

UNITED KINGDOM · CHINA · MALAYSIA

ACADEMIC PROCRASTINATION AMONG UK PHD STUDENTS

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Thesis submitted to the University of Nottingham for the degree of Doctor of Philosophy

January 2016

Abstract

The majority of research on academic procrastination has been conducted among undergraduate students, and there is relatively little research investigating procrastination among doctoral students. PhD students are different from undergraduates: they might need a higher level of self-regulatory ability to conduct research. The aim of this thesis was to fill the research gap in the investigation of academic procrastination among PhD students in the UK. More specifically, the current investigation combined different perspectives to examine the extent to which PhD students procrastinate, explores the relationships between a variety of psychological variables, doctoral satisfaction and academic procrastination, and identifies the antecedents and influence of procrastination in relation to PhD students' own experience.

This thesis comprises three studies. Firstly, a cross-sectional study (N=285) was conducted in order to assess the relationship between doctoral satisfaction, Big Five personality traits, self-efficacy, self-esteem, anxiety, depression, and academic procrastination. In Study 2, a longitudinal research design was employed to examine the stability of the identified relationships over a 12-month period (N=79). The results indicated that doctoral satisfaction and depression had long-term influence on PhD students' procrastinatory behaviour. In addition, conscientiousness was found to have an effect on academic procrastination only in the cross-sectional study, while openness was found to predict procrastination longitudinally. Moreover, doctoral satisfaction also had

meditional effect on the relationship between personality traits, self-efficacy, anxiety, and procrastination. In Study 3, the antecedents and consequences of academic procrastination in terms of UK PhD students' own perspectives were explored in twenty-one in-depth interviews. Data were thematically analysed and a description of the themes concerning antecedents, positive and negative consequences of procrastination, and coping strategies used to help reduce procrastination, is provided. The findings indicates that PhD students' procrastination is a multifaceted phenomenon with cognitive, affective, and behavioul factors influencing its likelihood.

Causes and effects of academic procrastination among PhD students are discussed on the basis of findings from the quantitative and qualitative studies, by considering individual differences, psychological state, and contextual factors in a new conceptual model of academic procrastination. The findings point to a range of possible procrastination-reduction interventions focused on doctoral satisfaction and psychological wellbeing. The strengths and limitations of this work are discussed.

Published work

Chapter 3 and 4 of this thesis have contributed to procrastination related conferences in the applied psychology field.

- Yang, Y., Houdmont, J. & Griffiths, A. (2014, 10th July). Academic procrastination in PhD students. *In: 28th International Congress of Applied Psychology*, Paris, France. (Chapter 3).
- Yang, Y., Houdmont, J. & Griffiths, A. (2015, 9th July). A longitudinal study of academic procrastination in PhD students. *In 9th Biennial Procrastination Research Conference*, Bielefeld University, Bielefeld, Germany. (Chapter 4).

Acknowledgement

This thesis would never have taken shape without the endless support, encouragement, and insight of my supervisors – Dr Jonathan Houdmont and Professor Amanda Griffiths. I cannot thank you enough for sharing your time and knowledge with me, providing constructive advice on research, and helping me develop independent research skills.

Many thanks are expressed to my friends and colleagues in Nottingham for support and useful discussions. Specially, I am grateful to Dr Luke Robles, for his generous support in helping me improve my thesis and for his time when I needed to talk. I also must thank my important friend – Dr Yinyin Zang, for being such a patient and supportive friend in the past four years.

My deepest thanks are to my families who have always encouraged me to follow my dreams. Their unconditional nurture, love, and tolerance have supported me throughout everything. Without these, I could not be confident to study in a foreign country. This thesis is dedicated to my lovely farther, mother, sister, and brother.

I also want to thank every person who gave me their time and participated my survey. I am grateful to every interviewee who allowed me to interview them and shared me their experiences and stories relating to me research project. This thesis would not have been accomplished without you and your generosity.

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Chapter 1: Introduction

1.1. Chapter overview

This chapter introduces the research area and describes the context of the present work. Outstanding gaps in the research topic are identified and the motivation behind the investigation of the research questions is explained. The chapter concludes with the research aims and describes how the research topic is addressed in subsequent chapters.

1.2. Statement of the problem

Procrastination – the unnecessary delay of things one intends to do – is a well-known phenomenon that has accompanied humankind since at least the times of Cicero (Klingsieck, 2013; Steel, 2007). It has attracted intense interest from researchers because of its existence across different aspects of life (Klingsieck, 2013). Study results report its prevalence rate in the general population as being as high as 20-25% (Ferrari & Díaz-Morales, 2007). Prevalence rates in the academic domain (i.e. procrastination within an academic-related context; e.g. writing term papers or preparing for an examination) are considerably higher at nearly 70% (Schouwenburg, Lay, Pychyl, & Ferrari, 2004). Some 50% of students procrastinate consistently and problematically (Day, Mensink, & O'Sullivan, 2000). In addition, increased attention has been paid to the influence of procrastinatory behaviour in the workplace in recent years (e.g. Skowronski & Mirowska, 2013; van Eerde, 2003b).

