participants to disclose their perceptions in depth; and dealing with potential bias from an imbalance in sampling, as the target sample only included students at one Australian university. This issue should be addressed by future research, by collecting data from participants in a number of countries across a wide variety of educational institutions.

8. Conclusion

Our study makes several unique contributions. Firstly, it sheds light on student discipline at university by revealing that students perceive it to be internally driven, as opposed to discipline at school level, which is often enforced externally. Discipline at university level is viewed by students as comprising of elements of *Focus, Intention, Responsibility, Structure* and *Time*. Secondly, a new conceptual framework for investigating discipline in university settings is outlined, underpinned by theoretical principles of *self-determination, goal-setting, self-efficacy, self-regulation* and *time management*. Thirdly, we contribute a ‘Threshold Concept of Discipline’, presented in the form of a hierarchy to allow for progression from an initial imposed discipline, peaking at what we have called ‘Creative Discipline’, a new term we have introduced in this paper.

Our focus is not on discipline as the act of ‘setting limits and punishments’ (Brown, 1971, p. 23) but on discipline as a tool for achieving high performance, be it at tertiary education level or in workplaces. Discipline should be about the aspiration to perform better and at a high level, to feel able to step outside of one’s comfort zone and become a high achiever. While many a university already incorporates the notions of *self-determination, goal-setting, self-efficacy, self-regulation* and *time management* in their content, it is argued that those education institutions seeking to enhance their graduates’ work readiness could consider incorporating the five discipline dimensions, as outlined in this paper (*Focus, Intention, Responsibility, Structure* and *Time*), into curricula to ensure that every student and in particular every graduate is equipped with the skills required and demanded in the marketplace.

Ultimately, we put forward the notion that an individual (student, worker) who masters the five elements of F.I.R.S.T. discipline is well placed to reach the highest level in our four-level threshold concept of discipline: Creative Discipline. Consequently, we conclude by putting forward a new definition of discipline as follows:

Discipline is a combination of five dimensions: Focus, Intention, Responsibility, Structure and Time (F.I.R.S.T.).

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Appendix 2.A. Overview of participants' demographic characteristics

Participant	Age	Gender	Enrolment	Program*	Year of Study	Country of birth	Length of stay (years) in Australia
P1	36	Female	Domestic	PG	**	Pakistan	11
P2	19	Male	Domestic	UG	First	Australia	Whole life
P3	28	Female	Domestic	PG	**	Afghanistan	9
P4	22	Female	Domestic	PG	First	Australia	Whole life
P5	33	Male	International	PG	Second	Canada	Less than 1
P6	24	Male	International	PG	First	India	Less than 1
P7	18	Female	Domestic	UG	First	Australia	Whole life
P8	18	Male	Domestic	UG	First	Australia	Whole life
P9	25	Female	Domestic	UG	Third	Australia	Whole life
P10	25	Female	International	PG	Last	China	2
P11	25	Male	International	PG	First	China	Less than 1
P12	38	Male	Domestic	UG	Fourth	Mauritius	7
P13	24	Female	Domestic	PG	First	Australia	Whole life
P14	22	Female	Domestic	UG	Fifth	Australia	Whole life
P15	20	Male	International	UG	First	Nepal	Less than 1
P16	19	Female	Domestic	UG	Second	Australia	Whole life
P17	25	Male	International	PG	First	Ghana	Less than 1
P18	22	Male	International	UG	First	China	Less than 1
P19	22	Male	Domestic	UG	First	Zambia	3
P20	19	Male	Domestic	UG	Second	Australia	Whole life

Notes:

*Program: PG – Postgraduate, UG – Undergraduate

** Not captured in the interview transcript due to an inaudible answer

*Appendix 2.B. Interview questions - “Perceptions of Discipline” questionnaire***Part A - Demographic data collection:**

1. What program are you enrolled in?
2. What gender are you?
3. What is your age?
4. Are you undergraduate or postgraduate student?
5. If undergraduate, are you a first, second, third or fourth year student?
6. Are you a domestic or an international student?
7. Where were you born?
8. What language do you speak at home?
9. How many years have you lived in Australia?
10. Are you working in the field of your study?

Part B - Questions and prompts for interviews:

1. What do you think discipline is?
2. What is the difference between being disciplined and not being disciplined?
3. Is being disciplined important to you?
4. Do you believe that being disciplined will help you achieve your goals?
5. Do you believe there is a link between discipline and academic performance?
6. How does discipline impact academic performance?
7. How is your academic performance affected by your level of discipline?
8. Are you disciplined enough?
9. How can you become more disciplined?
10. How will discipline affect your performance in the workplace?
11. How can university help you become more disciplined? Any suggestions?

Appendix 2.C. Alignment of F.I.R.S.T. discipline dimensions and participants' responses

Discipline Dimension	Discipline Sub dimension	Qualitative direct quotes
F. Focus	Focus - Keeping end goals in sight	I: What is the difference between being disciplined and not disciplined?
		P: I think it would have a lot to do with keeping your end goals in sight. (P4)
		If you're more disciplined, you've got an end goal in sight. You know what you need to achieve (P9)
	Focus - Removing distractions	I think discipline is [...] the act of, sort of, applying yourself in order to achieve an end goal (P14)
		Knuckling down and getting what you need to get done without being distracted. Working without distraction (P7)
		Just switch off everything else, like electronics. Because I know, sometimes when I study, I have my phone and then messages, they're just going off ...so I gave it to Mum and I was like "I cannot have it back until I finish this essay" (P16)
	Focus - Making sacrifices / choices	Wasting time on social media makes me a lot less disciplined (P20)
		Willingness to make sacrifices, which would in turn achieve goals I guess (P2)
		Ok, I'm going to watch YouTube, or I'm going to go watch TV. Things like that. But again, I would have said that a person that is well disciplined would have gone and studied (P3)
	Focus - Enthusiasm / drive	If you can delay the gratification and then see beyond the horizon of what your work is meant to achieve then you can, you can, uh achieve higher I think (P5)
		If I have an ambition for a task, I wanna get it done, I just [...] decide, you know, "Why not? Let's just-- I can get it done (P16)
		You don't see a lot of drive and energy within them, a lot of effort (P17)
		Ambition, I think. You-- everyone has a drive, you know. Some people achieve life's fullest without having discipline, whereas some people... You need a drive (P16)

Discipline Dimension	Discipline Sub dimension	Qualitative direct quotes
I. Intention	Intention – Purpose	If the student is not disciplined? I think they just-- they just doing things, you know, without purpose (P11)
		I think, a disciplined person, I think, needs to have purpose, like, they need to have drive and purpose (P14)
		The students who don't really do well in class, they are students who seem to be short on discipline in terms of how punctual they are to class. How they even report. They're truants. If they come, they don't come early. You don't see a lot of strive and energy within them, a lot of effort [...] it looks like they're not single-eyed when it comes to purpose and focus. (P17)
	Intention – Specific Goals	I: What would you have to do to be more disciplined? P: Um, to have a clear goal (P1)
		Obviously you're focused on a goal [...] if you're disciplined. And working [...] for a goal in a disciplined manner always helps because [...] you say your part in particular way (P6)
		Well, being disciplined basically is like [...] you have a structure-- to work with, and it's [...] more manageable-- if you have a goal in mind, it's more manageable to have a discipline to get that achieved, to achieve your goal. Whereas if you're not disciplined, you don't know where you're going (P12)
	Intention - High Expectation of oneself	At one semester, I decided I wanted to be the first, so I designed planto enhance my ability to study and I pushed myself so hard and that in one month's like time, I achieve-- I rank one. Every day I just follow out the instruction, so there's no excuse, you know, to run away, you know, duties. I work really, really hard, and push myself very hard. It's kind of like [...] I pushed myself too hard (P11).
		If you have set low priorities to academics and you reach those goals then I would argue you've reached the discipline level that you expect of yourself (P5)
		If you had a very high expectation and yeah, in a way it's like it...if you expected to get an A plus, like, say, 85, 90 plus but you didn't, let's say, put enough time to achieve those marks, like, time studying, then one might suggest, your discipline level may not be sufficient (P5)

Discipline Dimension	Discipline Sub dimension	Qualitative direct quotes
R. Responsibility	Responsibility - Locus of control (internal vs external)	Being disciplined [...] that you [...] can control yourself and [...] just to focus on the things that you need to do and stick on it (P1)
		If you are disciplined, then you are focused on studying and [...] you know it is important to study and to [...] have a good result in an exam. If you know the importance and then you will just do it. To control yourself, to focus on it and [...] if you study hard, then I think at least [...] if you can't get HD at least you can get a C or D. I think [...] discipline can just [...] have positive impact, quite positive impact on achieving [...] a good academic result (P1)
		I think discipline is kind of like a [...] self-motivation [...] because people have to [...] control their own lives (P11)
	Responsibility - Self-efficacy	At one semester, I decided I wanted to be the first, so I designed planto enhance my ability to study and I pushed myself so hard and that in one month's like time, I achieve-- I rank one. Every day I just follow out the instruction, so there's no excuse, you know, to run away, you know, duties. I work really, really hard, and push myself very hard. It's kind of like [...] I pushed myself too hard (P11).
		If I can do this in this amount of time, then who knows what can I do in a year's time? So it was just like once I started getting results, I was like [...] I'm going to do this, and I wanna [...] cause I had an ambition, I had a dream. And I did that, and I did really well in the end (P16)
	Responsibility - Sense of urgency	It seemed that the general consensus amongst those who weren't very disciplined or didn't care too much [...] they didn't really mind if it took them three years or five years. A lack of urgency. (P4)
		I have to get this done and I have to do it promptly. So, like, I, you know, block out all distractions. I write-- sort of, schedule my time in hour blocks (P14)
		Undisciplined people [...] maybe a lack of motivation. And putting things off to the last minute (P20)
	Responsibility Level of stress	I was the one who would do it the night before and panic [...] and stay up all night and cry, and then finally hand it in two hours late. But [...] I would like to think that if I had been on top of things, it would not cause me as much stress. I may not have done any better, but I think to have good mental health throughout it is super important because that's kind of-- one of the unravelling things is the stress and anxiety that comes with pressure from studying [...] comparing it to now, I'm a little bit obsessively ahead of things (P4)
		It's like having structure. You have a plan to work with, and that reduces your stress level. So you know what you're only working through-- you have a plan, a decent plan in place [...] so that contributes to your stress level (P12)
		I think something that comes in discipline is managing stress, I think (P16)

Discipline Dimension	Discipline Sub dimension	Qualitative direct quotes
S. Structure	Structure - Schedule / Timetable	You have to know what things are happening and when we need to get something done (P1)
		I always tell myself that I need to create a schedule [...] Kind of like, I should be doing this every hour of this or that. Having something – a written form to look at to trigger the thoughts is important for me. You know like to have a monthly calendar I can see that I can write on or like, a daily or like a weekly, hourly type thing (P5)
		I set out a timetable [...] like a structured timetable saying for [...] 8:00 till 11:00 you'll do this subject. Then you'll have a break, and then for the next two hours you'll do a different subject (P13)
		I think having a busier timetable makes you [...] able to structure yourself out better (P20)
	Structure - Step by step / small chunks	Everything was kept in order. I love this feeling, you know, to control my life and you knowing, fulfilling my plans. Everything just step by step and in the end I will be – I will succeed. (P11)
		I split everything into small part and into small chunks every day, so before the due day, I already finished those things. I feel, you know, relieved. (P11)
		If I can do this in this amount of time, then who knows what can I do in a year's time? So it was just like once I started getting results, I was like [...] I'm going to do this, and I wanna [...] cause I had an ambition, I had a dream. And I did that, and I did really well in the end (P16)
	Structure - Routine	Getting to the point where I had a routine set where I could achieve – to get all [...] As rather than, you know, lower marks. Getting something that worked for me (P5)
		I like to have, like, a routine. I like to make sure that things are getting done. It's just very satisfying when, you know, you know you're on top of everything. A routine just keeps things moving forward (P7)
		I am a person follow a routine every day, like I get up at 4 o'clock in the morning and do some daily reading (P11)

Discipline Dimension	Discipline Sub dimension	Qualitative direct quotes
T. Time	Time - Managing time	Being able to say “I only have this much time. What is my priority?” (P4)
		When there are competing interests, ability to choose the best and most appropriate one. Even if it’s less enjoyable[...] keeping track on what you should be doing (P5)
		You have to manage your time, your work, your studies, everything, to be well disciplined in university, I find. You have to do very well at managing your life in general (P8)
		I feel like it seems that when I manage my time better, I feel more disciplined and I perform better in my assessments (P8)
	Time - Allocating time	I set out how much work I need to do per subject based on how I’m going with it so far. So either the regular 8 hours weekly or some sort of change to 12 and I make a timetable. And I put it in where I can fit it in as well, having my regular weekly times when I do sports or such. And then I make sure I do it. And if I don’t do it, I do it at night. (P9)
		And you say, “this day today, I’m gonna do this amount of time” (P16)
		So just allocating certain amount of time per day to a certain subject (P16)
	Time - Spending enough time	That time it was critical that I studied and I managed every spare minute of my day studying. The little time I could squeeze in during the day, during lunch break, during train rides, if I was not busy for an hour at work, I would just start studying (P1)
		The higher level you go, I think, that [...] you have to spend more time. Well, you don’t have to spend more time but often you – it’s best to spend more time (P5)
		It was about spending the time – realizing how much time you really needed to spend (P5)
		You’ve gotta put like a certain amount of hours in every day, like not just at uni but at home (P7)
		For me to understand a concept I take longer. So, in that sense, I need to ensure that I have adequate amount of time on a certain subject to do well, essentially (P16).
		I think it’s like a direct correlation. The more time I put into uni and the more discipline I have, the better my results get (P20)
		I played piano when I was a child. But I haven’t practiced it for a long time [...] I just couldn’t sit there and focus on playing it at first. But [...] it was my mum that just forced me to stay there, to sit there for one or two hours at least--and to play it. And after several months practice, I actually found that I’m interested in playing the piano, and I [...] actually love it. I [...] just, found it interesting. At first, I was forced by my mum to play [...] but, later [...] I enjoyed it (P1)
		Music - You know, you have to practice every day. You know, maybe an hour at least every day to, to progress (P5)
		Practice, to reinforce, you know, to improve. And sports is actually the same. I also did sports [...] to a high level. I played badminton and before I got injured. I probably practiced about 10 hours a week of badminton. Over four, four, five days a week. So it’ll be like maybe [...] four days or three, four days a week, two, or three hour sessions kinda thing. So probably got to about a national level (P5)
		It means that I can achieve what I need to achieve by the day I need to achieve it by. Otherwise I will just procrastinate or [...]

	Time – Procrastination	get distracted and sort of half do tasks. So discipline makes sure that I complete what I need to complete (P13)
		For me, it allows me to achieve my dreams, if I wasn't disciplined, I would procrastinate a lot, I think (P16)
		Like wasting time on social media makes me a lot less disciplined. Because I'm not studying. 'Cause [...] my brain's, like, thinking about what's going on my phone [...] so just procrastinating (P20)

Introduction to Paper 2 – Measurement

The second paper in the thesis, *The F.I.R.S.T discipline principles - Measuring student discipline at university*, draws from the findings of the qualitative interviews and explores the measurement of the construct of discipline. In this stage of the research, a questionnaire was developed aimed at capturing the five themes – *focus, intention, responsibility, structure* and *time* - discussed by students during the interviews. The main purpose of this stage was to seek evidence for the proposal that ‘*Discipline is a combination of five dimensions: Focus, Intention, Responsibility, Structure and Time (F.I.R.S.T.)*’.

Human Capital Theory suggests that any increases in skills translate into greater productivity of workers. In order to test for associations between discipline and productivity, it was necessary to first ascertain whether the newly developed instrument is suitable for use across a multi-country sample, therefore it was administered in Korea, China and the United States. Using an online survey, data was collected from current university students and recent graduates to empirically test the findings of the exploratory interviews to ascertain whether discipline, with reference to these proposed items, can be measured not only in one English-speaking country but whether the new measurement instrument is also suitable for cross-cultural comparisons.

Prepared for submission to *Educational Measurement: Issues and Practice*

The F.I.R.S.T discipline principles - Measuring student discipline at university

Abstract

Purpose – This research seeks to explore the construct of discipline in a university context. The study argues that student discipline is a construct comprised of five discipline dimensions – *Focus, Intention, Responsibility, Structure* and *Time* (F.I.R.S.T).

Design/methodology/approach – This paper presents the results of an online survey of 537 current students and recent graduates from the United States, South Korea and China. Principal component analysis was used to test the overarching assumption that student discipline is composed of five dimensions. Multiple analysis of variance (ANOVA) with *post hoc* analyses and *t*-tests were applied to test for country and gender-related differences between the three country groups. Cluster analysis was employed to profile the respondent groups based on similarities across the samples.

Findings – The results confirm the five hypothesised dimensions (F.I.R.S.T.). In addition, the identification of low, medium and high discipline levels among the respondents provide support for the new concept of a layered “Threshold of Discipline”.

Originality/value – A F.I.R.S.T. discipline measurement questionnaire for capturing student discipline - underpinned by a conceptual framework encompassing *Self-determination, Goal-setting, Self-efficacy, Self-regulation* and *Time management* principles - was developed and tested. This paper extends previous research into student discipline, albeit with reference to schools, to higher education. Implications for tertiary institutions to enhance learning and for further research are discussed.

Keywords – discipline questionnaire, university student discipline, F.I.R.S.T. discipline principles, academic performance, higher education, gender, cross-cultural, convergence-divergence-crossvergence (CDC) framework, Threshold of Discipline

Paper type - Research paper

1. Introduction

‘If you cannot measure it, you cannot improve it’ has been a notion discussed regularly within many disciplines (e.g. Carlon and Combs, 2005; Andersen et al., 2007). The maxim, sparked by a quote from Sir William Thomson, Lord Kelvin (Thomson, 1884, p. 149) ‘*when you cannot measure it [...] your knowledge of it is of a meagre and unsatisfactory kind*’, has far-reaching implications across many domains. In education, from accreditation (Natarajan, 2000) and quality of education (Lomas, 2002) to student satisfaction (Beecham, 2009), scholars have been keen to ascertain the best way to measure constructs in order to improve outcomes. In the realm of student discipline, there have been many attempts at measurement (e.g. Dettman, 1972; Curwin and Mendler, 1988; OECD, 2013), as disciplinary climate has been found to impact academic achievement (OECD, 2013). However, the majority of past studies have focused on schools, with student discipline in the university sector receiving less attention (e.g. Le et al., 2005; Robbins et al., 2006).

Discipline plays an important role in the life of a student. In fact, it has been deemed essential not only ‘to effective teaching and learning’ (Knight, 1988, p. 326) but to society in general as ‘the ultimate goal of discipline is to train young people to be responsible for their own actions’ (Jones, 1987, p. 157). Furthermore, employers look for graduates equipped with adequate skills to immediately start contributing to their organisations. Employers often seek more than hard skills, as demonstrated by qualifications, and expect their junior workforce to increase productivity by applying a range of soft skills. Such skills include the capacity to think critically while solving problems, apply existing knowledge to new contexts, set well-defined goals, be persistent in carrying a task to fruition, and to have the ability to accept responsibility (Jackson, 2014; Robles, 2012). These desirable skills also include ‘discipline’ (Farkas, 2003) or ‘self-discipline’ (Etzioni, 1984; Jackson, 2013), as the ability to study or work independently or the ‘conscientious work habits’ (Farkas, 2003, p. 544) are often referred to (with both terms perhaps used somewhat interchangeably).

Without data on the current levels of discipline among university student cohorts, we are missing out on the chance to support students either in need of assistance or those aspiring to become high achievers. In other words, we are forgoing the opportunity to increase both course completion rates and the work readiness of graduates. With discipline confirmed not only to predict academic outcomes (Komarraju et al., 2013) and to impact both student retention (Robbins et al., 2006) and the readiness to enter the commercial sector (Etzioni, 1984; Jackson and Chapman, 2012b), gaining further understanding of student discipline should lead to improved outcomes not only for students but also for education institutions and future employers.

The purpose of our research is to investigate the construct of discipline in higher education. This paper reports on a quantitative survey of 537 respondents from China, South Korea (from here onwards simply Korea) and the United States into levels of discipline of university students. The survey builds on a qualitative study conducted in Australia (Krskova et al., 2018, unpublished) on perceptions of university students about what discipline means to them, which identified five discipline dimensions - namely *Focus*, *Intention*, *Responsibility*, *Structure* and *Time*. These dimensions have the potential to empower those aspiring to perform at a higher level and to become true professionals. In addition to speaking of discipline in terms of five themes; and in contrast to discipline at the school level, where discipline might often be associated with ‘behaviour management’ or ‘control’ and often is enforced externally, participants referred to it in terms of ‘internal discipline’ or ‘personal discipline’, which is in line with a recent proposition that discipline is ‘a very effective and useful tool to enhance learning, personal development and overall human betterment’ (Baumann and Krskova, 2016, p. 1021).

Recent studies into discipline in higher education have utilised the construct of “academic discipline” with reference to schoolwork (Le et al., 2005). This paper, however, sets out an alternative way to measure student discipline with reference to items relevant to and as identified by university students themselves. Furthermore, as past research has predominantly focused on one country only - the United States - this study takes a new approach by investigating student discipline across a multi-country sample. China, Korea and the United States were selected as target markets in order to contrast and compare levels of discipline in university students between countries representative of Western and Asian regions.

The reasoning for this selection was threefold. Firstly, prior research has found differences in discipline levels in school students between various geographic clusters (Baumann and Krskova, 2016), with the Far East Asia cluster found to have higher levels of academic performance as well as the highest level of academic discipline. Secondly, samples from these three countries are commonly chosen for cross-cultural research assessing similarities or differences (e.g. McMullen et al., 2005; Arkes et al., 2010). Thirdly, with discipline linked to academic outcomes at university (e.g. Komarraju et al., 2013), and universities from all three countries being listed among the top 100 universities worldwide (THE, 2018) the aim was to investigate if, similar to the confirmed differences in school-level discipline, there are differences between the levels of student discipline at university level across the three-country sample. Furthermore, this examination was informed by the convergence-divergence-crossvergence (CDC) framework (Ralston et al., 1997) about the impact of national culture in cross-cultural research.

Therefore, the questions guiding this research were:

- (i) *How to measure student discipline with reference to university students?*
- (ii) *Are there differences in the levels of discipline across respondents from China, Korea and the United States?*
- (iii) *Are there gender differences in the levels of discipline?*

- (iv) *Are there distinct segments of individuals with similar levels of discipline across the three societies?*

The article is structured as follows. Firstly, a discussion about research into discipline is provided. Secondly, an overview of studies into country and gender differences is outlined. Thirdly, the theoretical foundations and a conceptual framework for investigation of discipline are discussed, followed by details of the survey regarding the sample, procedure and analysis. Next, the results section presents the outcome of a) a principal component analysis verifying the five F.I.R.S.T. discipline dimensions (*Focus, Intention, Responsibility, Structure and Time*); b) an analysis of variance with *post hoc* tests revealing differences in the levels of discipline between the societies; c) a series of *t*-tests uncovering differences in gender in Korea; and d) a cluster analysis identifying three distinct discipline groups among respondents, namely low, medium and high levels of discipline. Then the findings are discussed, and the implications for educational institutions and suggestions for future research are presented.

2. Theoretical background and hypotheses

2.1. Discipline in education

Research into student discipline can be divided into two distinct categories – discipline at school level and discipline at university or college level, with previous research focusing mostly on discipline in the school context. At the school level, discipline often has had a negative connotation; in fact, due to its impact on school climate or the atmosphere of educational institutions, discipline has been discussed regularly over the past decades (e.g. Curwin and Mendler, 1988; Slee, 1997; Millei et al., 2010). It has been acknowledged that ‘discipline effectiveness is not an easy matter to define or measure’ (Furtwengler and Konnert, 1982, p. 4) and although there are numerous definitions of discipline available in the literature (e.g. Romi and Freund, 1999; Cameron, 2006), to date, discipline does not appear to have been clearly

conceptualised and the measurement of discipline in educational settings remains underdeveloped.

A new line of inquiry into discipline opened up in 2000 when questions about student and school discipline were included in the Programme of International Student Assessment (PISA) run by OECD every three years to assess the academic performance of 15 year olds, with studies linking discipline to academic achievement following shortly thereafter (e.g. Cohen et al., 2009). The availability of PISA data has also given rise to cross-cultural comparisons of the impact student discipline has on academic achievement. As previously alluded to, Baumann and Krskova (2016) found that while students with the highest levels of discipline achieved the highest academic results, the levels of discipline varied across different geographic regions.

In the higher education context, on the other hand, discipline appears to have been under-studied with earlier research focusing on both university and high school students together. For example, Le et al. (2005), in a study into predictors of college outcomes, used data collected from 5,970 respondents not only from colleges but also from high schools to construct the Student Readiness Inventory. However, ‘academic discipline’ in that particular study was defined as ‘the extent to which students value schoolwork and approach school-related tasks conscientiously’ (p. 494). In a subsequent study across 48 institutions, this time into college outcomes, Robbins et al. (2006) analysed data from 14,464 incoming first year students to confirm academic discipline to be predictive of academic performance - as measured by grade-point average (GPA) - as well as student retention. In addition, Komarraju et al. (2013, p. 103) found that ‘academic discipline partially mediated the relationship between high school GPA and college GPA’.

Although the above-mentioned studies focused on higher education students, they were utilising a definition of academic discipline as put forward by Le et al. (2005), with reference to school

and school-related tasks. Consequently, as discipline at university can be viewed as different to that applicable to high school students (which continues to be often externally enforced), this study takes a different approach. That is, to accurately assess the levels of discipline across university students, it is necessary to measure it with reference to items identified as important by university students themselves.

2.2. Country of birth

In an attempt to address a concern raised by McInerney (2012) - that studies in the area of achievement-enhancing strategies, such as self-regulation, are often conducted from a Western perspective – this study has expanded the investigation of student discipline in Australia and the United States by including two Asian countries into the analysis, namely China and Korea. In the field of education, cross-cultural studies are often aimed at investigation of a particular phenomenon, such as burnout and engagement in a study of university students from Spain, Portugal and Holland (Schaufeli et al., 2002); or the desire to pursue an entrepreneurial career of students from the United States, China and Spain (Pruett et al., 2009). In contrast, studies into academic discipline have been predominantly United States centred (e.g. Le et al., 2005; Robbins et al., 2006; Komarraju et al., 2013).

While ethnicity, ‘a proxy for racial classification or immigrant status’ (Helms and Talleyrand, 1997, p. 1246), is a variable commonly used in research across a variety of disciplines, a decision was made in line with McMurray and Scott (2013), to use ‘country of birth’ (as opposed to using ethnicity or racial group) to investigate differences in levels of student discipline as it was deemed ‘to be a reasonable proxy for cultural differences’ (p. 657). Furthermore, this study follows the notion of respondents ‘born and residing’ in a country (Tung and Baumann, 2009) to facilitate the comparisons across the three countries.

Therefore, it is hypothesised as follows:

Hc: There will be significant differences among the groups of Chinese, Korean and American respondents on the levels of the discipline dimensions – namely Focus, Intention, Responsibility, Structure and Time – as well as on the levels of the overall composite level of discipline.¹

2.3. Gender

The role of gender at all stages of education is a well-researched topic. While there might not be any differences between the general knowledge of first year school students (Freeman, 2004), as students progress through education, female students tend to perform better at reading and males achieve more in mathematics. According to the 2012 PISA assessment, male students topped the performance of girls in mathematics in 37 participating countries, while the gender gap in reading performance that consistently favours female students widened further (OECD, 2014). Other gender-related differences include, for example, high school completion rates, with the dropout rate of female high school students in the US being 9 percent in comparison to 12 percent for males (Freeman, 2004); or males reporting higher levels of self-efficacy in the first semester in college (D’Lima et al., 2014).

At the higher education level, several studies into gender differences have been conducted utilising Le’s definition of academic discipline. For example, Mattern et al. (2017) investigated the role that academic discipline plays in the college admissions process in predicting first-year GPA by gender and found that female students had a higher level of discipline. In addition, in a study investigating gender gaps in English and mathematics of first year college students, Ndum et al. (2018) concluded that male students could benefit from targeted programs aimed at increasing academic discipline more than females.

¹ *Hc* denotes hypothesis regarding country. For readability, the hypothesis *Hc* has been formulated including all discipline dimensions (*Focus, Intention, Responsibility, Structure and Time*). Please see Table 3.6 for a more detailed list of hypotheses.

Based on the review of the literature, with past research pointing to the possibility of gender impacting student discipline, it is therefore hypothesised:

*HG: There will be significant differences between female and male respondents on the levels of the discipline dimensions – namely Focus, Intention, Responsibility, Structure and Time – as well as on the levels of the overall composite discipline.*²

3. Research methodology

The methodology section is organised as follows. First, a theoretical model explaining discipline in education will be revisited. Second, the instrument development, sample and procedure will be discussed. Next, a brief overview of the analyses utilised will be provided.

3.1. Theoretical model explaining discipline in education - revisited

This study utilises a framework of theoretical foundations (Krskova et al., 2018, unpublished), underpinned by concepts of *self-determination*, *goal-setting*, *self-efficacy*, *self-regulation* and *time management*. These five dimensions (summarised in Table 3.1) play a role in explaining discipline in education. In fact, they enhance not only the understanding of student discipline, but also of student achievement and performance exhibited during the course of educational experience and beyond. For a graphical depiction of the conceptual model of student discipline see Figure 3.1.

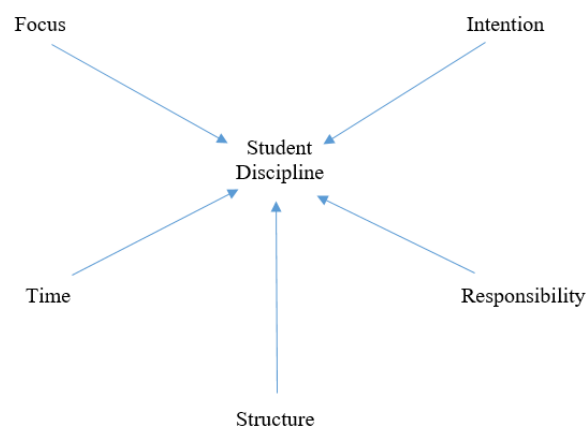
² *HG* denotes hypothesis regarding gender. For readability, the hypothesis *HG* has been formulated including all discipline dimensions (*Focus*, *Intention*, *Responsibility*, *Structure* and *Time*). Please see Table 3.6 for a more detailed list of hypotheses.

Table 3.1: Overview of theoretical foundations explaining discipline in education (Adapted from Krskova et al. (2018, unpublished).

Discipline dimensions	Theoretical foundations	Supportive reference
Focus	Self-determination	Deci and Ryan (1985) Ryan and Deci (2000)
Intention	Goal-setting	Locke and Latham (1990) Locke and Latham (2002)
Responsibility	Self-efficacy	Bandura (1977) Bandura (1997)
Structure	Self-regulation	Zimmerman and Schunk (1989) Schunk and Zimmerman (1998)
Time	Time management	Britton and Tesser (1991) Macan (1994)

In this context, it should be noted that discipline is not interchangeable with self-discipline. In line with the above-mentioned model, it is argued that discipline is a higher order construct comprising aspects of *self-determination*, *goal-setting*, *self-efficacy*, *self-regulation* and *time management*, with self-regulation synonymous to self-control (Baumeister, 2002), which in turn is often used interchangeably with self-discipline (Duckworth, 2011).

Figure 3.1: Proposed model of student discipline (Source: authors' original figure).



The overarching assumption of this study is that student discipline incorporates several dimensions, namely Focus, Intention, Responsibility, Structure and Time.

3.2. Instrument development

The development of the new survey was in line with methodology previously employed by Rowe and Wood (2007), who constructed a questionnaire for assessing student perceptions of feedback from themes identified both in the literature and from a thematic analysis of data obtained during interviews. We used a four-stage approach for the development of our survey. First, a review of literature related to student discipline was carried out to identify theoretical principles considered to impact student discipline (as outlined in Table 3.1). Second, transcripts of 20 student interviews, carried out in Semester 1, 2017 at an Australian university, were reviewed to identify emergent themes and patterns. The third step involved reviewing instruments previously developed for measuring the identified theoretical concepts, such as the 23-item self-efficacy instrument designed by Sherer et al. (1982) and the 53-item scale utilised by Locke and Latham (1984) to measure perceptions about goal-setting initiatives, which was subsequently re-tested by Lee et al. (1991). As these items, developed and utilised some 30 years ago, did not align well with the wording used by current students to discuss discipline at university, the final step consequently involved formulating new items. In line with a suggestion to have the item pool reviewed by experts (DeVellis, 2017) and to maximise the validity of the new instrument, the draft instrument was examined by three senior academics who recommended small amendments to some wording and tenses.

The final scale for measuring levels of student discipline at university consisted of 23 items. The aim was to achieve a balance between having too few items (not capturing the construct) and too many items (leading to respondent fatigue) (DeVellis, 2017). A list of the measurement items can be found in Table 3.2. A seven-point Likert scale was utilised, ranging from 1 (strongly disagree) to 7 (strongly agree). The instrument was launched first in the US market, to ensure clarity of the questions, prior to the questionnaire being translated into Chinese and Korean by professional translators. For example, it was necessary to include the word “college” in the US survey as their undergraduate courses are often provided by colleges and not only

universities. The Korean and Chinese translations were reviewed by a Korean academic researching in a related field as well as by a graduate from an Australian university whose first language is Chinese, to ensure the general concept of student discipline was retained (as opposed to discipline being accidentally translated, for example, as relating to rules and regulations).

3.3. Sample and procedure

This quantitative study is based on the results of a survey of 537 individuals from China, Korea and the United States, which was conducted in the first half of 2018. We chose those countries in an attempt to extrapolate from a qualitative study conducted into student perceptions of student discipline at a university in Australia. The aim was to obtain responses from current university students and recent graduates, in order to investigate if there were any differences between the levels of student discipline across these three countries. In line with other research (e.g. Viengkham et al., 2018), the survey was administered online by an international market research company. The sample size accords with guidelines for adequate sizes in factor analysis (Comrey and Lee, 1992), which deem a sample of 500 respondents to be ‘very good’. One notable fact in terms of sample demographics is that half of respondents in China were 18 to 24 years old, with university being the natural next step after completing high school; while in the United States the respondents were at varying stages of their lives. Appendix 3.A provides an overview of the respondents.

3.4. Analysis

The major focus of this investigation was on establishing how to measure student discipline in a higher education context and on investigating similarities and differences across three countries. Therefore, the following techniques were employed to analyse the data:

- a) a principal component analysis,
- b) analysis of variance (ANOVA) with *post hoc*s followed by
- c) a series of *t*-test analyses and

d) a cluster analysis.

Firstly, as we have clear indications from the literature about the ‘conceptual basis for understanding the relationships between variables’ (Hair et al., 2014, p.92), as detailed in Figure 3.1, a principal component analysis (PCA) was deemed ‘the solution of choice’ (Tabachnick and Fidell, 2013, p. 640) to test the overarching assumption that discipline is a construct consisting of five dimensions - namely *Focus*, *Intention*, *Responsibility*, *Structure* and *Time*. Prior to conducting PCA, we assessed Bartlett’s test of sphericity, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Measures of Sampling Adequacy (MSA) (Pett et al., 2003) to ascertain that it was prudent to proceed with conducting further analysis.

Secondly, we turned our attention to the levels of discipline across the three countries. Studies in education investigating current students alongside recent alumni are not uncommon (e.g. Mok et al., 2016); for example, Popp et al. (2015) confirmed no significant differences in satisfaction with skills development in sport management programs between students and recent graduates. Therefore, following the principal component analysis, a series of *t*-tests was run for each country on a smaller, randomly selected, subset of the entire data set (China n=102, Korea n=104 and the United states n = 118) with an equal distribution of students and recent graduates. All three *t*-tests suggested that there was no significant difference between the levels of discipline of current students and recent graduates on any of the five discipline dimensions in any one of the three countries.

Subsequently, to identify whether significant differences existed between the means of the three country groups, we conducted a one-way analysis of variance ANOVA tests. ANOVA was chosen as it is a method commonly used for group comparison studies relating to students and education with, for example, Cohen and Romi (2010) using ANOVA in their study into

classroom management and discipline, and Baumann and Krskova (2016) using ANOVA to test for geographic differences between five clusters in school discipline and academic performance.

Additionally, we used an independent *t*-test technique to ascertain gender differences across the five F.I.R.S.T. discipline dimensions. We tested for differences in the means between two groups at the consolidated level as well as for each country separately. Finally, we conducted a cluster analysis as it is suitable for both profiling student groups and is ‘complementary to factor analysis’ (Antonenko et al., 2012, p. 384). Similarly to Viengkham et al. (2018), this analysis was carried out in order to maximise the between-cluster heterogeneity as well as to maximise the within-cluster homogeneity of objects (Hair et al., 2014).

4. Results and Discussion

The focus of this quantitative study was on four main areas – how to measure student discipline in the higher education context; investigating similarities and differences across respondents from three societies; probing for gender differences; and to uncover clusters among respondents based on similar levels of discipline.