Procrastination therefore is a relatively common phenomenon for the general population, but previous studies indicate its wide-ranging effects have impacted on subjective well-being. Research has shown significant negative associations between procrastination and physical health (Sirois, Melia-Gordon, & Pychyl, 2003; Stead, Shanahan, & Neufeld, 2010; Tice & Baumeister, 1997), between procrastination and financial burdens (Mehrabian, 2000; Steel, 2007), and between procrastination and the preparation of retirement (O'Donoghue & Rabin, 1999). Procrastinators have also been found to exhibit more symptoms of anxiety (Pychyl & Flett, 2012; Watson, 2001), stress (Tice & Baumeister, 1997), worry (Fernie & Spada, 2008; Stöber & Joormann, 2001), guilt (Fee & Tangney, 2000), depression (Spada, Hiou, & Nikcevic, 2006; Steel, Brothen, & Wambach, 2001), and may even be more prone to suicide (Pychyl & Flett, 2012) than non-procrastinators. In the academic context, studies have shown that procrastination is associated with poor academic performance (van Eerde, 2003a). The above findings suggest procrastination is detrimental to subjective well-being for individuals across a variety of different social contexts.

Although increased attention has been paid to the seriousness of such needless delay across different domains of people's lives, and despite procrastination being linked to a range of negative outcomes, it remains "one of the least understood minor human miseries' (Ferrari, 1994, p. 673) and "much has yet to be learned about the cause of procrastination" (Steel, 2007, p. 65). A large amount of research has investigated procrastination in the various fields of psychology, namely social, personality, educational, clinical, and health psychology (Klingsieck, 2013). However, there has been much debate about

the causes, correlations, and consequences of procrastination over the last 40 years. Firstly, there is no commonly-shared definition of procrastination; instead, a variety of different definitions usually connote the different phenomena of procrastination (van Eerde, 2003a). More specifically, the term 'procrastination' is associated with different surrounding circumstances (Klingsieck, 2013). Some researchers, for example, suggest the term of procrastination means dysfunctional forms of delay, that it is "to voluntarily delay an intended course of action despite expecting to be worse off for the delay" (Steel, 2007, p. 66). Others interpret procrastination in relation to positive forms of delay, in that it "includes cognitive, affective, and behavioral components as well as the physical results and satisfaction with them" (Chu & Choi, 2005, p. 247). Some researchers holding the latter view believe procrastination is a strategic, rather than dysfunctional form of procrastination. Thus there is generally a lack of agreement about whether procrastination is functional or dysfunctional. One reason for this perhaps is that procrastination is a multifaceted phenomenon involving a complex processes which results in a variety of consequences.

Analogous to the different connotations of definitions of procrastination, a commonly-shared theory in understanding the concept still does not exist (van Eerde, 2003a). Klingsieck (2013) grouped the most elaborate and well-developed explanations for procrastination into four perspectives: *the differential psychological perspective, the motivational and volitional psychological perspective, the clinical psychological perspective, and the situational perspective*. In an attempt to understand procrastination, studies in

the differential psychological perspective have generally treated it as a personality trait or disposition (Johnson & Bloom, 1995; Lee, Kelly, & Edwards, 2006; Pychyl & Flett, 2012). This trait-based approach has focused on studying the relationship between procrastination and trait-like variables, mainly with regard to conscientiousness and neuroticism (Schouwenburg & Lay, 1995; Steel, 2007; Van Eerde, 2000). Understanding procrastination from *the motivational and volitional psychological perspective* has drawn on the failure in motivation or/and volition, leading to the intention-action gap (Klingsieck, 2013; Lay, 1986). That is, studies have focused on examining the relationship of procrastination with motivational and volitional variables such as locus of control (e.g. Brownlow & Reasinger, 2000), self-efficacy (e.g. Klassen, Krawchuk, & Rajani, 2008), self-regulation (e.g. Senécal, Koestner, & Vallerand, 1995), and goal orientation (e.g. Howell & Buro, 2009). In explaining procrastination, *the clinical psychology perspective* focuses on the conditions of, and interventions for, the clinical-related extent of procrastination (Klingsieck, 2013; Schouwenburg et al., 2004). Within this perspective, studies examine the association between procrastination and depression (Stöber & Joormann, 2001), anxiety (Spada et al., 2006), stress, and stressors (Tice & Baumeister, 1997). Unlike the aforementioned perspectives that address the sources of procrastination, temporal and situational variability of procrastination has been demonstrated within *the situational perspective*. More specifically, procrastination is understood as a dynamic behaviour that changes over time depending on the interaction of tasks and contexts (Moon & Illingworth, 2005), such as the difficulty and attractiveness of tasks (Ackerman,

2005; Blunt & Pychyl, 2000), and teachers' characteristics (Schraw, Wadkins, & Olafson, 2007).

Although the characteristics of procrastination can be reflected in the manifold theoretical approaches, there is a considerable degree of overlap between these perspectives, and a full understanding of procrastination cannot be developed by focusing solely on one approach. For example, there is an overlap between the differential and clinical psychological perspectives because the former defines procrastination as a personality trait, if not a lifestyle (Klingsieck, 2013). In addition, the situational perspective yields some other viewpoints because of the fact that how a situation is perceived, to a large extent, depends on the nature and character of one individual. Each perspective pays particular attention to certain aspects of procrastination while overlooking others, which, in turn, are highlighted by some other perspective. Consequently, in the attempts to fully understand the dynamics of procrastination, a combination of different perspectives will be addressed in the current investigation.