4.1. F.I.R.S.T. discipline dimensions confirmed

The first objective was to explore how levels of student discipline among university students can be measured, incorporating constructs defined by university students. We aimed to test whether such a measurement would be applicable across a variety of countries, as opposed to focusing on the United States only, as in prior research into student discipline in higher education (e.g. Le et al., 2005).

In line with past research (e.g. Baumann et al., 2007), we used a PCA to reduce the number of variables into meaningful dimensions, underpinned by the principles of *Self-determination*, *Goal-setting*, *Self-efficacy*, *Self-regulation* and *Time management*. The resulting dimensions

(*Focus, Intention, Responsibility, Structure and Time – F.I.R.S.T.*) each had a Cronbach's alpha in the excellent range of 0.71 and over (Comrey and Lee, 1992, p. 243) as summarised in Table 3.2. These results support our initial assumption that discipline consists of five dimensions and suggest that when discussing it or putting strategies in place for increasing discipline levels, all dimensions need to be addressed.

Table 3.2: Survey measures

Survey measures					
Factor Loadings	Question in questionnaire	Min	Max	Mean	Std dev
Panel A – Focus					
0.856	I feel passionate about my learning	1	7	5.23	1.336
0.854	I feel enthusiastic about my learning	1	7	5.17	1.363
0.842	I am able to reduce distractions during the period of time I have set aside for studying	1	7	5.04	1.419
0.834	I am able to reduce interruptions during the period of time I have set aside for studying	1	7	5.00	1.408
0.827	I keep my goals in sight at all times	1	7	5.26	1.336
0.771	I am able to say “no” to social pressure like going out with friends if I know I have to study	1	7	5.13	1.423
<i>Note 1: Cronbach’s alpha (standardised) = 0.910</i>					
Panel B – Intention					
0.906	I have clear goals that I aspire to achieve	1	7	5.26	1.358
0.866	I set high expectations for myself	1	7	5.25	1.425
0.857	I feel like I have a purpose	1	7	5.23	1.413
0.852	I prepare for my classes	1	7	5.15	1.394
<i>Note 2: Cronbach’s alpha (standardised) = 0.893</i>					
Panel C – Responsibility					
0.878	I feel in control of what academic results I achieve at university	1	7	5.25	1.318
0.875	I believe that I have the ability to perform at high level in my studies	1	7	5.36	1.275
0.804	I feel that if I trust higher forces, I will achieve good results	1	7	5.08	1.438
0.735	I do mind how long it takes me to finish my degree	1	7	4.97	1.410
<i>Note 3: Cronbach’s alpha (standardised) = 0.842</i>					
Panel D – Structure					
0.895	I like to create a routine for each of the subjects I study in a semester to keep me moving forward	1	7	4.97	1.428
0.877	I split my workload into small chunks to progress my projects (i.e. Assignment / essays) step by step rather than waiting to start work just before something is due	1	7	4.99	1.390
0.837	I use a specific “per day” schedule or timetable to ensure I know what is happening when	1	7	4.86	1.442
<i>Note 4: Cronbach’s alpha (standardised) = 0.839</i>					
Panel E – Time					
0.864	When I manage my time better, I perform better	1	7	5.34	1.302
0.851	I allocate specific amount of time per day to a certain task	1	7	5.12	1.400
0.837	When I manage my time better, I feel more disciplined	1	7	5.21	1.361
0.811	I am spending enough time on studying	1	7	5.05	1.384
0.736	I am on time to my classes	1	7	5.48	1.347
0.677	I do not procrastinate a lot	1	7	4.69	1.559
<i>Note 5: Cronbach’s alpha (standardised) = 0.885</i>					

4.2. Discipline levels across countries

We were interested in shedding light on the levels of discipline in the three countries. With the Levene's test (p -value < 0.001) revealing that the homogeneity of variance assumption was violated, it was necessary to examine the Brown-Forsythe F and the Welch's F (Field, 2013). Both tests presented as significant (the Welch's F results are noted in Table 3.3), confirming that the variances within the three country groups were significantly different. To illuminate these differences in discipline between the three societies, a Games-Howell *post hoc* test was conducted (Field, 2013). This test demonstrated that for three out of the five discipline dimensions (namely Focus, Responsibility and Time) there were three subsets in the data (outlined in Table 3.3), with Chinese respondents reporting the highest levels of discipline. For two of the discipline dimensions, only two subsets were found - in the case of Intention, China and the United States clustered together; and in the case of the Structure dimension, a similar convergence (Ralston et al., 1997) was found for Korea and the United States.

Caution must be applied to interpreting these results as it has been acknowledged that it is possible to obtain statistically significant variations (especially when analysing larger sample sizes) even when such findings might not translate to any practical differences (Pallant, 2016). In this particular case, while there are indeed significant differences among the subsets, the spread of values for the three societies is in fact relatively narrow. Following the notion of the recently introduced Inter-ocular test (Baumann et al., 2018), we inspected the range of values to find that, overall, the means ranged from 4.66 to 5.58 on a seven-point Likert scale. In other words, the spread is only 0.92 or just over 10% of the entire scale, thus indicating that while we uncovered significant differences, they are perhaps not as substantially divergent as the statistical significance would suggest. For educators or workplace supervisors, across all three countries under examination, increasing, for example, focus or time management of students or team members is a desirable outcome.

Table 3.3: ANOVA testing of discipline dimensions across country groups

Discipline Dimensions	Country	Mean	SD	F	p	Pairwise Comparisons*
Focus	China	5.5388	0.89840	33.994	0.000	China > USA > Korea
	USA	5.2391	1.22594			
	Korea	4.6575	1.10676			
	Pooled	5.1390	1.14673			
Intention	China	5.5581	0.96099	25.790	0.000	China and USA > Korea
	USA	5.3750	1.32365			
	Korea	4.7514	1.17807			
	Pooled	5.2235	1.21571			
Responsibility	China	5.5799	0.82748	30.624	0.000	China > USA > Korea
	USA	5.1549	1.22242			
	Korea	4.7762	1.11103			
	Pooled	5.1634	1.11780			
Structure	China	5.4244	0.96735	26.369	0.000	China > USA and Korea
	USA	4.7192	1.43983			
	Korea	4.7053	1.10234			
	Pooled	4.9404	1.23493			
Time	China	5.5436	0.85510	33.061	0.000	China > USA > Korea
	USA	5.1839	1.26192			
	Korea	4.7376	1.00295			
	Pooled	5.1487	1.10558			
Composite Discipline	China	5.5200	0.82271	34.514	0.000	China > USA > Korea
	USA	5.1205	1.14164			
	Korea	4.7175	0.99157			
	Pooled	5.1126	1.04742			

Note: n=537 (Korea n= 181, USA n= 184, China n = 172).

*Denotes post-hoc analysis with homogenous subgroups. Pairwise comparisons are significant at the $p=0.05$ level.

4.3. Discipline levels across gender

When examining the entire data set, we found no significant difference in the levels of the five discipline dimensions or the composite discipline variable between male and female respondents (Table 3.4). The effect size for the total sample (n=537) was found to be very small across all dimensions (less than .01). This is contrary to previous research into gender differences across many fields (e.g. Mattern et al., 2017; Ndum et al., 2018) but in line with a study of successful

business students, which reported no significant differences between performance of women and men in business master programs (Eddey and Baumann, 2009).

In contrast, an interesting pattern emerged when each of the countries was examined separately. In the case of the United States, females reported higher levels of all five discipline dimensions than males with the Intention component revealing a significant difference between female ($M = 5.5745$, $SD = 1.28307$) and male respondents ($M = 5.1667$, $SD = 1.34028$), $t = -2.109$, $p = 0.036$, with a small effect size (eta squared = 0.02). The explanation for these findings might lie in the several decades of encouragement of females to achieve in the United States, with the United States ranking 49th out of the 144 participating countries on the Global Gender Gap Report issued by the World Economic Forum for 2017 (Schwab, 2017), with China and Korea ranked 100 and 118, respectively.

Contrary to the United States and while Chinese men reported higher values than women on four discipline dimension (the one exception being Structure), no significant differences were revealed for any of the five discipline dimensions. One of the explanations for this result in China might potentially be the attitude to women historically underpinned by the often-quoted phrase ‘women can hold up half the sky’, attributed to Mao Zedong (Zhong, 2010).

Conversely, significant differences were revealed in Korea where we found lower values for females than for males on all five F.I.R.S.T. discipline dimensions (see Table 3.4); thus it is possible that in Korea the traditional focus for women on childcare and household duties has remained stronger (Kim, 2005). However, applying again the Inter-ocular approach, we examined the spread of the values in Korea. This time we found an even lower range of 0.71 indicating that while the differences in mean are indeed significantly different, in reality, Korean males and females might be only slightly different.

The results from the Chinese and Korean respondents are somewhat unexpected. As both China and Korea represent societies which to this day continue to be influenced by Confucianism, somewhat similar results might have been anticipated. However, while both countries have experienced a degree of westernisation and modernisation³ (see Baumann et al., 2018). The role of women is also changing in both societies, it might not be occurring to the same degree. Furthermore, when considering the influence of Confucianism on our findings, we are reminded by a leading cross-cultural scholar (Tung, 2008) to be careful when looking at the Confucian Orbit. While East Asia is largely driven and influenced by Confucianism, which emphasises a strict hierarchy in the order of human relationships based on social status, age and gender (Jang and Merriam, 2004), including appropriate behaviour and manners, this does not mean that there would not be variation within and between Confucian societies: ‘it is erroneous to assume homogeneity among Asian countries or even among countries that are heavily influenced by Confucianism’ (Tung, 2008, p. 105). It is also important to note that there would also be variations between countryside (more traditional gender roles) and the large metropolitan areas (e.g. Shanghai in China, Seoul in Korea) where many young females are university graduates with aspiring (and stellar) professional careers.

³ ‘We refer to Westernisation as the cultural influence of predominantly European and, most recently, American cultural artefacts – music, food, entertainment, movies and TV, language pronunciation and slang, fashion and so on. In contrast, Modernisation is the process of using the most recent ideas, technology, infrastructure and methods’ (Baumann et al., 2018, p. 211). See: Baumann, C., Winzar, H. & Fang, T. 2018. East Asian wisdom and relativity: Inter-ocular testing of Schwartz values from WVS with extension of the ReVaMB model. *Cross Cultural & Strategic Management*, vol. 25, no. 2, pp. 210-230.

Table 3.4: T-test of discipline dimensions across gender

Discipline Dimensions	Gender category	Mean	SD	Sig.	T	Mean	SD	Sig.	t
Panel A – total sample*						Panel B – Korea only**			
Focus	Male	5.2131	1.07358			4.9463	0.94606		
	Female	5.0647	1.21321	0.134	1.502	4.3718	1.18271	0.000	3.201
Intention	Male	5.2751	1.12927			5.0806	0.94500		
	Female	5.1716	1.29675	0.325	0.986	4.4258	1.29505	0.000	6.265
Responsibility	Male	5.2017	1.08993			5.0194	1.00785		
	Female	5.1250	1.14585	0.427	0.794	4.5357	1.16044	0.003	1.721
Structure	Male	4.9517	1.26067			4.9519	0.98117		
	Female	4.9291	1.21080	0.833	0.212	4.4615	1.16510	0.003	2.263
Time	Male	5.1766	1.08592			4.9074	0.82755		
	Female	5.1206	1.12631	0.558	0.586	4.5696	1.13013	0.023	6.683
Composite Discipline	Male	5.1513	1.00998			4.9580	0.81498		
	Female	5.0738	1.08420	0.392	0.857	4.4797	1.09298	0.001	4.212

Note*: Total sample - n=537 (male n = 269, female n = 268)

Note**: Korea only - n=181 (male n = 90, female n = 91)

4.4. Segments among respondents – low, medium, high levels of discipline

To gain further understanding of discipline levels across the three societies we then applied cluster analysis, because we were interested in how our respondents group, or ‘cluster’, together by ‘groupings in the data that might otherwise be overlooked’ (Wilks, 2011, p. 603). The two-step cluster analysis resulting in a three-cluster outcome is outlined in Table 3.5, with each of the three clusters comprised of respondents of all three societies. Overall, only less than 10% of all respondents (n=53) view their level of discipline as low, while 47% (n=253) of all respondents deemed their level of discipline to be high. In fact, in China, nearly 65 percent of respondents fall into the High Discipline Cluster and only three percent fall within the Low Discipline Cluster. In the case of the United States, the respondents are spread between two clusters - Medium and High Discipline Clusters - while in Korea, most respondents are located in the Medium Discipline Cluster.

There are many influences at play in the lives of university students. In the case of this study, the respondents would have been influenced for example by their national culture. Whilst national culture might once have been deemed to be ‘a fuzzy, difficult-to-define construct’ (Triandis et al., 1986, p. 258), respondents in this study were likely to be impacted by the ‘beliefs and values that are widely shared in a specific society at a particular point’ (Ralston et al., 1993). For instance, while the United States has been largely influenced by the Protestant work ethic, in Korea and China the influences have been, for example, Confucianism, Taoism, Legalism and Buddhism. Other influencing factors might be the distinctly opposing capitalist versus socialist economic philosophies (Ralston et al., 1997).

Despite the many impacts on the respondents in our study, our results provide evidence, that regardless of what country they were from, there are three distinct discipline segments among them. These findings are in line with the proposed *Threshold of Discipline* (Krskova et al., 2018, unpublished), which puts forward the notion that each student is at a different level of discipline development. Learning strategies can be developed to assist them with increasing their discipline skills.

Table 3.5: Membership profile of discipline clusters

Segment	Cluster 1 (n=53)	Cluster 2 (n=231)	Cluster 3 (n=253)	Total (n=537)
Classification	Low Discipline	Medium Discipline	High Discipline	
Society	3% China 15% Korea 12% US	33% China 56% Korea 40% US	64% China 29% Korea 48% US	100% (n= 172) 100% (n= 181) 100% (n= 184)
Gender – Male	3 Chinese 5 Korean 12 American	27 Chinese 50 Korean 39 American	59 Chinese 35 Korean 39 American	89 90 90 Total = 269
Gender – Female	2 Chinese 22 Korean 9 American	29 Chinese 51 Korean 35 American	52 Chinese 18 Korean 50 American	83 91 94 Total = 268

To summarise, the hypotheses developed on the basis of our initial review of literature are detailed in Table 3.6, which also provides an overview of the relevant research outcomes.

Table 3.6: Summary of hypotheses

Panel A – Country	
<i>HC1 – HC6: There will be significant differences among the groups of Chinese, Korean and American respondents on levels of discipline component</i> - Focus - Intention - Responsibility - Time - Structure - overall composite discipline	Supported Supported Supported Supported Supported Supported
Panel B.1 - Gender –total sample	
<i>HG1 – HG6: There will be significant differences between female and male respondents on levels of discipline component</i> - Focus - Intention - Responsibility - Time - Structure - overall composite discipline	Not supported Not supported Not supported Not supported Not supported Not supported
Panel B.2 - Gender – Korea	
<i>HG7 – HG12: There will be significant differences between female and male respondents on levels of discipline component</i> - Focus - Intention - Responsibility - Time - Structure - overall composite discipline	Supported Supported Supported Supported Supported Supported
Panel B.3 - Gender – United States	
<i>HG13 – HG18: There will be significant differences between female and male respondents on levels of discipline component</i> - Focus - Intention - Responsibility - Time - Structure - overall composite discipline	Not supported Supported Not supported Not supported Not supported Not supported
Panel B.4 - Gender – China	
<i>HG19 - 24: There will be significant differences between female and male respondents on levels of discipline component</i> - Focus - Intention - Responsibility - Time - Structure - overall composite discipline	Not supported Not supported Not supported Not supported Not supported Not supported

Note:

HC denotes hypotheses regarding country.

HG denotes hypotheses regarding gender.

5. Implications

The ability to accurately identify and measure student discipline at university has several practical implications. With discipline recently confirmed to have a more pronounced effect on educational performance than education investment (Krskova and Baumann, 2017), this study offers a low-cost methodology for enabling academic achievement. In an era of constant downward pressure on the allocation of resources to education – assisting students with development of the *F.I.R.S.T. Discipline Principles* (*Focus, Intention, Responsibility, Structure and Time*) represent a cost-effective tool for enhancing academic outcomes, especially in comparison to funding new infrastructure or employing more staff. Furthermore, the instrument we developed provides a useful tool for obtaining information about how disciplined students are. Assessing how disciplined a student is at the beginning of a course and then upon graduation would provide a complimentary assessment of how much closer to being work ready (in terms of having an internal mechanism to contribute to an organisation) a student is at the end of their higher education degree.

In line with prior studies into profiling of student cohorts (e.g. Jackson and Chapman, 2012a) and with suggestions regarding assessing students' expectations about educational experience before students 'enter the higher education system' (Bowden and Wood, 2011, p. 147), it is recommended that levels of discipline are assessed at the beginning of their course. Given that higher education contributes not only to improved economic prosperity of nations but also to the mental and physical wellbeing of individuals (Wood and Breyer, 2017), understanding how disciplined students are upon joining an educational institution is important, especially as one in four students drops out of their studies (DOE, 2017). It would be beneficial for higher education administrators to monitor and measure levels of student discipline, not only at the beginning and conclusion of their studies but also on an ongoing basis through the degree. Gaining more understanding about the five dimensions of discipline will allow us to provide

strategies for improvements in one, or all, of the F.I.R.S.T. discipline dimensions, as and when required.

Depending on their progress through the Threshold of Discipline (Krskova et al., 2018, unpublished), some students might need assistance only with time management, for example, while others might benefit from learning more about goal setting or structuring their study sessions. In addition, having the ability to assess levels of student discipline would enable educational institutions to provide assistance both to students at risk of academic failure as well as to those wishing to further enhance their learning and academic achievement. In other words, educational institutions could enable and empower students to strive towards the highest level of the Discipline Threshold, Creative Discipline.

While the focus of this study is on university students, it is important to note that these principles are not aimed only at assisting with academic achievement. With learning being increasingly viewed ‘as a lifelong process that involves repeated self-directed efforts to improve one’s skill in not only academic and professional areas of functioning but also personal areas of functioning’ (Schunk and Zimmerman, 2012, p. 23), applying the *F.I.R.S.T. discipline principles* will enable greater achievement across all aspects of life. They can assist every individual with becoming more achievement focused; gaining clarity around defining goals and intentions; taking responsibility for their actions and being accountable for their decisions; being skilled in setting structures about priorities; creating routines and habits intended to increase productivity; and with managing and allocating time wisely. Should an individual master the five principles, it will stand them in good stead in the future, not only during their formal education or upon entering the workforce, but in all aspects of their lives.