Another aspect of procrastination research that requires further attention is that procrastination studies have often drawn upon university/college student samples because of the high prevalence of unnecessary delay among undergraduate students, while investigation of PhD student samples are rarely included in academic procrastination research. It was estimated that 47% of students enrolled in doctoral programmes failed to complete their degrees within a period of 7 years in the US according to the Council of Graduate Schools (CGS, 2008). A more recent and comparable figure comes from the Higher Education Funding Council for England (HEFCE), where a national

survey reported that approximately 42% students qualified with a research degree award within 5 years in the UK (HEFCE, 2013). The low PhD completions rates have been a concern, because the reduced retention of the highly educated individuals would challenge economic and intellectual drains in both universities and funding agencies (Hwang et al., 2015; McAlpine & Norton, 2006). Nonetheless, doctoral education has received considerably less research attention compared with other aspects of higher education (Humphrey, Marshall, & Leonardo, 2012), and there is generally a lack of information on which and how, potential sources contribute to delay in completing, or failure to complete, PhD programmes.

Investigating the procrastination phenomenon and identifying factors related to doctoral students may not only help faculty members in higher education to ensure the timely completion of doctoral students' programmes, but may also shed light on comparing academic procrastination across different student samples which have been overlooked in procrastination literature. Currently, most research has identified the influence of demographic or situational factors on timely PhD completions (Kearns, Gardiner, & Marshall, 2008). For instance, previous findings indicate that PhD students in the science-based disciplines (Seagram, Gould, & Pyke, 1998), at full-time programme (Kearns et al., 2008), with research funding (Seagram et al., 1998), with prior research experience (Latona & Browne, 2001), and with supportive supervision (Lindsay, 2015) are less likely to delay on completions. In order to develop effective procrastination interventions, and to reduce PhD students' needless delaying, it

calls for more psychological approaches to identify factors related to PhD students' procrastinatory behaviour.

Another limitation of existing procrastination research is that most studies have been based on cross-sectional research designs (e.g. Alexander & Onwuegbuzie, 2007; Balkis, 2013; Ferrari, 1994; Steel, 2007). A cross-sectional approach collects data at a single point in time, which enables researchers to address some possible associations between the variables under investigation and to provide preliminary evidence to support further research. One clear limitation of the cross-sectional study is with regard to the stability of the relationship and its failure to give an assurance without examination over time. Longitudinal research design, as a result, is employed in the current study to investigate if, and how, the relationship between procrastination and studied variables changes over an extended period of time.

1.3. Research aims

As a result of the high levels of procrastination among students, the goal of this thesis is to fill the research gap in the investigation of academic procrastination among PhD students in the UK. More specifically, the current investigation combines different perspectives to examine the extent to which PhD students procrastinate, explores the relationships between a variety of psychological variables within the manifold theoretical approaches and academic procrastination, and identifies the antecedence, influence, and coping strategies of procrastination in relation to PhD students' own experience. The research was undertaken in UK universities, and consists of three studies. Study one

assesses the relationship between doctoral satisfaction, a set of psychological constructs, and academic procrastination within a cross-sectional design, while study two was subject to a longitudinal research design that attempts to examine the stability of the identified relationships over a 12-month period. Along with two quantitative studies, qualitative research was also conducted to explore a multifaceted and comprehensive description of antecedence, consequences, and coping strategies of academic procrastination from the perspectives of different students.

The decision to focus on the relationships between procrastination and a set of variables with regard to the Big Five personality traits, self-efficacy, self-esteem, anxiety, depression, and doctoral satisfaction was arrived at on the basis of contextual, theoretical, and empirical grounds. In relation to context, academic procrastination is of interest in this thesis, and there have been calls in procrastination literature to draw on a variety of samples within single-context settings (Klingsieck, 2013). Therefore, an important consideration for the current work was to go beyond the common undergraduate student samples to doctoral student samples which have been overlooked in procrastination research.

There are also strong theoretical and empirical reasons for utilising combined perspectives to fully understand PhD students' tendency to procrastinate. *The differential psychological perspective* has consistently identified procrastination as an immutable personality trait (Pychyl & Flett, 2012; Van Eerde, 2000). In particular, the link between the Big Five personality traits and

academic procrastination has been the subject of a large volume of procrastination research and seems well established for understanding the characteristic tendency to procrastination as a function of individual differences (Lay, Kovacs, & Danto, 1998; Schouwenburg & Lay, 1995; van Eerde, 2004). In addition, *the motivational and volitional psychological perspective* could have been subsumed under the differential psychological perspective with regard to personality variables; however, the former one extends the latter by investigating procrastination's association to modifiable variables (Klingsieck, 2013). Moreover, linking the variables of anxiety and depression from *the clinical psychological perspective* with procrastination is considered theoretically practically appropriate given that a range of studies have shown that anxiety and depression are associated with procrastinatory behaviour (Ferrari, Johnson, & McCown, 1995; Spada et al., 2006; Stöber & Joormann, 2001). Furthermore, doctoral students were found to experience high levels of stress and depressive moods which can affect academic performance (Andrews & Wilding, 2004; Eisenberg, Gollust, Golberstein, & Hefner, 2007). To further expand the body of knowledge on effects of negative emotions in PhD students' academic procrastination, an investigation into the relationship between anxiety/depression-procrastination seems particularly important.

1.4. Thesis importance and contributions

The present study has four advantages over existing research: First, previous procrastination research has commonly been dominated by college/undergraduate students, possibly because of considerations relating to

accessibility and studies that investigating academic procrastination among higher educational student samples (e.g. PhD students) remain underdeveloped. When combined with different perspectives of procrastination, the current work can help identify the extent to which PhD students procrastinate and the relationships between doctoral satisfaction, a set of psychological constructs, and procrastination. Second, the present thesis sheds light on the underlying psychological mechanisms of procrastination by employing a longitudinal research design. Although previous cross-sectional studies have contributed significantly to the current understanding of academic procrastination, a combination of cross-sectional and longitudinal research will help determine whether associations between variables under investigation are synchronous or lagged, and will explain the temporal effects of the study's variables on procrastination over an extended period. Third, the interview study will offer a broad and in-depth exploration of the antecedence, consequences, and coping strategies of academic procrastination from the perspectives of different PhD students. The findings may lay the foundations for designing interventions to reduce academic procrastination tailored to doctoral students' specific needs. Finally, the current thesis will make a specific contribution to procrastination literature by drawing on PhD student samples to provide a better understanding of the doctoral-related sources of procrastination that need to be addressed to identify strategies for reducing unnecessary procrastination and may also lead to improvements in the timely completion rates of PhD studies.

1.5. Structure of the thesis

Chapter 2 provides a comprehensive review of the literature that describes and summarises the existing background, theories, and empirical studies on

academic procrastination. Rather than simply describing the procrastination literature, the review identifies the strengths and key gaps, as well as the conclusions, of the existing literature. This will inform the present investigation to address the key aims and specific hypotheses on the basis of the strengths and weaknesses of the existing scientific research literature.

Chapter 3 presents Study one, a cross-sectional study of this thesis which will examine the relationships hypothsised in Hypotheses 1 to 4. The method, results and discussion of Study one will be outlined in this chapter. The findings will provide the baseline results for the following longitudinal study to examine the stability of results over time.

Chapter 4, therefore, presents Study two, a longitudinal study that will identify whether relationships found at the baseline carry over the next 12 months and test the Hypotheses 5 to 9.

Chapter 5 outlines the theoretical and philosophical background and methodological choices made for the qualitative study of this thesis. An interview study will be present with attempts to obtain a comprehensive description of antecedences, consequences, and recommended coping strategies of academic procrastination from participants' own perspectives without taking a specific theoretical perspective.

Finally, the findings of both quantitative and qualitative studies will be discussed, and the strengths, weaknesses, and implications will be outlines in Chapter 6.

Chapter 2. Literature review

2.1. Chapter overview

This chapter presents a comprehensive review of the literature that summarises and synthesizes the existing background, theories, and empirical work on academic procrastination. The findings of the review informed the present investigation into the current state of evidence on academic procrastination and about key gaps in knowledge and practice that are in need of further scientific exploration.

This chapter is divided into six sections. The first section, Section 2.2, provides the background to the current investigation, which pays particular attention to the definition, prevalence and measurement of academic procrastination. The next section, section 2.3, addresses the importance of examining academic procrastination among PhD students. The costs and sources of academic procrastination, particularly in relation to doctoral students, are highlighted to support the importance of the current investigation. In Section 2.4, a review of existing research involving the factors that contribute to academic procrastination is conducted. Section 2.5, therefore, presents the relationship between risk factors and procrastination. The findings of the review will be used to recognise current knowledge relating to the causes of academic procrastination, identify limitations in previous literature, and determine the key areas for further investigation by the current research (Section 2.6). Section 2.7 provides an outline of the key aims and specific hypotheses of the current

investigation based on the literature review. In the final section (Section 2.8), a summary of the literature review will be presented to close this chapter.

2.2. Definition and prevalence of academic procrastination

Procrastination is not a new concept and can be traced back to 800 B.C. It derived from Latin verbs, in which 'pro' refers to forward motion and 'crastinus' refers to belonging to tomorrow (Ferrari et al., 1995). However, a commonly shared definition of procrastination is an area of on-going debate (). That is, there exist a variety of different definitions that are disparately obscured and illuminated the nature of procrastination. One defining aspect of procrastination agreed upon is that it involves an act of postponing, delaying, or putting off of a task or decision (Corkin, et al. 2011; Steel, 2007),while others reveals the circumstance surrounding the different connotations of procrastination definitions.

For example. procrastination is defined as an intended voluntary delay in starting and/or finishing a task until the last minute or pass the predetermined deadline, despite the expectation of being worse off from such intended action (Abbasi & Alghamdi, 2015; Freeman, Cox-Fuenzalida, & Stoltenberg, 2011; Gupta, Hershey, & Gaur, 2012; Rozental & Carlbring, 2013; Steel, 2007). Procrastination is also defined in terms of process (behavioural vs. decisional) or context (general vs. academic) (van Eerde, 2003b). Milgram and Palti (1993) classified procrastination into five different types: (i) life routine procrastination, (ii) decisional procrastination, (iii) neurotic procrastination, (iv) compulsive procrastination, and (v) academic procrastination. While general

and academic procrastination are related to the avoidance of tasks, the other procrastinatory behaviours are more related to decision-making. The habit of putting tasks off, in general, is illustrated as the difficulty that an individual has in performing daily tasks with potential causative factors of incapability to organise time and manage workload effectively (Ferrari et al., 1995). Neurotic procrastination is represented as a delayed tendency towards decisions about important matters in one's life (Solomon & Rothblum, 1984). Decisional procrastination is a maladaptive behaviour of postponing a decision about different experiences with conflicts and choices (Ferrari et al., 1995). Compulsive procrastination is depicted as a delayed pattern of making behavioural decisions (Ferrari, 1991). Academic procrastination is defined in terms of students postponing their academic responsibilities such as doing homework, studying for exams, writing term papers, or performing academic administrative and attendance tasks, to the last possible minute (Schouwenburg et al., 2004; Solomon & Rothblum, 1984).