6. Limitations and further research

No study is without limitations and our study is no exception. As well as relying on self-reported measures, inherent challenges included focusing primarily on respondents only born in each country. It is therefore recommended that the study be extended to include not only more countries but also to respondents from wider demographic backgrounds. Further research is also warranted to investigate gender difference in Korea in more detail.

Having empirically verified the five F.I.R.S.T. discipline dimensions, the focus of future research should be on investigating outcomes of discipline, such as academic performance, in a tertiary context. Prior research has established a positive link between discipline at school level and work ethic (Baumann et al., 2016) and competitiveness (Krskova and Baumann, 2017); consequently, the interplay between discipline, work ethic, productivity or competitiveness could now be investigated, including any moderating effects of parental expectations, parental education, participation in sport or music activities or cultural background. In addition, further investigation into differences in the levels of discipline between current students, recent graduates and long-term workforce participants is recommended.

7. Conclusion

The aim of our research is to explore the construct of discipline in the higher education context and this paper makes three unique contributions. *Firstly*, we present evidence in support of our conceptual model of student discipline. The results confirm that discipline is a construct encompassing facets of *self-determination*, *goal-setting*, *self-efficacy*, *self-regulation* and *time management* and it is a combination of five dimensions: *Focus*, *Intention*, *Responsibility*, *Structure* and *Time* (F.I.R.S.T.). *Secondly*, we have uncovered three segments among respondents with distinctly different levels of discipline, namely low, medium and high levels. This pattern was confirmed across all three countries, which is in line with the proposition that

discipline develops over time across several stages of the 'Threshold of Discipline'. *Thirdly*, our study is novel as it contributes to the discussion of the intersectionality of gender, discipline and cross-cultural studies.

We opened this article noting that if a construct cannot be measured, our knowledge will be incomplete. This study has addressed both concerns. It has not only demonstrated a way to measure discipline at university level with reference to items that the students themselves regard as important; it has in fact confirmed the F.I.R.S.T. Discipline dimensions. This in turn has increased our knowledge of student discipline. Applying Inter-ocular testing, we also found that while there are significant differences across the three societies on the levels of discipline, they occur in a narrow band. To conclude, the fact that the differences are so small supports the proposition that the F.I.R.S.T. measurement questionnaire can be applied across various countries to accurately measure levels of discipline.

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Appendix 3.A: Sample overview

	China		Korea		USA		Total	
Variable	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender								
Female	83	48.3	91	50.3	94	51.1	268	49.9
Male	89	51.7	90	49.7	90	48.9	269	50.1
Total	172	32.0	181	33.7	184	34.3	537	
Age								
18-24	93	54.1	65	35.9	48	26.1	206	38.4
25-34	64	37.2	51	28.2	53	28.8	168	31.3
35-44	10	5.8	42	23.2	19	10.3	71	13.2
45-54	4	2.3	14	7.7	24	13.1	42	7.8
55-64	1	0.6	7	3.9	21	11.4	29	5.4
65+	0	0	2	1.1	19	10.3	21	3.9
Status								
Students	123	71.5	131	72.4	119	64.7	373	69.5
Graduates	49	28.5	50	27.6	65	35.3	164	30.5

Introduction to Paper 3 – Associations

The third paper in the thesis, *The role of discipline, parental expectations and sport involvement in explaining individual competitiveness and productivity: Moderating effects of country of birth*, draws from the findings of the two previous papers. Chapter 2 reported on qualitative interviews and put forward a conceptual model of discipline underpinned by five discipline dimensions. Chapter 3 drew on such a model to develop a new instrument for measuring discipline suitable for the measurement of discipline in multiple countries. In this chapter, survey data from 537 current university students and recent graduates from China, Korea and the United States were analysed to test the explanatory power of independent variables in the two models proposed in this thesis (the individual competitiveness and individual productivity models), including testing for interaction or moderation effects of country of birth.

By bringing together seemingly unrelated factors, such as discipline, the importance placed on discipline in primary schools, past participation in sport and parental expectations, it was possible to shed light on the relationships between the variables in the models as well as between discipline and both competitiveness and productivity, with discipline emerging as a factor of significant economic importance. Through a series of regressions, Chapter 4 provides compelling evidence that the responsibility for future competitiveness and productivity of individuals does not rest solely on the shoulders of educational institutions; it also rests with parents.

Prepared for submission to the *International Journal of Educational Management*

The role of discipline, parental expectations and sport involvement in explaining individual competitiveness and productivity: Moderating effects of country of birth

Abstract

Purpose – This research seeks to extend previous research into student discipline and competitiveness, at the macro or national level, to the micro or individual level, as well as to explore the impact of discipline and individual competitiveness on productivity. The role of other factors with the potential to impact individual competitiveness and productivity, namely the importance discipline played in primary and secondary schools, the expectation of the mother and of the father of high academic achievement and past participation in sport and music activities, were examined.

Design/methodology/approach – Survey data from 537 current university students and recent graduates from China, South Korea and the United States were analysed using multiple regressions to test the explanatory power of independent variables in the individual competitiveness and productivity models, including testing for interaction/moderation effects of country of birth.

Findings – The results suggest that university student discipline is significantly associated with both individual competitiveness and productivity. The importance placed on discipline in primary schools was found to impact individual competitiveness as were the expectations of the mother and of the father. Neither past participation in music nor discipline at secondary school were found to associate with individual competitiveness and productivity. On the other hand, the interaction of country of birth with past participation in sport was found to be significantly associated with competitiveness. No interaction effect of country of birth was found for productivity.

Originality/value – The results demonstrate the importance of discipline in gaining competitiveness and productivity, thus contributing to the literature on the critical role discipline plays in the university sector and the workforce. The study illuminates the role of sport in gaining individual competitiveness and the role of mothers in gaining productivity. Implications for tertiary institutions to further enhance learning and opportunities for further research are presented.

Keywords – discipline, competitiveness, productivity, parental expectations, music, sport, work readiness, university

Paper type - Research paper

1. Introduction

‘The distribution of skills is an important ingredient in the distribution of productivity in modern economies, and in competitive economies the distribution of productivity directly affects the earnings of workers.’ (Hanushek and Woessmann, 2016, p. 7)

Much has been written about the role of human capital in economic prosperity (e.g. Schultz, 1961; Barro, 2001); that is, skills and knowledge have been found to contribute to economic growth (Schultz, 1963) through increases in productivity (Becker, 1993). At a macroeconomic level, productivity is a well-researched topic as is its interplay with competitiveness (e.g. Nickell, 1996). Both constructs are often discussed in the context of, or in relation to, education, because nations often can prioritise education to achieve a competitive and productive workforce; in other words, nations richer in human capital display greater productivity gains. In contrast, at the microeconomic level of individuals, the interplay between productivity and competitiveness is less researched.

The need to tackle low productivity growth (Barro, 2016) has become especially pressing recently. In the third quarter of 2018 the U.S. Bureau of Labor Statistics (U.S. Government, 2018) issued *Productivity and Costs*, a report which indicates that nonfinancial corporate productivity has decreased 1.9 percent while unit labour costs have increased by the same percentage. If ‘team productivity is assumed to be a product of its members’ capabilities and effort’ (Bass, 1982, p. 181), gaining better understanding of the drivers of individual productivity would enable both educational institutions and employers, in tandem, to put in place strategies aimed at fostering increases in both individual competitiveness and productivity.

One potential driver of both is discipline. In the university sector, however, studies into discipline have utilised an academic discipline construct (Le et al., 2005), even though it refers to schoolwork. In contrast, we have viewed discipline more in accord with how university

students perceive discipline - as an internal mechanism for propelling them forward - as opposed to rules and regulations or a field of study, such as business or economics (which is what the term ‘academic discipline’ could imply). We consider discipline to be a combination of five dimensions: *Focus, Intention, Responsibility, Structure* and *Time* (F.I.R.S.T.), a finding which emerged from interviews conducted with university students (Krskova et al., 2018, unpublished).

The purpose of our study was twofold. Firstly, it was driven by a desire to examine the interplay of student discipline and competitiveness at university. A recent study by Krskova and Baumann (2017), which analysed five dimensions of school discipline climate – based on data collected through the Programme of International Student Assessment (PISA) (OECD, 2013) – found that discipline not only affects academic performance in reading, mathematics and science of high school students, but also ultimately impacts national competitiveness. However, investigation in the higher educational context into the links between discipline and competitiveness are yet to be conducted. Secondly, it was driven by our interest in probing the interplay between student competitiveness and productivity. We built on a recent study into the competitiveness of university students from China, South Korea (from here onwards simply Korea) and the United States (Baumann and Harvey, 2018), which examined the explanatory power of motivation and personality on student competitiveness and used competitiveness as an independent or predictor variable to explain student performance. We too were interested in the competitiveness of students, initially as an outcome or dependent variable in our Individual Competitiveness model. We subsequently investigated the effect of competitiveness on productivity in our second model, which focuses on individual productivity.

The focus of this paper is on three key objectives. Firstly, to examine potential drivers of individual competitiveness and individual productivity and, in particular, the role of discipline in this relationship (based on data we collected from university students and graduates from

China, Korea and the United States). Secondly, to probe the relationships through which competitiveness interacts with productivity at an individual level. Thirdly, to illuminate any possible variability between the three countries under examination, we investigated whether there are moderating or interaction effects of the country of birth on competitiveness and productivity.

Therefore, the specific questions guiding this research were:

- (i) *Does discipline drive competitiveness, productivity, or both?*
- (ii) *Does individual competitiveness explain individual productivity?*
- (iii) *Is country of birth a moderator in the individual competitiveness and productivity models?*

In an era of attempts to shift the responsibility for the future success of students towards schools and educational providers, our findings suggest that parents as well as educational administrators and policy makers have the ability to impact the competitiveness and productivity of our future generations. Shedding light on what drivers contribute to individual competitiveness and productivity could assist educational institutions with implementing learning and teaching strategies to boost graduate work readiness.

2. Literature review

The key concepts that frame this research are student discipline, competitiveness and productivity. Additional constructs under investigation include the degree of importance discipline played during primary and secondary education; parental expectations of achieving high academic marks; past participation during school years in activities such as sport and music; and country of birth. The literature review was therefore focused on these concepts.

2.1. Discipline

2.1.1. Student discipline

In this paper, we focus on student discipline, or the internal mechanism propelling students towards the achievement of academic goals, to probe for associations with competitiveness and productivity. Such interpretation of discipline is in line with a recent proposition that discipline is ‘a very effective and useful tool to enhance learning, personal development and overall human betterment’ (Baumann and Krskova, 2016, p. 1021).

At school level, discipline has received much attention (e.g. Mayworm and Sharkey, 2014), with numerous definitions of discipline available in the literature (e.g. Jones, 1987; Cameron, 2006). The advent of a degree of consistency in measuring student discipline at school level came about in 2000, when questions about student discipline were added to PISA, run by OECD three-yearly in over 60 countries to assess academic performance at high school in the areas of reading, mathematics and science. Studies based on linking PISA data on discipline to academic achievement followed shortly thereafter (e.g. Cohen et al., 2009; Chiu and Chow, 2011; Baumann and Krskova, 2016).

In the higher education context, in a study into predictors of college outcomes, a 10-question “academic discipline” construct was developed as a part of an extensive 108-item Student Readiness Inventory (Le et al., 2005). However, Le and his colleagues based the development and testing of the construct on data from both university and high school students, and they defined academic discipline as ‘the extent to which students value schoolwork and approach school-related tasks conscientiously’ (p. 494); that is, it was defined in regard to school students. The Student Readiness Inventory is available under the ACT Engage banner (www.act.org) to assist with identification of students (from middle school to college) at risk of low grades and potential dropout from their studies.

Although the academic discipline concept put forward by Le and his colleagues refers to schoolwork, it continues to be used in research in the university context. For example, Robbins

et al. (2006), used it in a study into college outcomes to confirm academic discipline to be predictive of academic performance; and Mattern et al. (2017) investigated the role that academic discipline plays in the college admissions process to find that female students reported higher levels of discipline. In contrast, we measure student discipline with reference to items that university students themselves used when describing discipline. More specifically, we probe for the interrelationship between discipline and competitiveness, and between discipline and productivity, in the university context at the individual or microeconomic level.

2.1.2. The importance discipline plays in schools

For decades researchers have sought to answer questions such as: *Is discipline an important factor in every school? Or is there a degree of variation between schools?* As far back as 1918, Allen (1918, p. 372) singled out a teacher who practised discipline focused on the ‘greatest results with the least friction’ by utilising a ‘steady pressure’ and always being clear about what the expectations were. Since then, discipline has often been viewed as ‘activities that are implemented to control learner behaviour’ (Bechuke and Debeila, 2012, p. 243) in order to maintain order and to enforce compliance, that is, it is enforced externally through rules and regulations. In fact, in a study into student and teacher perceptions of the important aspects of good school discipline, it was viewed as a necessity, deemed to be a prerequisite for both teaching and learning because ‘without discipline there will be no learning’ (Haroun and O'Hanlon, 1997, p. 243).

Over the years, many models of classroom discipline and management have been devised (e.g. Canter and Canter, 1976; Glasser, 1986) with varying degrees of teacher intervention, control or influence over students. Discipline at the school level represents a different type of discipline, as opposed to the discipline at the university level. While at the university level, where it is viewed as internal or personal discipline, discipline at the school level might often be associated with controlling students or behaviour management and is often applied externally. The desire

to investigate the link between disciplinary practices at schools and achievement has been highlighted further by a recent synthesis of studies into student discipline (Gregory et al., 2010). Probing the relationship between the degree of importance discipline plays in education (both primary and secondary) and the current levels of respondents' discipline, competitiveness and productivity, will add further to such discussions.

2.2. Individual competitiveness

The literature is rich in examples of the positive outcomes of individual competitiveness and of studies investigating factors influencing the competitiveness of workers. For example, a study into the relationship between job shaping and the individual competitiveness of sales representatives found a strong relationship between their individual competitiveness and the number of changes they made to their roles aimed at increasing and improving sales (Lyons, 2006); while a study into the competitiveness of individuals in work teams revealed that social networking enhances individual competitiveness (Su, 2011).

In the context of education, studies have investigated various competitiveness traits including competing to win (CW) or competing to excel (CE) (Ryckman et al., 1990), with CW aligned to the concept of hypercompetitiveness, or winning at all costs, and CE aligned to the concept of competitiveness as a mode towards personal development or improving one's skills (Ryckman et al., 1996). In a study into the psychological adjustment of adolescents, CW was found to correlate more strongly with aggression, with more males reporting higher CW levels; and CE was found to be associated with higher self-esteem, with no gender difference (Hibbard and Buhrmester, 2010). In terms of cross-cultural research into student competitiveness, a study into the levels of cooperation and competition of Chinese and American college students uncovered a preference of American students towards cooperation and Chinese students for competition as a success strategy (Tang, 1999). The lens we apply to investigating

competitiveness is from the angle of personal development, or competitiveness to excel, as opposed to competing to win at all costs.

2.3. Individual productivity

With the links between individual productivity and the productivity of organisations established (Goodman et al., 1994), research into the productivity of individuals followed (e.g. Worchel et al., 1998; Carayol and Matt, 2006) including studies into the individual productivity of students (Gullatt, 2006). While productivity is defined as ‘the amount of goods and/or services produced per hours of human labor’ (Muckler, 1982, p. 13) and performance is referred to as ‘scalable actions, behavior and outcomes that employees engage in or bring about that are linked with and contribute to organizational goals’ (Viswesvaran and Ones, 2000, p. 216), these two constructs are often used interchangeably, for example, by using an individual productivity ratio (total individual sales in dollars divided by individual payroll costs in dollars) to measure individual performance (Muckler, 1982).

While related, performance and productivity are not the same and in this study our focus is on the productivity of students. As the fundamental goal of higher education is learning, we view productivity in the case of students as working hard towards achieving specific course goals (McKeachie, 1982).

2.4. High expectations to achieve academically

The impact of parental expectations on student performance is well documented. In 1952, Campbell (1952) investigated how school achievement is impacted by home environment, in particular by the values and attitudes upheld by parents, while Keeves (1972) confirmed that positive parental attitudes and expectations of student progression at school contribute to academic achievement. Similarly, the findings of the Plowden Report (1967), titled *Children and their Primary School*, noted that parental attitudinal factors accounted for almost 60 per

cent of the variance in student achievement. In particular, children witnessing no desire in their parents to become involved in school activities are unlikely to develop and internalise positive feelings towards their school (Kohl et al., 2013). Interestingly, parental expectations tend to be discussed in the literature as a combined construct. In our study, however, we examine parental expectations as two separate constructs – the expectations of the mother and of the father.

The notion that ‘when we expect certain behaviours of others, we are likely to act in ways that make the expected behaviour more likely to occur’ (Rosenthal and Babad, 1985, p. 36) refers to the concept of a *self-fulfilling prophecy* (Merton, 1948), which in turns underpins the Pygmalion theory (also known as the Rosenthal effect). Although the Rosenthal proposition was criticised by some (e.g. Thorndike, 1968), the Pygmalion effect or the impact of high expectations on increasing achievement has been applied not only in education (e.g. Niari et al., 2016) but, for example, also in the area of sport (e.g. Rosenthal and Babad, 1985) and leadership (e.g. Raiz et al., 2017).

2.5. Participation in music and sport during school years

Interest in the influence of activities such as sport and music has increased following a study into American adolescents’ time use in the late 1980s and early 1990s, derived from a number of large-scale databases, such as the National Education Longitudinal Study and the Longitudinal Study of American Youth of 1988. The study found that high school students who spent no time on such activities were ‘57 percent more likely to have dropped out by the time they would have been senior’ in comparison to students who engaged in such activities between one to four hours per week (Zill et al., 1995, p. 52). Since then, the positive role of sport and music in adolescent development has been well supported (e.g. Eccles et al., 2003; Cheng et al., 2004; Farkas, 2003), with interest not only focusing on adolescent development but also including student achievement. Interestingly, according to a comprehensive review of studies from 1988 to 2003 into extracurricular activities, Feldman and Matjasko (2005) uncovered a

pattern of school-based activities having a mostly positive impact as well as a pattern of sport being examined more often than music.

The link between sport and greater academic achievement has been established (Broh, 2002), however, contradictory findings have been reported from research into the links between academic achievement and studying music. In a study comparing mean math or cumulative GPA of high school students, no statistically significant differences were found between students completing music classes and those not undertaking music classes in school (Cox and Stephens, 2006). Another investigation of the effects of music instruction on achievement in mathematics and language of fourth-grade school pupils found no effect on achievement but confirmed a positive effect on children's self-esteem (Costa-Giomi, 2004). In contrast, a meta-analysis of 24 correlation studies demonstrated a strong positive association between standardised reading tests and students studying music (Butzlaff, 2000). Investigating the possible impact that past participation between the ages of 5 and 18 in sport and music activities might have on competitiveness and productivity will broaden the contexts in which sport and music have been examined to date.

2.6. Country of birth

Each individual is influenced by 'norms and values of a culture, and the specific "way of working" of its economic institutions' in their country (Löhr and Steinmann, 1998, p. 10) and race, country of origin or ethnicity are variables frequently used in cross-cultural research (e.g. Glass and Westmont, 2014). For example, ethnicity was positioned as a moderator when examining the impact of motivation and personality on the competitiveness and performance of Chinese, Korean and American respondents (Baumann and Harvey, 2018). In our study, 'country of birth' (as opposed to ethnicity) was deemed 'to be a reasonable proxy for cultural differences' (McMurray and Scott, 2013, p. 657). This construct was strengthened further by narrowing the sample down to respondents born and residing in the three countries under

examination in order to facilitate cross-country comparisons as well as to minimise the impact of intra-national diversity (Tung and Baumann, 2009), an issue particularly pertinent to the sample from the United States. Examining the influence of birth country of respondents on their levels of competitiveness and productivity will add to the discussion of potential sources of differences in national competitiveness and productivity in the global marketplace.

3. Conceptual model development and hypotheses formulation

This study is not only guided by the interplay between the notions of human capital and economic growth (which includes competitiveness and productivity) (e.g. Becker, 1993) but also by the Ecological Systems Theory, which offers a framework for interpreting ‘the evolving interactions’ (Bronfenbrenner, 1979, p. 3) between human beings and their social environment, including the influences of parents and family, school or culture. Informed by the literature review, we have developed two models when theorising about the possible interplay between the key variables:

- (i) The Individual Competitiveness model (see Figure 4.1)
- (ii) The Individual Productivity model (see Figure 4.2)

A point to be noted here is that a conscious decision was made to first examine the explanatory powers of discipline (and other independent variables in this study) on competitiveness in the Individual Competitiveness model and then subsequently examine the explanatory power of competitiveness (as an independent variable) on productivity in a second model. In other words, probing for mediation effects (using, for example, Structural Equation Modelling analysis) is outside the scope of this paper.

The additional variables under examination in both our models are:

- Discipline as a driver for competitiveness of university students (Krskova and Baumann, 2017). Discipline is also conceptualised as a driver of productivity, underpinned by the

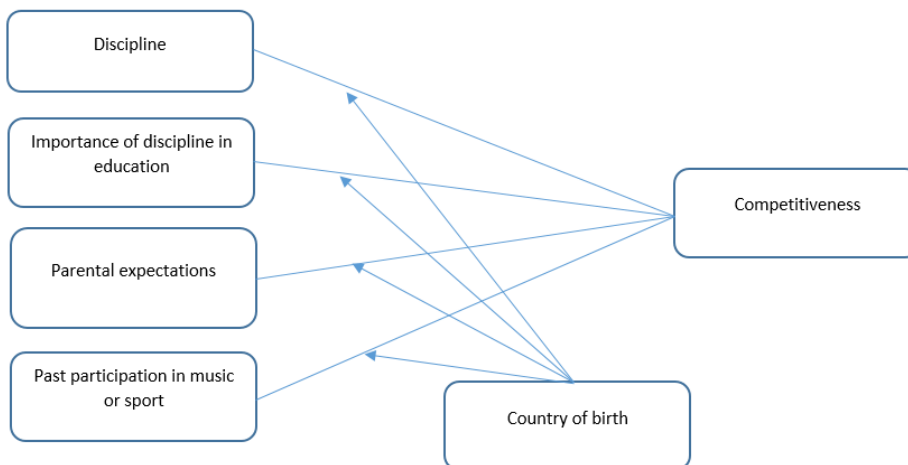
interrelationship between competitiveness and productivity at the macroeconomic level (e.g. Nickell, 1996).

- Individual competitiveness in terms of enhancing personal development (Ryckman et al., 1996). In the Individual Competitiveness model, it is the outcome variable and in the Individual Productivity model, it is presented as a driver of productivity.
- The degree of importance of discipline in school (Haroun and O'Hanlon, 1997), focusing on possible differences between primary and secondary school levels.
- Parental expectations of academic achievement (Wang and Heppner, 2002) as two separate constructs – expectations of the mother and those of the father.
- Participation in music and sport between the ages of 5 and 18 (Anderson et al., 2003).
- Country of birth (McMurray and Scott, 2013) as a potential moderator in the individual competitiveness and productivity models.

In the Individual Productivity model, one additional variable was added:

- Individual productivity, the ultimate outcome variable, is conceptualised to be driven by discipline, competitiveness and the other factors under examination in the Individual Competitiveness model. Productivity, at the individual level, is hypothesised to be driven by competitiveness, in line with the interrelationship between competitiveness and productivity at the macroeconomic level (e.g. Nickell, 1996).

Figure 4.1: The Individual Competitiveness model (Source: authors' original figure).



The hypotheses associated with the Individual Competitiveness model, based on the review of the literature, are as follows:

Hc1¹: Discipline is significantly associated with individual competitiveness.

Hc2: The importance of discipline in primary education is significantly associated with individual competitiveness.

Hc3: The importance of discipline in secondary education is significantly associated with individual competitiveness.

Hc4: Mother's expectations of high achievement are significantly associated with individual competitiveness.

Hc5: Father's expectations of high achievement are significantly associated with individual competitiveness.

Hc6: Participation in sport during school years is significantly associated with individual competitiveness.

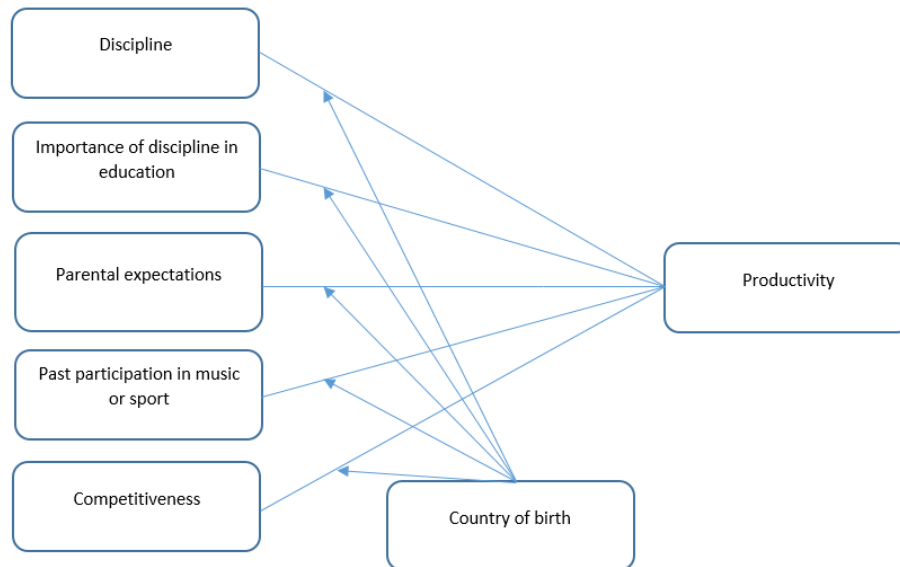
Hc7: Participation in music during school years is significantly associated with individual competitiveness.

In addition to the constructs listed in the Individual Competitiveness model, the Individual Productivity model also explores the relative contribution of competitiveness to productivity. In

¹ HC denotes hypothesis regarding individual competitiveness.

this model, competitiveness was moved from the dependent outcome variable position to the position of an independent predictor variable.

Figure 4.2: The Individual Productivity model (Source: authors' original figure).



For the Individual Productivity model, it is hypothesised:

HP1²: Discipline is significantly associated with individual productivity.

HP2: The importance of discipline in primary education is significantly associated with individual productivity.

HP3: The importance of discipline in secondary education is significantly associated with individual productivity.

HP4: Mother's expectations of high achievement are significantly associated with individual productivity.

HP5: Father's expectations of high achievement are significantly associated with individual productivity.

HP6: Participation in sport during school years is significantly associated with individual productivity.

HP7: Participation in music during school years is significantly associated with individual productivity.

² HP denotes hypothesis regarding individual productivity.

H_{P8}: Individual competitiveness is significantly associated with individual productivity.

Furthermore, it is hypothesised that country of birth will play a moderating role in the individual competitiveness and productivity models:

H_{MC}³: Country of birth is a moderator in the Individual Competitiveness model.

H_{MP}: Country of birth is a moderator in the Individual Productivity model.

An overview of the relationships between the various hypotheses in this study and prior research is provided in Appendix 4.B.

4. Research methodology

The methodology section is organised as follows. First, the instrument development will be discussed. Second, the sample and administration of the survey will be outlined. Third, a brief overview of the techniques utilised to analyse the data will be provided.

4.1. Development of survey

With the exception of the items for capturing student discipline, the survey questions for measuring constructs were selected from previously validated questionnaires or adapted from the literature. A complete list of the measurement items that were included in the survey can be found in Appendix 4.A. All questions were assessed by respondents using a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

Discipline In the higher education context, studies into discipline utilise an “academic discipline” construct with reference to schoolwork (Le et al., 2005). In an attempt to develop a questionnaire with reference to what university students themselves consider important in

³ *HM* denotes hypothesis regarding moderating effect of country of birth.

relation to student discipline in the university sector, we based the questions on themes that were identified during 20 student interviews we conducted in Semester 1, 2017 at an Australian university. The five emergent themes (*focus, intention, responsibility, structure and time*) underpinned by theoretical principles with the potential to impact student discipline, such as *self-determination* (Deci and Ryan, 1985) or *self-efficacy* (Bandura, 1977), were reported in Krskova et al. (2018, unpublished).

Our review of instruments previously employed to measure such concepts (e.g. Sherer et al., 1982; Lee et al., 1991; Macan, 1994) revealed that a majority did not incorporate the wording used by current students to discuss the subject. Therefore, we formulated new statements to encapsulate student discipline arising from our interviews. Additionally, in an attempt to capture their perceptions as opposed to having too many questions, which could lead to respondent fatigue (DeVellis, 2017), the final questionnaire consisted of 23 items (as detailed in Appendix 4.A). We also assessed the internal consistency reliability using Cronbach's coefficient alpha and found the coefficient to be above .90 or in the 'very good' range (DeVellis, 2017, p. 145).

Competitiveness The respondents' tendency to compete was assessed using a modified version of the Competitiveness Orientation Measure (Newby and Klein, 2014). The 37-item COM was designed as a unified measure of trait competitiveness, synthesising previous research on personal enhancement, competitive affectivity, general competitiveness and dominance dimensions. We selected two questions each from three dimensions to assess student levels of competitiveness: general competitiveness (*Competition motivates me, I perform better when I compete against others*); dominant competitiveness (*Other people comment on how competitive I am, I try to be the best person in the room at almost anything*); and personal enhancement competitiveness (*I can improve my competence by competing, Competition allows me to judge my level of competence*).

Productivity To measure individual productivity, we adopted three statements, such as *I am productive*, that were previously used in an investigation of competitiveness and workforce performance by Baumann et al. (2016a, p. 2201), who drew on the ‘work of Woods et al. (1981) on measuring performance/productivity in individuals’. We used these in order to capture the respondents’ perceptions about how hard they are working, the amount of work they have already done and how productive they think they are.

Importance of discipline Additional questions were asked about the importance discipline played in both their primary and secondary education (*Discipline was an important aspect in my primary school, Discipline was an important aspect in my secondary school*). These two statements were inspired by a study into differences of perception between teachers and students about what school discipline is (Haroun and O'Hanlon, 1997).

Parental expectations The questions designed to measure parental expectation were inspired by an academic achievement item (*Parents expect me to have excellent academic performance*) from ‘a scale for measuring parental expectations and living up to parental expectations’ and the impact that expectations have on the psychological distress of college students (Wang and Heppner, 2002, p. 582). However, in our study two items were formulated as we aimed to investigate the expectations of the mother and those of the father separately.

Participation in music and sport The respondents were also asked about the number of years between the ages of 5 and 18 they participated in sport and music activities. These questions were modelled on questions asked during a study of children’s perceptions of their parents’ involvement in extracurricular activities (Anderson et al., 2003).

4.2. Sample and survey administration

In line with past research testing for associations across a three-country sample (e.g. Viengkham et al., 2018), the survey was administered online in Semester 1, 2018 by a professional market research company with the ability to disseminate an instrument to specific target respondents. The relevant university Ethics Approval was in place for the entire research project. The instrument was launched first in the American market in order to test the clarity of the questions, before the survey was translated into Korean and Chinese by professional translators. The translated instrument was pre-tested by a bilingual academic from a related field as well as by a bilingual graduate from an Australian university, to ensure the intended meaning of measurement items (an internal mechanism propelling students forward towards their academic goals) was retained (as opposed to, for example, discipline being accidentally translated as relating to enforcement of rules or regulations).

The objective was to obtain responses from current university students and recent graduates with data being collected from a total of 537 respondents from China, Korea and the United States. This exceeds the often cited $N > 50 + 8m$ formula for sample size calculations for multiple regression testing, where m equals the number of independent variables (Tabachnick and Fidell, 2013, p. 123). China, Korea and the United States were selected as target markets in order to investigate the interplay of discipline, competitiveness and productivity across countries representative of Western and Asian regions, with Korea representing a blend between East and West (Baumann et al., 2016b). Table 4.1 provides an overview of the respondents, which outlines the range in ages, with half of the respondents in China being less than 24 years old (university being the natural next step after completing high school); while the respondents in the United States were attending university at different stages in life.

Table 4.1: Overview of sample

			China	Korea	United States	Total
Size	<i>N</i>		172	181	184	537
	(%)		32	33.7	34.3	
Gender	Male	(%)	51.7	49.7	48.9	50.1
	Female	(%)	48.3	50.3	51.1	49.9
Age	18-24	(%)	54.1	35.9	26.1	38.4
	24-34	(%)	37.2	28.2	28.8	31.3
	35-44	(%)	5.8	23.2	10.3	13.2
	Over 45	(%)	2.9	12.7	34.8	17.1

4.3. Analysis

Multiple linear regression analysis was deemed the most appropriate for analysing the data in this study as it tests the relationships between one outcome variable and one or more predictors (Muijs, 2011). In other words, we were interested in shedding light on the explanatory power of the independent variables (IVs) in our models. Stepwise multiple regression was utilised as it allows the program to select the order in which the variables are entered into the equation (Pallant, 2016) and ‘to eliminate those IVs that do not provide additional prediction’ (Tabachnick and Fidell, 2013, p. 140). Prior to interpreting the results of our regression analyses, the data set was assessed for linearity and outliers as well as multicollinearity (Muijs, 2011) and the tolerance statistics were well above any multicollinearity concerns.

The focus of our study was, however, not only on ‘demonstrating the existence of an effect’ (Hayes, 2018, p. vii) between the variables, but also on probing for moderation or interaction effects of the combined effect of two variables on a third variable (Field, 2013). In our analysis, we took the United States as a base and created two indicator variables for Korea and China. To test for interaction effects, we used multiple regression with all variables considered; known as the ‘enter’ approach.

5. Results and discussion

The focus of our quantitative study was on three main areas: firstly, on investigating the explanatory power of the independent variables under examination on competitiveness; secondly, on examining the explanatory power of the same independent variables and also competitiveness on productivity; and, finally, on probing for an interaction effect of a moderating variable on the relationships in the individual competitiveness and productivity models. Our results in these three areas will now be discussed in more detail.

5.1. Discipline, parental expectations and sport explaining competitiveness

The first objective of our study was to investigate the explanatory powers of student discipline. We also examined the importance discipline played in primary and secondary education, the expectation of the mother and the father of high achievement, and also of past participation in sport and music on competitiveness, with the results of the initial regression summarised in Table 4.2a.

Overall, the explanatory power of the Individual Competitiveness model is 47.1% (Adjusted $R^2 = 0.471$), indicating a ‘moderate fit’ (Muijs, 2011, p. 145) of our model to the sample. Our results provide support for our hypothesis that discipline is significantly associated with individual competitiveness. In fact, out of the variables under examination in our study, student discipline was found to have the strongest effect on explaining individual competitiveness. Our finding is in line with a recent study, when discipline was found not only to impact national competitiveness (albeit indirectly), but the relative impact of discipline on educational performance was higher than the impact of education investment, 88% and 12% respectively (Krskova and Baumann, 2017). Past research has established the link between discipline and competitiveness at the school level and our study now demonstrates that the link also applies in a university setting.

It was not only student discipline but also the degree to which discipline played a role in primary school that was found to significantly impact competitiveness. Interestingly, the extent of the effect of discipline in secondary schools was not found to be significant in our model. One explanation for this difference might be aligned with the notion of a slow deterioration of interest in schooling (or love of learning) displayed by many school pupils by the time they reach secondary school (Sarason, 1990). Fortunately, ‘all humans are born with a hunger to learn, a seemingly insatiable appetite for knowledge’ (Lumsden, 1999, p. 1) and the approximately 12,000 hours students spend in schools interacting and observing teachers, learning by watching while being disciplined by them (Curwin and Mendler, 1988) appears to play a role well into the future. This could suggest that teachers shape and influence children’s lives (Christensen et al., 1995) not only through teaching and educating but also through the importance they place on discipline in primary schools.

The second biggest effect that our regression was the expectations that fathers place on their children in terms of their academic achievement. When both the expectations of the mother and that of the father were entered into our model, the expectations of mothers did not appear to significantly impact on competitiveness, which is in line with a recent study where the involvement of fathers was found to affect achievement of students beyond the influence of mothers (McBride et al., 2005).

In addition, the length of time an individual spent playing sports between the age of 5 and 18 was also found to positively impact competitiveness. This finding builds on the notion that competitiveness is the essence of sport (Yang and Zhao, 2011). The role of sport will be discussed further in the section on the moderating effect of country of birth.

One additional interesting finding relates to music. As alluded to in the literature review, the research on the effect of music activities on the development of students has been inconclusive.

Our study adds to the discussion, confirming that while sport impacts the competitiveness of individuals, music is unlikely to have a significant effect in this realm. It appears that while studying music assists, for example, with the development of fine motor skills (Costa-Giomi, 2005), it does not contribute towards the competitiveness of an individual. When it comes to gaining competitiveness, only participation in sport was found to be important.