A variety of definitions are used to describe the phenomena of delay. Some researchers consider procrastination to be a dysfunctional form of delay (e.g., Steel, 2007; Burka & Yuen, 1983; Ellis & Knaus, 1977), while some acknowledge procrastination can be an adaptive form of intended delay (e.g., Chu & Choi, 2005). Klingsieck (2013) suggested that if there exists a commonly shared understanding of procrastination that would not only settle the debates as to whether procrastination is solely dysfunctional or has functional roles as well, but also help procrastination researchers to develop solid theories, valid instruments, and effective interventions. Thus, the author

of the current thesis analysed frequently cited procrastination definitions and catergorised them into various constituent parts:

a) An obvious or hidden act is delayed (e.g., Ferrari, 1994).
b) One delays beginning or completing an intended course of act (e.g., Lay & Schouwenburg, 1993).
c) The act is necessary or of personal interest (e.g., Lay, 1986).
d) The delay is a deliberate choice of the individual without imposing external matters (e.g., Milgram, Mey-Tal, & Levison, 1998).
e) The delay is unnecessary or irrational (e.g., Steel, 2007).
f) The delay is voluntary despite aware of its potential negative consequences (e.g., Steel, 2007).
g) The delay is always or nearly always accompanied with discomfort (e.g., Solomon & Rothblum, 1984).

In order to clarify the arguments regarding the dysfunctional or functional nature of procrastination, the characteristic of the delay itself should be understood. Naturally, the delay to become procrastination is the one which is unnecessary, irrational, or even harmful (Klingsieck, 2013; Steel, 2007). While in the case of functional delay, one might be aware of negative consequences of the delay but expecting that the positive consequences would outweigh these negative consequences (Chu & Choi, 2005). That is, research that deals with functional aspects of procrastination (e.g., Chu & Choi, 2005; Schraw et al., 2007) can be understood as strategic delay (Corkin, Yu, & Lindt, 2011). Consequently, combining different aspects of procrastination and extending the definition by Steel (2007), procrastination can be defined as the voluntary and unnecessary delay of an intended and necessary and/or important activity,

despite awareness of potential negative consequences that might outweigh the positive consequences of the delay (Klingsieck, 2013). Building on this base, the term ‘academic procrastination’ used in this thesis can be defined as the unnecessary delay of an intended act on academic activities/responsibilities, despite expecting to be worse off for the delay.

Generalised procrastination has been expected to affect 20-25% of men and women in everyday events, such as paying bills, paying taxes, or undergoing medical examinations (Ferrari & Díaz-Morales, 2007; Onwuegbuzie, 2004). McCown, Johnson, and Petzel (1989) found that approximately 25% of the non-student adult population considered their procrastination as a big problem, and 40% of them experienced significant financial loss because of their problematic delay. These results have been replicated by more recent studies (Dewitte & Schouwenburg, 2002), which highlights that procrastination is a recurrent behavior in modern societies (Rosário et al., 2009).

Although procrastination occurs in all kinds of daily life (Alexander & Onwuegbuzie, 2007), students tend to report more frequent academic procrastination than other groups. It had been estimated from both clinic experience (e.g. Ellis & Knaus, 1979) and self-report measures, that academic procrastination in tasks related to academic life are more prevalent in approximately 95% of college students and nearly 70% of university students (Day et al., 2000; Onwuegbuzie, 2004; Schouwenburg et al., 2004; Solomon & Rothblum, 1984). In 50% of the cases, university students consider their procrastination as consistent and problematic (Day et al., 2000). In addition,

university students have reported that procrastination typically accounts for more than one-third of their daily activities and up to 95% wish to reduce the extent to which they procrastinate (O'Brien, 2002). Moreover, undergraduate students procrastinate with writing term papers (46%) more often than reading assignments (30%), studying for exams (28%), or attending to academic (23%) and administrative tasks (11%) (Solomon & Rothblum, 1984). In another prevalence study conducted by Clark and Hill Jr (1994), a similar percentage of undergraduate students reported always or nearly always procrastinating on studying for exams (28%), writing term papers (30%), and reading assignments (36%). Furthermore, McCown and Roberts (1994) examined the levels of academic procrastination in terms of grade levels of university students and found that 23% of freshmen, 27% of sophomores, 32% of juniors, and 37% of seniors engaged in problematic delay. Academic procrastination appears to increase over the years during university life (Schouwenburg et al., 2004). Onwuegbuzie (2004), on the other hand found that 41.7% of US graduate students reported that they always or almost always procrastinate on their academic studies. Onwuegbuzie (2000) also noted that many graduate students procrastinate at various stages of the research process, including while engage in the literature review and writing research paper process. Thus, there is increased interest in conducting research that explains and identifies sources of academic procrastination across different domains and on a variety of samples. In spite of growing research attention, procrastination remains "one of the least understood minor human miseries" (Ferrari, 1994, p. 673) and "much has yet to be learned about the cause of procrastination" (Steel, 2007, p. 65).