Table 4.2a. Discipline, expectations and participation in sport explaining competitiveness – main effects

Model	Standardised coefficients (β)	<i>t</i>	Sig.
(Constant)		2.126	0.034
Discipline	0.451	12.554	<0.001
Expectations father	0.275	7.539	<0.001
Sport (in years)	0.088	2.750	0.006
Importance of discipline in primary school	0.098	2.701	0.007
Notes:			
1) $n = 537$, $R = 0.689$, $R^2 = 0.475$, Adjusted $R = 0.471$, SE of the estimate = 0.9137			
2) <i>Expectations of both mothers and fathers were included in the regression, with the expectations of mother not found significant.</i>			

The above results beg a question: *what happens when no fatherly expectations of academic achievement are forthcoming in the life of a student?* After all, it has been acknowledged that children, and especially children's education, is 'dramatically impacted by family structure' (Lee et al., 2007, p. 149). With 27% of children in the United States in 2000 living in single-parent families, rising to 53% for African American children (Sigle-Rushton and McLanahan, 2004), the effect of the absence of a father in the lives of children is a well-documented topic (e.g. Barajas, 2011). However, findings of studies into academic achievement of adolescents living in single-father or single-mother households appear inconsistent, with Lee et al. (2007, p. 152) reporting 'no significant differences in academic achievement' between the two groups. In contrast, Featherman and Hauser (1978) reported that children who lived in single-mother families achieved higher academic scores, while Mulkey et al. (1992) reported that the absence of a mother was more detrimental to the outcome of science test scores. To see how the explanatory power of our model changes when no father expectations are entered (as a

simulation of single-mother household settings), we re-ran the regressions minus father expectations. The outcome of the second regression analysis is presented in Table 4.2b.

Table 4.2b: Discipline, expectations and participation in sport explaining competitiveness – father expectations excluded from regression

Model	Standardised coefficients (β)	<i>t</i>	Sig.
(Constant)		2.042	0.042
Discipline	0.459	12.319	<0.001
Expectations mother	0.207	5.450	<0.001
Importance of discipline in primary school	0.128	3.445	0.001
Sport (in years)	0.080	2.431	0.015
Notes: $n = 537$, $R = 0.671$, $R^2 = 0.450$, Adjusted $R = 0.445$, SE of the estimate = 0.9355			

The explanatory power of the model remained strong, with discipline again having the strongest effect. It appears that when father expectations are excluded from the study, even more discipline-related values transfer from primary school onto the students and contribute to making an individual gain competitiveness.

5.2. Discipline, competitiveness and parental expectation explaining individual productivity

The next objective of our study was to shed light on the relationship between individual competitiveness and productivity, with the results of the regression analysis presented in Table 4.3.

Table 4.3. Discipline, expectations and competitiveness explaining productivity

Model	Standardised coefficients (β)	<i>t</i>	Sig.
(Constant)		2.253	0.015
Discipline	0.365	9.278	<0.001
Competitiveness	0.351	8.721	<0.001
Expectations mother	0.124	3.519	<0.001
Notes: $n = 537$, $R = 0.714$, $R^2 = 0.510$, Adjusted $R = 0.507$, SE of the estimate = 0.8707			

As was the case with the Individual Competitiveness model, discipline was found to have the strongest explanatory power in the Individual Productivity model, followed closely by individual competitiveness. An interesting finding was that the expectations of fathers in terms

of academic achievement are no longer significant, with only the expectations of mothers contributing to productivity. Our findings also indicate that while sport drives competitiveness, when it comes to productivity both music and sports have fallen out of the model. The overall explanatory power of the Individual Productivity model (comprising of discipline, competitiveness and expectations of mothers) is 50.7% (adjusted $R^2 = 0.507$), again indicating a strong fit (Muijs, 2011) of our model with the data. When we consider the many variables that could have an impact on student productivity, such as family socio-economic status, parental education or teacher influence, the explanatory power of our model or how well our constructs under examination together predict productivity is noteworthy.

The role that parental expectations play in our models is remarkable. The importance of parental influence can be illustrated by an exchange between the former United States President Barack Obama and former South Korean President Lee Myung-bak, when Lee indicated that, in his view, their biggest educational challenge was parents being ‘too demanding’ (Duncan, 2010, p. 65), which might in fact be one of the explanations behind Korea becoming one of the best-educated workforces and fastest-growing economies.

The commonly accepted wisdom that fathers are stricter (as they have historically been the heads of families) does not, however, hold fully in our study. In fact, we have illustrated that the interplay of parental expectations is more complex. One explanation behind the prominent role mothers play in influencing future outcomes for their children might be that it is not only Asian mothers - sometimes referred to as ‘Tiger mothers’, for whom ‘academic achievement reflects successful parenting’ (Chua, 2011, p. 5) - who have high expectations of academic achievement for their children. It might be that mothers everywhere are stricter with children, especially when it comes to their expectation of academic achievement. It might also be possible that while fathers’ expectations play a prominent role in terms of competitiveness among individuals or

‘helping to mold the major behavioural outcomes’ (Jeynes, 2015, p. 414), it is the mother who instils in children the sense of “producing” something, “completing” tasks or being productive.

5.3. The moderating effect of country of birth

The third objective of our study was to test for interaction effects in our individual competitiveness and productivity models. Our analysis revealed that the effect of years of playing sport (between the ages of 5 and 18) on competitiveness is moderated by country of birth (as summarised in Table 4.4 and depicted in Figures 4.3 and 4.4).

Table 4.4: Interaction effects of country of birth in Individual Competitiveness model

Model	Standardised coefficients (β)	<i>t</i>	Sig.
(Constant)		1.270	0.205
Discipline	0.446	12.703	<0.001
Expectations father	0.227	6.247	<0.001
Sport (in years)	0.214	4.468	<0.001
Importance of discipline in primary school	0.071	2.021	<0.044
Korea	0.198	4.107	<0.001
China	0.331	6.425	<0.001
Sport x Korea	-0.065	-1.377	0.169
Sport x China	-0.125	-2.539	0.011
Notes: $n = 537$, $R = 0.721$, $R^2 = 0.520$, Adjusted $R = 0.513$, SE of the estimate = 0.8766			

What we uncovered is that for the three country groups in our study, the Chinese group is statistically different from the American group. To illuminate the relationship between years of playing sport and competitiveness, Figure 4.3 presents the outcome of a scatterplot after applying the smoothing Loess fit lines (Cleveland, 1979), which revealed a ‘dose response’ effect of the numbers of years playing sport on competitiveness (as opposed to a ‘threshold’ effect). In other words, the more years of sport that respondents from the United States played, the more competitive they became. However, for respondents from Korea and China, after playing sport for about two and half years their competitiveness reaches a peak. In China the negative beta coefficient indicates that for every 1-unit increase in the predictor variable, the competitiveness variable will decrease by the value of the beta coefficient (-0.125), with the slope of the line for China being statistically different to the slope of the base American group (Figure 4.4). One of the explanation for sport not contributing to gaining competitiveness for

Chinese students as much as for American students is that interpersonal competition might be fostered in the classrooms – as opposed to a sporting field - due to the fact that from the very day students in China start school ‘they have to compete with their peers for better grades so that they will be able to continue their education’ (Xiang et al., 2001, p. 360). In contrast, in the United States, sporting excellence can facilitate entry to university, thus perpetuating competitiveness (Camiré, 2014).

Figure 4.3 – Smooth fitted lines (Loess fit) for competitiveness vs years of sport by country

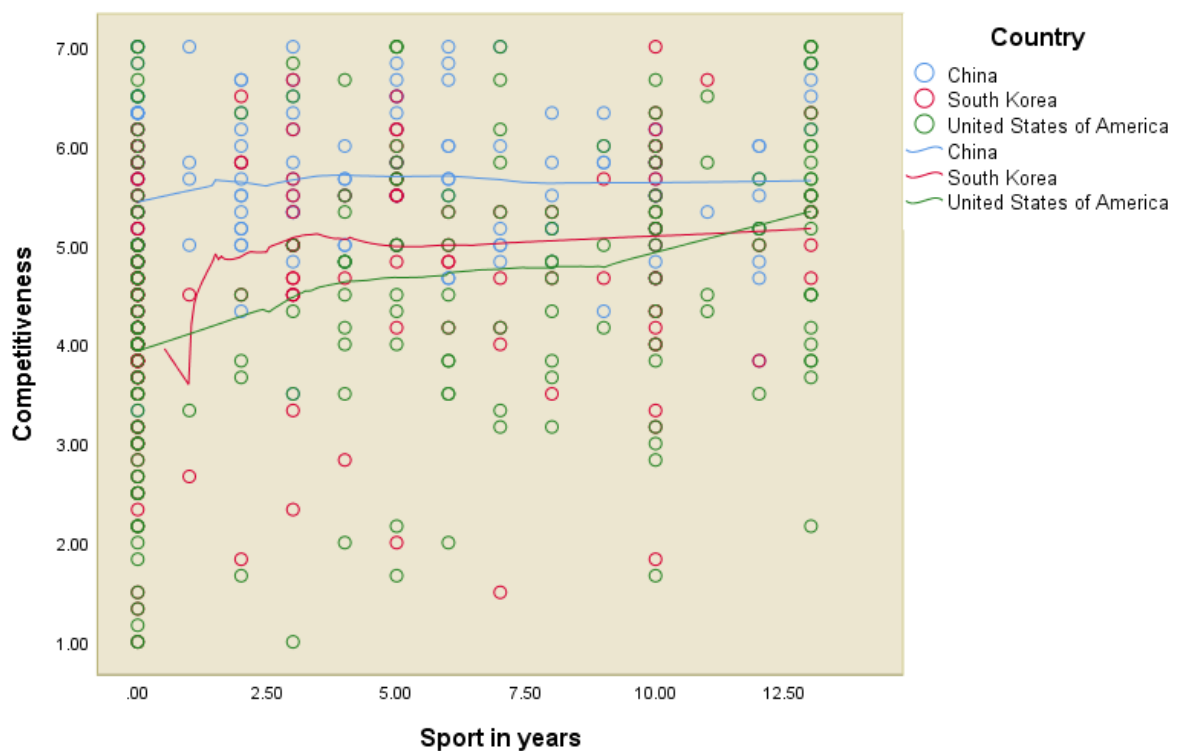
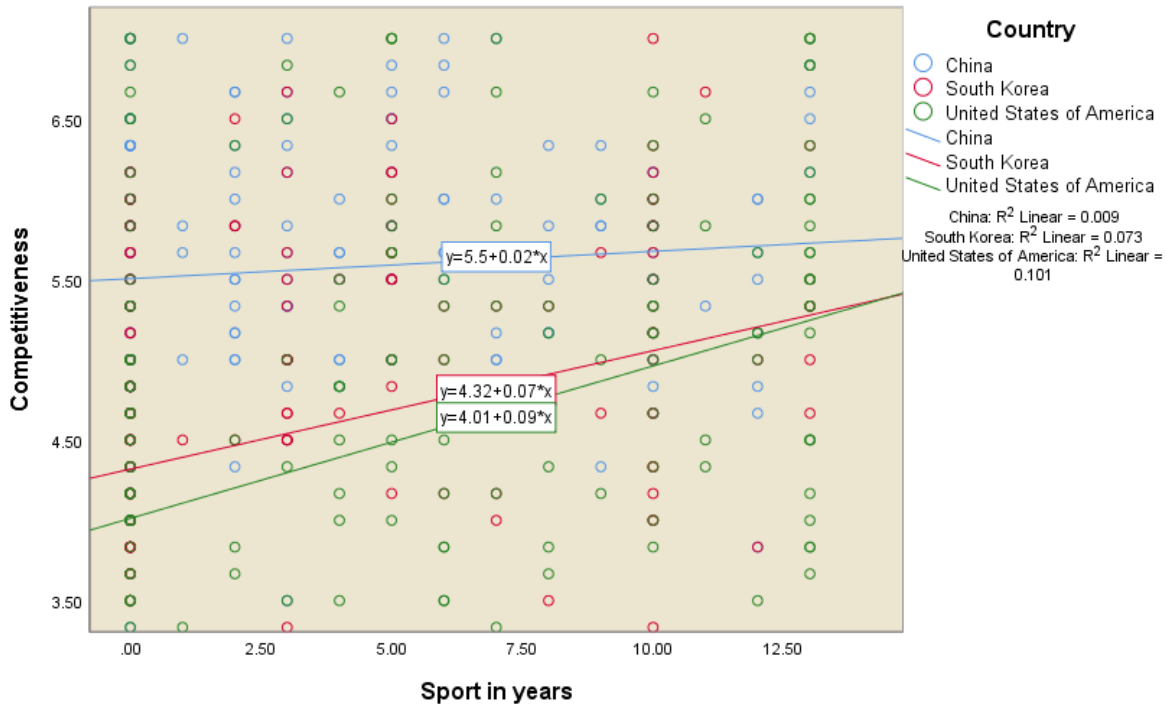


Figure 4.4: Interaction effects of country of birth and sport on competitiveness



In this study we predicted the interaction effect of country of birth in our individual competitiveness and productivity models. However, no interaction effect was uncovered in the Individual Productivity model.

In summary, our study has provided support for positive responses to the three original research questions detailed at the beginning of our paper. Specifically:

- (i) We have found evidence that discipline indeed drives both competitiveness and productivity.
- (ii) We have also found evidence that individual competitiveness explains individual productivity.
- (iii) And finally, we have demonstrated that country of birth acts as a moderator in one of our models, that is, in our Individual Competitiveness model.

All the findings of the study, in relation to each hypothesis developed on the basis of our initial literature review, are shown in Table 4.5.

Table 4.5: Summary of hypotheses

Panel A – Competitiveness model hypotheses summary	
<i>HC1: Discipline is significantly associated with individual competitiveness.</i>	<i>Supported</i>
<i>HC2: The importance of discipline in primary education is significantly associated with individual competitiveness.</i>	<i>Supported</i>
<i>HC3: The importance of discipline in secondary education is significantly associated with individual competitiveness.</i>	<i>Not supported</i>
<i>HC4: Mother's expectations of high achievement are significantly associated with individual competitiveness.</i>	<i>Supported*</i>
<i>HC5: Father's expectations of high achievement are significantly associated with individual competitiveness.</i>	<i>Supported</i>
<i>HC6: Participation in sport during school years is significantly associated with individual competitiveness.</i>	<i>Supported</i>
<i>HC7: Participation in music during school years is significantly associated with individual competitiveness.</i>	<i>Not supported</i>
Panel B - Productivity model hypotheses summary	
<i>HP1: Discipline is significantly associated with individual productivity.</i>	<i>Supported</i>
<i>HP2: The importance of discipline in primary education is significantly associated with individual productivity.</i>	<i>Not supported</i>
<i>HP3: The importance of discipline in secondary education is significantly associated with individual productivity.</i>	<i>Not supported</i>
<i>HP4: Mother's expectations of high achievement are significantly associated with individual productivity.</i>	<i>Supported</i>
<i>HP5: Father's expectations of high achievement are significantly associated with individual productivity.</i>	<i>Not supported</i>
<i>HP6: Participation in sport during school years is significantly associated with individual productivity.</i>	<i>Not supported</i>
<i>HP7: Participation in music school years is significantly associated with individual productivity.</i>	<i>Not supported</i>
<i>HP8: Individual competitiveness is significantly associated with individual productivity.</i>	<i>Supported</i>
Panel C – Moderating effects of country of birth	
<i>HMC: Interaction of sport and country of birth is significantly associated with competitiveness in the Individual Competitiveness model</i>	<i>Supported</i>
<i>HMP: Country of birth is a moderator in the Individual Productivity model.</i>	<i>Not supported</i>

Note: *When father expectations were excluded from the model.

6. Implications

6.1. For parents

In keeping with the notion that parents have a large effect on ‘many dimensions of their children’s lives’, discussed by a pioneer of Human Capital Theory and the winner of the 1992 Nobel Prize in Economics, Garry Becker (1993, p. 21), our results suggest that the influence of parents is one of the important sources of university students’ levels of competitiveness and productivity. Parents could therefore reassess the levels of expectation they place on their children. We do not invite unnecessary pressure on students from their families, but we advise against the possible scenario of limited or no expectations of academic achievement. After all, the link between authoritative parents (demanding and responsive) with expectations for achievement for their children (as opposed to parents who are less demanding and more permissive) and student academic achievement is well established (Baumrind, 1966; Spera, 2005). Despite so much emphasis being placed on the contribution of educational institutions, our study highlights the importance that mothers and fathers play in building the foundations for competitiveness and productivity of our future generations.

6.2. For employers

The main premise of this paper was that the levels of discipline of individuals contribute to the accumulation of human capital. With discipline confirmed to not only impact competitiveness - both at the macro national level (Krskova and Baumann, 2017) and at the micro individual level (this study) - but also productivity (this study), employers could consider enhancing discipline in their workers through tailored training. We suggest that increasing levels of discipline might lead to more economically successful individuals, businesses and nations. Furthermore, building on the close links between competitiveness and productivity (Nickell, 1996), organisational leaders could also call for a measurement of the levels of discipline, competitiveness and productivity of students as a part of any work-readiness assessment of graduates.

6.3. For educational institutions

At school level, discipline is not about rules to show children who is in charge. It is not about punishing children. It is not about *what not to do*, but about *what to do* (Charles and Barr, 1992). Because teachers sometimes face students who are not aware of what proper and respectful behaviour is (McIntyre, 1989), by upholding the importance of discipline schools might be impacting communities and nations long term. In a time of continual requests for additional investment into education, efforts aimed at raising the importance of discipline in education might be a cheaper alternative in order to produce outcomes.

At university level, gaining a deeper understanding of discipline and other drivers of student competitiveness and productivity can assist educational institutions with implementing strategies and creating opportunities for further enhancement of individual competitiveness and productivity. When it comes to work readiness of graduates, it is not just about acquisition of hard skills (as supported by the degree awarded at the end of one's studies); educational providers can also facilitate the acquisition of additional "soft" skills (such as discipline) that have the potential to positively impact competitiveness and productivity, to ensure that graduates are fully equipped to participate in the workforce.

6.4. Theoretical implications

As foreshadowed at the onset of our article, the literature signalled that there is not only a link between competitiveness and productivity (Nickell, 1996), but also that discipline would impact competitiveness (Krskova and Baumann, 2017). What was, however, less clear was the role discipline plays at the individual, micro level in terms of explaining both competitiveness and productivity or the impact competitiveness has on productivity at the level of individual students. Also unclear was the impact of discipline in education and high expectations or participation in sport and music during school years on the interplay of the three main variables

(discipline, competitiveness and productivity). We have now contributed to a better understanding of the relationships between these variables.

7. Limitations and further research

No study is without limitations and ours is no exception. The sole reliance on self-reported responses is one example. Another comes from the general characteristics of the sample in the study; it would be helpful to examine more culturally diverse groups within one country and to extend the research to more countries. A further limitation relates to the reliance on retrospective perception of the more mature respondents, who were asked to reflect on their experience in school many years after completing their schooling.

There are many factors that impact on students' competitiveness and productivity, with the scope of this study having been focused on a specific number of these. Having empirically tested the interplay of individual competitiveness and productivity with the country of birth of current students and recent graduates, the focus of future research could be on investigating additional demographic variables. For example, in the light of competitiveness being viewed as associated more with males than females (Schneider et al., 2005) and productivity declining with age (Skirbekk, 2003), it would be interesting not only to examine the impact of age and gender on the individual competitiveness and productivity of university students but also of participants in the workplace. In addition, the interplay of individual competitiveness and productivity with innovation at the macro level established (Atkinson, 2013; Carayannis and Grigoroudis, 2014) and with innovation viewed as 'the defining challenge for global competitiveness' (Porter, 2001), it is recommended to probe the relationships, including the impact of discipline on innovation and creativity, at the individual, micro level. The 'alternative causal directions' (Baumann and Winzar, 2016, p. 21) of the relationship between sport and competitiveness should also be investigated.

8. Conclusion

The aim of our research was to explore the interplay between student discipline and individual competitiveness and productivity in the university context and this paper makes three unique contributions. Firstly, we present evidence in support of the importance of the role that discipline plays at the micro, individual level in explaining both competitiveness and productivity. Secondly, this article has shed light on additional drivers of individual competitiveness and productivity, namely mother's and father's expectations; the importance of discipline in primary education; and participation in sport-oriented activities. Thirdly, in the context of the Ecological Systems Theory and the Pygmalion effect (or more specifically the expectations placed on students by their parents), our study provides evidence in support of the importance that social environment has for individual competitiveness, and in turn for individual productivity.

We have opened our article noting the importance of productivity for the economic growth of nations. A point even more salient and pressing for each individual worker is the role that productivity plays in the levels of their personal workplace remuneration, as the more productive one is, presumably the higher the earnings. Hence, to achieve the highest possible payoff for each worker (for contributing to national productivity in the globally competitive economy), it is recommended that individuals (students and workforce participants alike), businesses and educational providers collectively look for opportunities to enhance the levels of discipline of individuals. This in turn will positively impact the levels of individual competitiveness and productivity. And the higher the levels of individual productivity, the more that can be achieved in the competitive marketplace overall, today and in the future.

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Appendix 4.A: Summary of construct measurements

Construct	Items	Key influencing references
Discipline *	<p><i>Focus</i></p> <ul style="list-style-type: none"> • I keep my goals in sight at all times • I am able to reduce distractions during the period of time I have set aside for studying • I am able to reduce interruptions during the period of time I have set aside for studying • I am able to say “no” to social pressure like going out with friends if I know I have to study • I feel enthusiastic about my learning • I feel passionate about my learning <p><i>Intention</i></p> <ul style="list-style-type: none"> • I feel like I have a purpose • I prepare for my classes • I have clear goals that I aspire to achieve • I set high expectations for myself <p><i>Responsibility</i></p> <ul style="list-style-type: none"> • I feel in control of what academic results I achieve at university • I believe that I have the ability to perform at high level in my studies • I do mind how long it takes me to finish my degree • I feel that if I trust higher forces, I will achieve good results <p><i>Structure</i></p> <ul style="list-style-type: none"> • I use a specific “per day” schedule or timetable to ensure I know what is happening when • I split my workload into small chunks to progress my projects (i.e. Assignment / essays) step by step rather than waiting to start work just before something is due • I like to create a routine for each of the subjects I study in a semester to keep me moving forward <p><i>Time</i></p> <ul style="list-style-type: none"> • When I manage my time better, I feel more disciplined • When I manage my time better, I perform better • I am on time to my classes • I allocate specific amount of time per day to a certain task • I am spending enough time on studying • I do not procrastinate a lot 	<p>Deci and Ryan (1985)</p> <p>Deci et al. (1994)</p> <p>Deci and Ryan (2000)</p> <p>Deci and Ryan (2012)</p> <p>Locke and Latham (1990)</p> <p>Locke (1996)</p> <p>Locke and Latham (2002)</p> <p>Bandura (1971)</p> <p>Bandura (1977)</p> <p>Bandura and Schunk (1981);</p> <p>Bandura and Locke (2003)</p> <p>Shapira (2017)</p> <p>Zimmerman and Schunk (1989)</p> <p>Schunk and Zimmerman (1998)</p> <p>Schunk and Zimmerman (2012)</p> <p>Britton and Glynn (1989)</p> <p>Macan (1994)</p>

Importance of discipline in primary education	<ul style="list-style-type: none"> Discipline was an important aspect in my primary school. 	Haroun and O'Hanlon (1997)
Importance of discipline in secondary education	<ul style="list-style-type: none"> Discipline was an important aspect in my secondary school. 	Haroun and O'Hanlon (1997)
Expectations Mother	<ul style="list-style-type: none"> My mother places high expectations on me to achieve high marks academically 	Wang and Heppner (2002)
Expectations Father	<ul style="list-style-type: none"> My father places high expectations on me to achieve high marks academically 	Wang and Heppner (2002)
Sport	<ul style="list-style-type: none"> Between the ages 5 and 18, how many years did you play sport for? 	Anderson et al. (2003)
Music	<ul style="list-style-type: none"> Between the ages 5 and 18, how many years did you play music for? 	Anderson et al. (2003)
Construct	Items	Sources of measurement items
Competitiveness	<ul style="list-style-type: none"> Other people comment on how competitive I am I try to be the best person in the room at almost anything Competition motivates me I perform better when I compete against others I can improve my competence by competing Competition allows me to judge my level of competence 	Newby and Klein (2014, p. 894)
Productivity	<ul style="list-style-type: none"> Right now I am working harder than usual The amount of work I have already done in the last twelve months is more than usual I am productive 	Baumann et al. (2016a, p. 2216)

Note 1: Items were measured by utilising a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

*Note 2: *The Cronbach's coefficient alpha for discipline construct was above the 'very good' range of .80 to .90 (DeVellis, 2017).*

Appendix 4.B: Overview of relationships between hypotheses and prior research

Panel A	
Competitiveness model hypotheses summary	Based on
<i>HC1: Discipline is significantly associated with individual competitiveness.</i>	Krskova and Baumann (2017)
<i>HC2: The importance of discipline in primary education is significantly associated with individual competitiveness.</i>	Krskova and Baumann (2017) & Haroun and O'Hanlon (1997)
<i>HC3: The importance of discipline in secondary education is significantly associated with individual competitiveness.</i>	Krskova and Baumann (2017) & Haroun and O'Hanlon (1997)
<i>HC4: Mother's expectations of high achievement are significantly associated with individual competitiveness.</i>	Wang and Heppner (2002)
<i>HC5: Father's expectations of high achievement are significantly associated with individual competitiveness.</i>	Wang and Heppner (2002)
<i>HC6: Participation in sport during school years is significantly associated with individual competitiveness.</i>	Anderson et al. (2003)
<i>HC7: Participation in music during school years is significantly associated with individual competitiveness.</i>	Anderson et al. (2003)
Panel B	
Productivity model hypotheses summary	Based on
<i>HP1: Discipline is significantly associated with individual productivity.</i>	Baumann et al. (2016b)
<i>HP2: The importance of discipline in primary education is significantly associated with individual productivity.</i>	Baumann et al. (2016b) & Haroun and O'Hanlon (1997)
<i>HP3: The importance of discipline in secondary education is significantly associated with individual productivity.</i>	Baumann et al. (2016b) & Haroun and O'Hanlon (1997)
<i>HP4: Mother's expectations of high achievement are significantly associated with individual productivity.</i>	Baumann et al. (2016b) & Wang and Heppner (2002)
<i>HP5: Father's expectations of high achievement are significantly associated with individual productivity.</i>	Baumann et al. (2016b) & Wang and Heppner (2002)

Productivity model hypotheses summary	Based on
<i>HP6: Participation in sport during school years is significantly associated with individual productivity.</i>	Anderson et al. (2003)
<i>HP7: Participation in music school years is significantly associated with individual productivity.</i>	Anderson et al. (2003)
<i>HP8: Individual competitiveness is significantly associated with individual productivity.</i>	Baumann et al. (2016a) & Baumann and Harvey (2018)
Panel C	
Moderating effects of country of birth	Based on
<i>HMC: Interaction of sport and country of birth is significantly associated with competitiveness in the Individual Competitiveness model</i>	Ryckman et al. (1992) & Tang (1999)
<i>HMP: Country of birth is a moderator in the Individual Productivity model.</i>	Baumann and Harvey (2018)

5. Conclusion

This thesis was designed to achieve three overarching objectives: firstly, to gain a better understanding of discipline, based on the perceptions of students about what discipline at university is; secondly, to develop a discipline measurement survey, based on the students' perceptions of discipline and a review of the literature, and to ascertain whether such an instrument is suitable for multi-country comparisons; and thirdly, to probe for associations between discipline and individual competitiveness as well as productivity in the university context.

Previous research has emphasised the importance of cognitive skills in human capital formation, with non-cognitive skills, such as discipline, receiving less attention. Therefore, viewing discipline as a skill and guided by *Human Capital Theory*, this thesis builds on the work of prominent economists such as Gary Becker (1993) and James Heckman (e.g. Cunha et al., 2005; Kautz et al., 2014) with the examination of discipline underpinned by a proposition that: *the higher the level of discipline a student has, the more he or she will be competitive and also productive* (as outlined in Chapter 1).

Support for the positive role of discipline at university emerged early; for example, the first participant in the initial exploratory interviews (discussed in Chapter 2) indicated that:

'If you learn discipline in school or in college, it definitely helps the rest of your life'. (Interview participant 1)

There are many factors that have the potential to positively impact the level of competitiveness and productivity of students, with discipline being one of such factors. The positive association revealed between discipline, competitiveness and productivity is also consistent with the basic human capital notion that increases in skills have positive impacts on productivity, as the

entire stock of human capital that individuals possess leads them ‘to greater workforce productivity’ (Kell et al., 2018, p. 2).

This thesis offers novel insights into a contributor to human capital: discipline, with each of the three papers (discussed in Chapters 2 to 4) making several distinct contributions - individually and synergistically - to the three specific areas of research interest: discipline, competitiveness and productivity. The main contributions and the implications of the thesis will be presented in the following sections, with limitations and suggestions for future research also outlined.

5.1. Contribution

In addition to shedding light on what discipline is in the university context, this thesis has made further contributions to measuring discipline through ascertaining whether the new discipline measurement instrument is applicable not only in one English-speaking country but is also suitable for multi-country comparisons; and through providing empirical evidence for the importance of discipline in explaining individual competitiveness and productivity in the university context. The main contributions of this thesis will now be discussed across three areas: contributions to theory, methodology and practice.

5.1.1. Contribution to theory

One of the main aims was to contribute to the body of knowledge by advancing the theoretical understanding of discipline in the university context. This was achieved by conducting both inductive qualitative and deductive quantitative research. In line with a taxonomy of theoretical contributions (Presthus and Munkvold, 2016), the original contributions of this thesis to theory have taken many forms, such as formulating propositions about the relationships between variables under examination, enhancing the understanding of the concept of discipline, and proposing a novel unified conceptual model of discipline.

In particular, Chapter 2, titled *F.I.R.S.T. Discipline towards work readiness – Investigation of university student perceptions of discipline*, focused on assessing what is known about discipline, in order to gain further understanding of the concept and to investigate how graduates could become more disciplined and more work ready. During the semi-structured interviews and the subsequent thematic analysis of the transcripts, five themes emerged, namely *focus, intention, responsibility, structure* and *time* (*F.I.R.S.T.*). Although students presented a wide variety of responses, the synthesis of their perceptions provides a compelling case for a new conceptual model of discipline (outlined in Figure 3.1), underpinned by theoretical foundations of *self-determination, goal-setting, self-efficacy, self-regulation* and *time management*.

The thesis presents a shift in thinking about discipline. It offers a reconceptualisation of discipline, through innovative interpretations of the interplay of theoretical perspectives (outlined in Figure 2.1 in Chapter 2):

- *Self-determination Theory* (Deci and Ryan, 1985),
- *Goal-setting Theory* (Locke and Latham, 1990),
- *Self-efficacy Theory* (Bandura, 1977), and
- The theoretical concepts in the field of *Self-regulation* (e.g. Zimmerman, 1986).

In addition to the application of the principles of *self-determination, goal-setting, self-efficacy* and *self-regulation* in the realm of student discipline, the prominent role of time management - highlighted by all but one participant during the interviews as being closely aligned with discipline - led to *time management* (e.g. Britton and Tesser, 1991; Macan, 1994) being included in the new conceptual framework (detailed in Figure 2.1) for investigation of discipline as the fifth theoretical perspective.

Closely related to the new conceptual model is a new definition of discipline proposed in this thesis: *Discipline is a combination of five dimensions: Focus, Intention, Responsibility, Structure and Time (F.I.R.S.T.)*, which extends the conceptual vocabulary for the investigation

of discipline.

When discussing what discipline at university is, students referred to discipline in terms of levels. Firstly, they referred to it in terms of the external influence of family or schools. Secondly, they indicated that as they became more disciplined over the years, they started to experience the feeling of being disciplined as well as being in control. Thirdly, students described it in this study as ‘internal discipline’, ‘personal discipline’ or an ‘internal mechanism’ for propelling individuals forward. Such a threefold view and the various meanings of discipline inspired the re-conceptualisation of discipline and the articulation of a Threshold of Discipline (presented in Figure 2.2).

For use in future theoretical work, the Threshold of Discipline is proposed as a new hierarchical, four-layered concept. The findings from this research suggest that individuals might differ in the levels of discipline reached in relation to the Threshold of Discipline. Depending on their progress through the layers, some individuals might benefit from structured assistance only with time management, for example, while others might benefit from learning more about goal setting or structuring their study or work. The ultimate goal of the progression through the Threshold of Discipline is the highest - fourth - level: Creative Discipline. Somewhat of a paradox and alluded to by only a very few students, creative discipline refers to a state where individuals are able to immerse themselves in an activity so deeply, while being structured, focused and organised, that they are able to harness the state of disciplined creativity.

In addition, as outlined in Chapter 1, research into the interplay between the human capital perspective and the impact of non-cognitive skills on human capital formation (e.g. Heckman and Kautz, 2012) was particularly influential in prompting the investigation of the relationships between the three main constructs under examination in this thesis: discipline, competitiveness and productivity. Guided by *Human Capital Theory*, discipline was identified as a non-cognitive

skill, with the potential to impact individual competitiveness and productivity. Thus this thesis contributes to the debate about the role of skills in human capital formation, highlighting discipline as a potential contributor to human capital.

5.1.2. Contribution to methodology

Chapter 3 - *The F.I.R.S.T discipline principles - Measuring student discipline at university* - sought to ascertain how to measure student discipline with reference to university students and this thesis offers an alternative approach to measuring it, as opposed, for example, to the 10-item ‘academic discipline’ measurement instrument put forward by Le et al. (2005). A new survey was developed aimed at capturing the five themes – *focus, intention, responsibility, structure* and *time* - discussed by students during the qualitative interviews. The development and validation of the measurement questionnaire, in line with methodology discussed by, for example, DeVellis (2017) and Streiner and Norman (1995), adds to the battery of instruments available for non-cognitive skill measurement, with Chapter 3 offering empirical evidence for the proposition that discipline consists of five dimensions of discipline: *focus, intention, responsibility, structure* and *time*, as well as validating the discipline measurement instrument as being suitable for multi-country comparisons.

This thesis also outlines models of individual competitiveness and productivity that illuminate the mechanics of the association between these two concepts and discipline. This research has broken new ground in terms of providing evidence of the role discipline plays in gaining individual competitiveness and productivity.

5.1.3. Contribution to practice

While it was anticipated that discipline at a university will be somewhat different to the concept as applied to discipline in schools, it was described by the participants as an enabler, enhancing the individual’s feelings of focus and purposefulness. The students perceived discipline as not

being externally enforced and described it as a mechanism for propelling individuals forward. Regardless of what country respondents were from, three distinct segments were revealed among them, namely low, medium and high levels of discipline, with less than 10% of all respondents (n=53) self-reporting their level of discipline as low, while 47% (n=253) viewed their level of discipline to be high (as reported in Chapter 3).

In addition, variability in the level of clarity about the role of discipline in participants' lives was uncovered in Chapter 2. While some students displayed deep conviction about the benefit of discipline, other students - the ones that self-reported as less disciplined - were unable to discuss it in much detail. In addition, those in need of becoming more disciplined (as self-reported) showed less clarity about what it means to be disciplined. They were also less clear about what strategies they could put in place to improve, which would indicate that those individuals needing the most assistance with increasing their levels might also need assistance with understanding the five building blocks of discipline (*focus, intention, responsibility, structure and time*). In other words, participants appeared to be at different places in the Discipline Threshold, with the less disciplined students discussing what university could do for them to 'stay on track', while the more disciplined students appeared to be more in control of their progress through university and articulated the five discipline themes in detail.

Chapter 4 provides compelling evidence for discipline being a factor of potential economic importance, with the responsibility for future competitiveness and productivity of individuals not resting solely on the shoulders of schools and educational institutions, but also with parents. The results provide support for the hypothesis that discipline is significantly associated with individual competitiveness and individual productivity. This is in line with past research (Krskova and Baumann, 2017), which established that discipline at school level has an indirect effect on competitiveness at the macroeconomic level.

The complex role of parents in the life of a student was also highlighted in Chapter 4 by the results for the role of the expectations of parents of high achievement in gaining both competitiveness and productivity. In relation to the Individual Competitiveness model, the second biggest effect revealed (after student discipline) was the expectations that fathers place on their children in terms of their academic achievement. When both the expectations of the mother and that of the father were entered into the model, the expectations of mothers did not appear to impact on competitiveness. However, when the expectations of the father were removed from the model (as a simulation of single-parent families), the expectations of the mother were revealed as significant. In the Individual Productivity model, only the mother's expectations were significant. It is possible that while fathers' expectations may mould behaviour (Jeynes, 2015), such as in sporting activities (which then translates into increased competitiveness), when it comes to gaining productivity, it is the mother – regardless of participants' country of birth - who instils the benefits of completing tasks and being productive.

In relation to the importance discipline played in schools, this research found evidence that the degree of importance placed on discipline in schools appears to be important at the primary school level but not at the secondary school level. This finding is in line with some authors highlighting the possibility of students disengaging from learning (Sarason, 1990) and losing the love of learning (Lumsden, 1999) by the time they enter high school, as was also alluded to by Professor Pasi Sahlberg, leading education expert and the Former Director General of Education in Finland (Sahlberg, 2006). Such a finding would suggest that it is predominantly primary schools that would benefit from a clear strategy to increase the importance of the role of discipline in their environment – through both the externally imposed discipline aimed at control of the student environment as well as the internally imposed *F.I.R.S.T. principles of discipline*, which can be imparted to pupils from a very early age.