2.3. The importance of examining academic procrastination in PhD students

Despite the increased prevalence of academic procrastination among university students, little empirical research has been conducted that focuses on the levels of academic procrastination and the causal factors contributing to procrastinatory behaviour among PhD students. Doctoral students are the most educationally advanced students in global higher education system that operate in different ways around the world (Hwang et al., 2015; Lindsay, 2015). For example, in the USA, PhD students compulsorily undertake oral exams prior to being entitled to start writing their thesis, which they may do after passing these so-called 'ABDs' (All But Dissertation) (Lindsay, 2015). In doctoral programmes in the UK, the writing up of the thesis is usually done continuously throughout a student's studies before the *viva voce* examination. In addition, the Higher Education Funding Council for England (HEFCE) proposes research degree qualification rates (RDQRs) for higher education institutions in England, recommending full-time and part-time PhD students to complete their studies in 4 and 7 years, respectively.

Golde (2000) indicated that doctoral students are the group least likely to achieve their degree, because they are expected to learn, to think and act like professional scholars by "watching faculty, conducting research on their own, attending professional meetings, and the like" (p.199). Doctoral completion rates and time-to-completion have been an ongoing concern for higher education research with a great number of studies focused on investigating impact factors associated with the delay or failure to complete their doctoral

programmes (Elgar, 2003; Lindsay, 2015; Martin, Maclachlan, & Karmel, 2001; Park, 2005; Wright & Cochrane, 2000). For example, Latona and Browne (2001) classified impact factors into three categories: (a) institutional/environmental; (b) individual supervisory arrangements; and (c) student cohort and characteristics.

Interestingly, little work has been conducted to investigate PhD students' procrastinatory behaviour related to their doctoral programmes. Although some studies indicate that graduate students are delaying completion of their doctoral dissertation because of situational, programme-specific, cognitive, and affective factors that cause them to engage in procrastination (Cook, 1958; Frank, 1984; Green, 1997; Muszynski & Akamatsu, 1991). Weidman, Twale, and Stein (2001) proposed that the Graduate Socialization Framework, which suggested that personal communities (e.g. family, employment) affected doctoral student completion. These findings explained procrastination among doctoral students and these external obligations might be the sources that cause students to delay progress, reduce persistence and motivation on coursework and their research projects and, ultimately, result in the failure to complete their doctoral programmes (Barnett, 2008; Boes, Ullery, Millner, & Cobia, 1999; Hwang et al., 2015).

There is a considerable body of empirical research investigating the relationship between procrastination and academic performance, suggesting that procrastination places potentially negative effects on learning and achievement, including lower grades and course withdrawals (Balkis, 2013;

Ferrari et al., 1995; Özer, Demir, & Ferrari, 2009; Rothblum, Solomon, & Murakami, 1986). Time pressure resulting from procrastination can compromise task accuracy and punctuality (Kim & Seo, 2015). Thus, it can be argued that procrastination would negatively influence performance (van Eerde, 2003b). Prolonged, unmanaged academic procrastination in students can result in deficiencies in the quality or quantity of their thesis and doctoral degrees. There is also economic and intellectual drains for both universities and funding agencies (Bowen & Rudenstine, 2014; Hwang et al., 2015; McAlpine & Norton, 2006) as well as social and personal consequences; for example, depleting intellectual competitiveness and devastation to personal lives (Gardner, 2009).

The close links between academic procrastination and doctoral degree completion has led to research investigating possible factors that could result in problematic delay in doctoral studies. Given the relatively small body of literature on procrastination among PhD students, a thorough understanding of the extent to which PhD students procrastinate and the causal factors contributing to students' problematic delay is needed, with the aim of identifying the sources of procrastination and to prevent/reduce procrastination-related doctoral completion decrements.

The existing literature on academic procrastination has identified a few risk factors to such behavioural postponements, such as task assertiveness, boredom, low self-efficacy, low self-esteem, perfectionism, low conscientiousness, and high neuroticism (Ferrari et al., 1995; Lay et al., 1998; Rothblum et al., 1986;

Senécal et al., 1995; Steel, 2007). However, the literature is still under-developed because of the lack of well-established empirical and theoretical procrastination research. One of the key limitations of existing research is that there is a lack of attention given to students in higher education. Therefore, little is known about the extent to which PhD students engage in problematic delay and the nature of the relationships between those potential causal factors and procrastination among doctoral students. Another key limitation of procrastination research is the lack of consistent evidence of those risk factors to procrastination over long periods of time. Most of the existing procrastination research has been dominated by the use of cross-sectional design; it is difficult to know how those psychological factors take effect over time.

The existing evidence and research provides important implications for the current investigation. Firstly, problematic procrastination is conceptualised as an example of an extreme variant of a fundamental personality trait, namely low conscientiousness. From the perspective of the Big Five personality model, for example, academic procrastination is associated with conscientious-related traits such as dutifulness, self-discipline, and deliberation.

Researchers need to develop a more accurate understanding of how and why these extreme personality traits come about, and their impact on procrastination. The effects of personality has received attention in terms of other maladaptive variants such as personality disorder (Pychyl & Flett, 2012; Widiger, 1997). However, Pychyl and Flett (2012) suggested that there is much more yet to

investigate with regards to the characteristic tendencies to procrastination as a function of individual differences. More attention is needed on academic procrastination among PhD students because academic procrastination is not just a factor behind a students' lack of progress, it is indeed possible to identify warning signs of successful and timely completions (Green, 1997).