In terms of past participation in sport, this research found that participation in sporting activities

between the ages of 5 and 18 positively impacts competitiveness. Such a finding is in line with the reported positive associations between sport and, for example, greater academic achievement (e.g. Broh, 2002). In the case of the respondents from the United States, the more years of sport that respondents played, the more competitive they became. However, the Chinese and Korean respondents reached a peak after playing sport for about two and half years. Despite the variability in how sport impacts gaining competitiveness, the findings would suggest that regardless of country of birth, students could benefit from participation in sports between the ages of 5 and 18.

5.2. Implications

The significance of the five discipline dimensions, referred to as *the F.I.R.S.T. discipline principles*, as enablers of competitiveness and productivity, lies in the wide applicability in a variety of settings, whether in the educational context or in workplaces. The research reported in this thesis offers numerous contributions to potential improvements in practice. The findings detailed in Chapters 2, 3 and 4 are discussed in the following order: for educational providers, industry, individuals and for parents. Implications for further research are outlined in the subsequent section.

5.2.1. For educational providers

At any educational level

All educational providers are in the business of enhancing human capital through enabling individuals to strive to reach their potential. The findings of this research could be utilised to guide educational leaders in designing specific strategies aimed at improving the levels of discipline among students and graduates. In an era of pressure on educational institutions to come up with innovative ways to increase the work readiness of students, this research provides an alternative to help graduates to be equipped to contribute from the moment when they join the workforce. In line with Kautz et al. (2014, p. 1), who highlighted that high quality programs

can ‘improve character skills in a lasting and cost-effective way’, *F.I.R.S.T. discipline principles* represent a low-cost avenue (as opposed to employing more staff or funding new infrastructure) for enabling higher academic outcomes. While many educational institutions already deliver programs underpinned by elements of *self-determination*, *goal-setting*, *self-efficacy*, *self-regulation* and *time management*, for others without such programs, the findings of this study could be used as a guide for assistance programs.

At school level

Building on Heckman’s argument about the importance of developing both cognitive and non-cognitive skills early in one’s life (Elango et al., 2015), we have an opportunity to instill the concept of discipline in our students early. While ‘some children have an advantage because they are born into families with greater ability, greater emphasis on childhood learning’ (Becker, 1993, p. 260), for others, for example from families where learning or education are undervalued, embedding discipline in the curricula has the potential to address such inequality. Upholding the notion that discipline is not about *what not to do*, but about *what to do* (Charles and Barr, 1992), development of the five *F.I.R.S.T. discipline principles*, could become a tool or building blocks towards success. It is a low-cost tool that can assist with narrowing focus, eliminating distractions, and setting goals and structures in place together with enhanced time management.

The principles could be incorporated into school curricula, similar to resilience-based interventions for schools, such as *the Asia-Pacific Resilience Project* (Sun and Stewart, 2010) that has been found to positively impact the mental health problems of students at the primary school level; or the whole-of-school approach of *Project Air Strategy for Schools* (Townsend et al., 2018) to intervention for personality disorders and self-harm in youth.

At university level

Just as ‘favourable graduate employment outcomes’ are of critical importance for future enrolments at higher education institutions (Jackson, 2014), the F.I.R.S.T. elements are relevant to all fields of study from humanities to business and engineering. Student development sessions could become an integral part of curricula, for example as a foundation unit, since students’ interaction with disciplinary (field of study) content could benefit from increases in the different aspects of discipline.

With the completion rates of university students remaining a concern (e.g. Smith et al., 2015), there is a constant search for better solutions and strategies for students at risk. In Australia, for example, the completion rates for the 2007 cohort of domestic bachelor students over a nine-year period was 73.6 per cent (DOE, 2017). With discipline linked to both retention and higher academic achievement (Robbins et al., 2006), it can therefore provide a valuable tool for students who might require assistance. It would enable educational institutions to assist both students “at risk” of academic failure as well as students wishing to further enhance their learning and academic achievement.

5.2.2. For industry

A deficiency in any of the discipline elements can derail individuals’ efforts to achieve a goal, leaving untapped potential both for them and for their employers. Educational providers could be requested to measure the levels of discipline, competitiveness and productivity of graduates as a part of their work-readiness assessment. Employers could also incorporate the measurement of discipline into their pre-employment assessments of new staff. In addition, they could assess how disciplined their current employees are. Such assessments would in turn provide an opportunity to implement tailored training for staff and to embed the discipline elements into continuous professional development (CPD) programs. By offering employees these principles as part of a suite of ‘learning tools and experiences they will need for continuous development’

(Deloitte, 2018, p. 9), employers would be in a position to enhance discipline in the workplace by empowering employees to achieve more.

Implementation of such a toolkit would be directly in line with discussions at the Commission of the European Communities (2009) about the role of education and training in the European Union's post-2010 strategy, and specifically around the proposition that 'adult education and training should give real opportunities to all adults to develop and update their key competences throughout life' (p. 3). After all:

'Skills enable people. They are capacities to function. Greater levels of skill foster social inclusion and promote economic and social mobility. They generate economic productivity and create social well-being. Skills give agency to people to shape their lives, to create new skills and to flourish.' (Kautz et al., 2014, p. 4)

5.2.3. For individuals (students and workforce participants alike)

In an era when it is expected that 'individuals take responsibility for lifelong learning' (PwC, 2018, p. 29), with the responsibility for professional and personal development shifting from employers onto employees, and when learning is being increasingly viewed 'as a lifelong process that involves repeated self-directed efforts to improve one's skill in not only academic and professional areas of functioning but also personal areas of functioning' (Zimmerman and Schunk, 2008, p. 23), mastering the *F.I.R.S.T. discipline principles* could enable individuals to take control of their own learning and development.

Each individual, at any stage of life, can unpack the five dimensions to assess which components would benefit from enhancement, which in turn could boost their achievement across many a domain. In addition, as 'employability is about being capable of getting and keeping fulfilling work' (Hillage and Pollard, 1998, p. 2), increasing the levels of discipline has the potential to increase the employability of individuals, regardless of age, industry or geographical location.

5.2.4. For parents

In keeping with the notion that ‘parents matter’ as they ‘continue to play a key role in student success and achievement’ (Harris and Goodall, 2008, p. 286), empirical evidence was uncovered in support of the critical role parents play in the lives of university students for years to come after the commencement of formal education, with fathers playing a significant role in individuals gaining competitiveness and mothers in gaining individual productivity. Such findings could provide grounds for society to rethink where, on the continuum of the levels of responsibility for the future success of our children, should the pendulum sit: closer to the schools, as is often argued in the popular press, or closer to home.

In line with literature on the positive role of sport in the lives of adolescents (e.g. Cheng et al., 2004) and the result that sport positively associates with individual competitiveness, parents could also influence the levels of competitiveness and in turn of productivity through the activities they encourage their children to get involved in. With sport being found to be significant, and music falling out of both the individual competitiveness and individual productivity models, parents might choose to encourage more sport participation in their offspring.

5.3. Limitations and future research

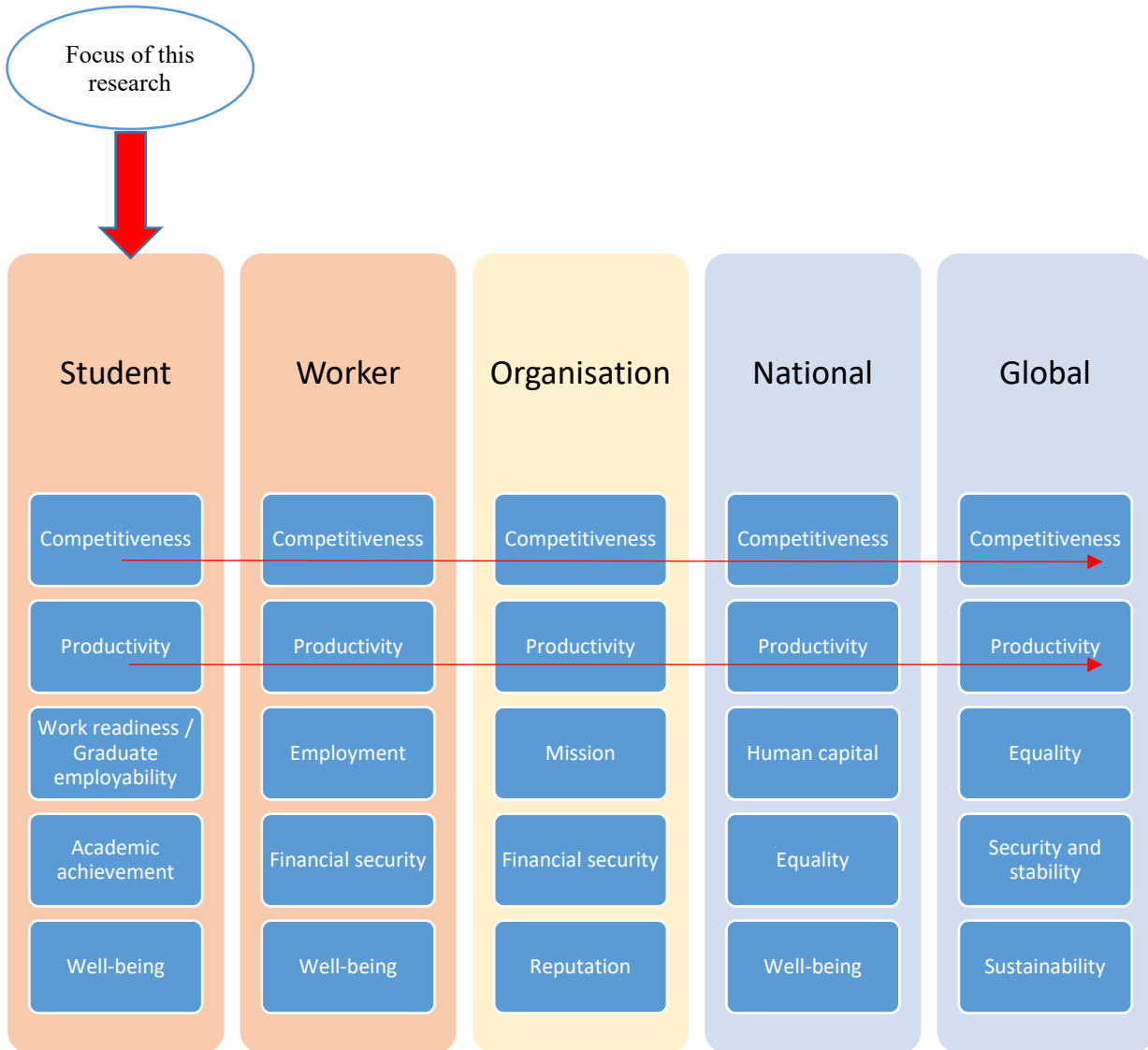
While the research was carried out thoroughly and meticulously, there are some limitations inherent in this study. Following the initial exploratory interviews in Australia, the primary interest lay with establishing whether the discipline measurement instrument could be validated. However, the scope of the quantitative phase of this thesis was limited to samples from China, Korea and the United States. Further empirical testing is therefore recommended across larger samples, in a variety of countries as well as with samples from a wider range of demographic differences. The inclusion of additional countries, for example, from Asia, would also further assist with addressing the need to consider influences impacting on students, such as time

management and goal orientation, in a cultural context and not only ‘from a Western perspective’ (McInerney, 2012, p. 392).

The current research focused on probing for moderation or interaction effects of country of birth, first examining the explanatory powers of discipline in the Individual Competitiveness model and then subsequently turning to examine the associations between variables in the Individual Productivity model, with competitiveness included as an independent variable. The scope of the study could therefore also be extended to include testing for mediation effects via Structural Equation Modelling (SEM).

The findings of this research align with the proposition that ‘success in higher education may translate into the increase in human capital to society’ (Wood and Breyer, 2017, p. 3), both at national and global level. With discipline found to be positively associated with competitiveness and productivity at the individual level, guided by the work on emergent properties (e.g. Fromm, 2005), additional studies could investigate the differences between the levels of discipline in individuals in work groups to ascertain how the relationship between discipline and competitiveness and productivity might play out in groups, and how the associations might change with increases in the numbers in a group. Future studies could also probe the associations at various levels of analysis, such as at a level of organisations, as well as across various forms of employment. The potential flow-on effect of increases in discipline and the various levels of analysis that can be addressed by future studies are illustrated in Figure 5.1.

Figure 5.1: Overview of the potential flow-on effects from increases in the levels of discipline (adapted from a representation of “Success factors for stakeholders” in higher education in Wood and Breyer (2017, p. 3)).



It could be informative to examine the relationship between student grade point average (GPA), as a proxy for academic performance, combined with discipline, competitiveness and productivity. Taking this one step further, as an assessment of readiness for transition to the workplace (Jackson, 2016), future investigations could include a longitudinal study of student discipline upon entering university and then upon graduation, particularly in relation to and complementary to internship work placements. Additionally, in light of the need to decrease dropout rates (Kell et al., 2018) and the potential for increased levels of discipline to be

advantageous for students at risk, the relationship between the levels of discipline of students and completion rates could be explored.

In terms of the newly introduced concept of Threshold of Discipline (detailed in Figure 2.2), it is recommended that future theoretical and empirical research should explore in further detail the mechanics of how individuals progress through the threshold.

Furthermore, much has been written about the desire to improve learning experiences and outcomes for students across various programs, including in the more technical fields of, for example, engineering (e.g. Allie et al., 2009) and mathematics (e.g. Thomas et al., 2017). Further investigation could therefore also provide greater insight into the levels of discipline among students across various fields of study.

In terms of specific research in relation to competitiveness, while evidence has been presented about the role of sport in gaining individual competitiveness, little is yet known about the influence of specific sports. Thus there is room for progress in determining the impact of group versus individual sports, as well as the influence of when (at what age) and for how long individuals participated in sports. It is also recommended that the ‘alternative causal directions’ (Baumann and Winzar, 2016, p. 21) of the relationship between sport and competitiveness be investigated.

5.4. Concluding remarks

In keeping with recent discussions regarding the potential of non-cognitive skills for enhancing success in many domains of life (e.g. Heckman and Kautz, 2012), this thesis illuminates the positive relationship between discipline, competitiveness and productivity. The findings suggest that higher levels of the five discipline dimensions, namely *focus*, *intention*, *responsibility*, *structure* and *time* (*F.I.R.S.T.*), can contribute to greater competitiveness and productivity, thus

highlighting the important contribution of greater discipline, in education and beyond. It is therefore hoped that although this thesis is focused on university students, its modest contribution to knowledge in the three areas under examination - discipline, competitiveness and productivity - could also serve as a foundation for future research in other fields.

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APPENDIX A

From: Alex Jackson **On Behalf Of** FBE Ethics

Sent: Wednesday, 8 March 2017 10:52 AM

To: Chris Baumann <chris.baumann@mq.edu.au>

Cc: Nikola Balnave <nikki.balnave@mq.edu.au>; Leigh Wood <leigh.wood@mq.edu.au>; Yvonne Breyer <yvonne.breyer@mq.edu.au>; Hana Krskova <hana.krskova@mq.edu.au>

Subject: Ethics application Approved 5201700175

Dear Associate Professor Baumann,

RE: 'Discipline as a driver for performance in tertiary education: Measurement and associations' (Ref: 5201700175)

The above application was reviewed by the Faculty of Business & Economics Human Research Ethics Sub Committee. Approval of the above application is granted, effective "7/3/2017". This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

<http://www.nhmrc.gov.au/files/nhmrc/publications/attachments/e72.pdf>.

The following personnel are authorised to conduct this research:

Associate Professor Chris Baumann

Professor Leigh Wood

Doctor Yvonne Breyer

Mrs Hana Krskova

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 7th March 2018

Progress Report 2 Due: 7th March 2019

Progress Report 3 Due: 7th March 2020

Progress Report 4 Due: 7th March 2021

Final Report Due: 7th March 2022

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:
http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>
http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of approval to an external organisation as evidence that you have approval, please do not hesitate to contact the FBE Ethics Committee Secretariat, via fbe-ethics@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely,

Dr. Nikola Balnave
Chair, Faculty of Business and Economics Ethics Sub-Committee

FBE Ethics Secretariat

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APPENDIX B

----- Forwarded message -----

From: **FBE Ethics** <fbe-ethics@mq.edu.au>

Date: Mon, Oct 30, 2017 at 9:56 AM

Subject: New Ethics Application (5201700956)

To: Chris Baumann <chris.baumann@mq.edu.au>

Cc: Leigh Wood <leigh.wood@mq.edu.au>, Yvonne Breyer <yvonne.breyer@mq.edu.au>, hana.krskova@students.mq.edu.au <hana.krskova@students.mq.edu.au>, Nikola Balnave <nikki.balnave@mq.edu.au>, FBE Ethics <fbe-ethics@mq.edu.au>

Dear A/Prof Baumann

Re application entitled: Discipline as a driver for performance in tertiary education: Measurement and associations

Reference Number: 5201700956

The above application was reviewed by the Faculty of Business & Economics Human Research Ethics Sub Committee. Approval of the above application is granted, effective "27/10/2017". This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Associate Professor Chris Baumann

Professor Leigh Wood

Dr Yvonne Breyer

Mrs Hana Krskova

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).

2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 27 October 2018

Progress Report 2 Due: 27 October 2019

Progress Report 3 Due: 27 October 2020

Progress Report 4 Due: 27 October 2021

Final Report Due: 27 October 2022

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/
Resources/Forms and Templates

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/

human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/

human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of approval to an external organisation as evidence that you have approval, please do not hesitate to contact the FBE Ethics Committee Secretariat, via fbe-ethics@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely,

Dr. Nikola Balnave
Chair, Faculty of Business and Economics Ethics Sub-Committee

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APPENDIX C

From: Irene Chen

Sent: Wednesday, 14 February 2018 2:31 PM

To: Chris Baumann <chris.baumann@mq.edu.au>

Cc: FBE Ethics <fbe-ethics@mq.edu.au>; Leigh Wood <leigh.wood@mq.edu.au>; Yvonne Breyer <yvonne.breyer@mq.edu.au>; Hana Krskova <hana.krskova@mq.edu.au>

Subject: amendment (5201700956)

Dear A/Prof Baumann

Re: Project entitled: Discipline as a driver for performance in tertiary education: Measurement and associations

Reference No.: 5201700956

Thank you for your recent correspondence. The following amendments have been approved:

- amendments to survey questions

If you have any questions or concerns please contact the FBE Ethics Secretariat on 9850 4826 or at the following email fbe-ethics@mq.edu.au

Yours sincerely,

Dr. Nikola Balnave

Chair, Faculty of Business and Economics Ethics Sub-Committee

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