Procrastination, especially academic procrastination, has sometimes been neglected because it has often been viewed as a cost only to the individual. There had been a concern that universities generally do not pay adequate attention to academic procrastination among students. However, as everybody is embedded in a social context, one individual's procrastinating behaviours inevitably affect others. Pychyl and Flett (2012) defined such phenomenon as *"second-hand"* procrastination. This involves constantly dealing with the psychological distress that this problematic delay creates, in terms of last-minute cancellation of social responsibilities and obligations, unnecessary and undesired engagement in other's task to help meet the deadline, as well as the continuing duplicity that is developed through excuse-making strategies to justify procrastination (Pychyl & Flett, 2012). The view that academic procrastination is a problem for individual PhD students rather than universities is thought to contribute to a lack of recognition and attention being given to the nature and effects of academic procrastination. This could compromise not only the highly educated individuals but also the faculty members in higher education.

To raise awareness and encourage actions for preventing or reducing the tendency to procrastinate, it is important to further investigate the nature and expression of academic procrastination among different individuals (e.g. PhD students). If doctoral students' related practices (for example, supervision, university counseling services, etc.) had a broader and more comprehensive understanding of sources and coping strategies of academic procrastination, students may be more motivated to change those sources and adopt effective strategies to decrease the tendency of problematic delay.

The current investigation employed mixed methods (quantitative and qualitative approaches) to explore the extent to which PhD students engage in academic procrastination, and to discover the relationship between a set of psychological constructs addressed from previous literature and academic procrastination. Understanding the antecedents and effects of procrastination and coping strategies will help PhD students and university educators acknowledge and understand students' procrastination levels and causal factors for procrastination. Consequently, it will aid them in setting effective coping mechanisms/interventions designed to reduce academic procrastination and promoting doctoral programmes.

2.4. Evidence of risk factors for academic procrastination

2.4.1. Demographic variables

Previous research found that demographic variables (such as sex, age, education) were potential indicators of procrastination tendencies (Ferrari et al., 1995; Ferrari, O'Callaghan, & Newbegin, 2005; Hammer & Ferrari, 2002;

Steel & Ferrari, 2013). For example, the relationship between gender and procrastination was examined by two large-scale investigations, a meta-analysis by Steel (2007) and a survey study by Gröpel and Steel (2008). These results indicated that gender is expected to show only a weak relationship with procrastination with coefficient $r=-.08$. However, gender differences with regard to academic procrastination is still a controversial issue that may be hard to predict and somewhat inconsistent (Özer et al., 2009). Previous literature investigated gender differences and the related construct of self-control. The results indicated that boys had higher levels of impulsiveness (Strüber, Lück, & Roth, 2008) and girls have higher levels of self-control (Higgins & Tewksbury, 2006); both are essential indicators of procrastination. Several studies supported the findings that males are at more risk of being procrastinators (Ferrari et al., 1995; Özer et al., 2009; Pychyl, Coplan, & Reid, 2002; Steel & Ferrari, 2013). Some studies suggested that women are more likely to engage in frequent procrastination (Doyle & Paludi, 1998; Solomon & Rothblum, 1984). However, other studies argued that there is no such gender difference in the incidence of procrastination (Alexander & Onwuegbuzie, 2007; Hess, Sherman, & Goodman, 2000; Onwuegbuzie, 2000, 2004).

With regard to age, procrastinators are somewhat more likely to be found in a younger age group (van Eerde, 2003a). From a neurobiological perspective, the prefrontal cortex are still developing and affect their ability for self-control (Jurado & Rosselli, 2007; Reyna & Farley, 2006). Therefore, they are believed to have no advantage on some forms of impulse-control (e.g. task delay, procrastination). Ferrari et al. (1995) demonstrated that procrastination

tendency reaches a peak for people in their middle-to-late 20s and declines until approximately age 60. In addition, when people grow old and mature, they tend to have higher levels of conscientiousness (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007) that is a key predictor of procrastination. Thus, it is possible that individuals may overcome their tendency to procrastinate as they grow older (van Eerde, 2003a). Moreover, O'Donoghue and Rabin (1999) have indicated that "many people who procrastinate only moderately do so not because of intrinsic self-control, but because they have developed schemes to overcome procrastination" (p. 807). It seems that people can learn to avoid procrastination (Steel, 2007). Earlier evidence from Ainslie (1992) and Baumeister, Heatherton, and Tice (1994) supports the view that people tend to procrastinate less after repeated practice. Moreover, Watson (2001) categorised procrastination scales into age groups and found that the younger participants, indeed, had significantly higher scores on the aversiveness scales. It is evident that, on the basis of a greater repertoire of past experiences, older people might have different perceptions toward task aversiveness. Thus, they are less likely to delay on some aversiveness than younger people. Furthermore, Steel's (2007) meta-analytic results found strong negative relationships between age and procrastination after correcting for age ranges. In terms of academic procrastination, Cao (2012) found that age-related academic procrastination differences were noted among undergraduate students, but not for graduate students. This implies the possibility that students may grow out of procrastinatory behaviours when they become more experienced in school (Cao, 2012).

2.4.2. Big Five personality traits and procrastination

Although academic procrastination may be seen as an outcome of many processes determined by personality, motivation, tasks characteristics as antecedents, most studies in the differential psychological perspective have conceptualised procrastination as an independent personality variable and have focused on investigating the nomological network of procrastination with regard to the Big Five personality traits model (Klingsieck, 2013; Klingsieck, Fries, Horz, & Hofer, 2012; van Eerde, 2003b; Watson, 2001). Tupes and Christal (1961) and Norman (1963) are commonly acknowledged for generating the Big Five (Judge & Ilies, 2002). Only in the past 3 decades has research on the Big Five traits become a profound area of investigation (Judge & Ilies, 2002). The structure of five factors personality has been generalised from culture, sources of ratings, and measures (John & Srivastava, 1999) from almost every major personality inventory, and from analyses of more than 15,000 traits in English and those in many languages (Goldberg, 1990). Evidence has suggested substantial heritability of the traits, which enable the Big Five to be one of the most widely accepted structures of personality (Judge & Ilies, 2002; Loehlin, 1992).

The Big Five personality traits include the dimensions of *agreeableness, conscientiousness, extraversion, neuroticism, and openness*. Of the five factors, *conscientiousness* is conceptualised as dependability and responsibility, the ability to plan, organise, and persist in the service of achievement (Bidjerano & Dai, 2007). *Agreeableness* is the tendency to be courteous, gentle, trusting, and treating others fairly and kindly (Judge & Ilies, 2002). *Neuroticism* is a

measure of emotional stability versus instability and is often linked to the tendency to show poor emotional adjustment in the form of stress, anxiety, and depression (Bipp, Steinmayr, & Spinath, 2008; Judge & Ilies, 2002). *Extraversion* is defined as the quantity and intensity of interpersonal interaction involving traits as assertiveness, sociability, impulsiveness, and cheerfulness (Bidjerano & Dai, 2007; Bipp et al., 2008; Watson & Clark, 1997). *Openness* consists of the facets of creativity, flexibility, curiosity, originality, and imagination (McCrae, Zonderman, Costa Jr, Bond, & Paunonen, 1996).

Conscientiousness

Previous meta-analytic results (Steel, 2007; van Eerde, 2003a, 2003b) indicated that procrastination negatively related to conscientiousness and its related trait. Lay et al. (1998) provided evidence that low conscientiousness is associated with procrastination in school children age 7-11 years, suggesting that procrastination may established a pattern early on in an individual's academic career. According to Costa and McCrae's (1992) facets of the five factor model, conscientiousness consists of the following facets: *competence, order, dutifulness, achievement striving, self-discipline, and deliberation*. Later, Johnson and Bloom (1995) conducted a facet level analysis on the association between conscientiousness and procrastination among young adults. The findings suggested that all the conscientiousness facets were negatively related to procrastination, with self-discipline being the strongest predictor. In addition, Roberts, Chernyshenko, Stark, and Goldberg (2005) tried to identify the underlying structure of the conscientiousness trait by conducting exploratory and confirmatory factor analyses together with criterion validation. A

comprehensive number of conscientiousness-related scales were administered to more than 700 participants. Six underlying factors (industriousness, order, self-control, responsibility, traditionalism, and virtue) were found with excellent convergent validity. Among these factors is one labeled as *responsibility,* which is defined as the "the diligent fulfillment of objectives" and it best represents procrastination.

It has been reported that the effect of tasks aversiveness in triggering procrastination has shown that conscientiousness moderates the relationship between procrastinatory behaviour and task aversiveness (Lay & Brokenshire, 1997; Somers, 1992). That is, people with low conscientiousness increase the effect of task aversiveness on procrastination. In addition, previous studies of personality and academic performance relationships have indicated that conscientiousness has a strong association with academic performance (Poropat, 2009; Steel, 2007). Steel's (2007) meta-analytic work of procrastination indicated that procrastination largely accounts for the relationship between conscientiousness and performance. As a consequence, "procrastination may be considered to be the most central facet of conscientiousness, but it is not conscientiousness itself" (Steel, 2007, p. 81).

Neuroticism

Neuroticism has also been examined as a source of academic procrastination (Steel, 2007). Neuroticism is usually associated with worrying, trait anxiety, negative affect, or a lacking of effective cognitive skills (Eysenck, 1967; Lee et al., 2006; Schouwenburg & Lay, 1995; Steel, 2007). There is evidence

however that neuroticism can facilitate motivation and effort expenditure, as was the case of defensive pessimism by those who are more susceptible to experiencing stress and anxious, and who, in anticipating a failure, prepare their efforts to preempt it (Norem & Cantor, 1986). The overall effect of neuroticism was more likely to be negative rather than positive (Bidjerano & Dai, 2007; Matthews & Zeidner, 2004). Researchers argue that if people procrastinate on tasks that are unpleasant or stressful, then those who are high in neuroticism would be more likely to experience more negative emotions and psychological distress, thus should procrastinate more (Brown, 1992; Burka & Yuen, 1983; Costa & MacCrae, 1992; Ellis & Knaus, 1979; Steel, 2007). Previous personality studies by Johnson and Bloom (1995) and Schouwenburg and Lay (1995) suggest that the relationship between procrastination and neuroticism was inconclusive. That is, neuroticism has either been a strong, weak, or null predictor of the tendency to procrastinate. However, recent meta-analytic findings from van Eerde (2003a) and Steel (2007) have shown that there is a positive, and often moderate association between procrastination and neuroticism with its related traits (e.g. fear of failure, perfectionism, self-handicapping).

Extraversion

Extraverts are often described as social, optimistic, outgoing, energetic, expressive, exciting, and impulsive (Steel, 2007). Extraversion is regarded as one of the more interesting, but one of the more complicated, possible causes of procrastination (Steel, 2007). McCown et al. (1989) employed principle components analysis on procrastination and indicated a type of procrastinator

as extraverted and outgoing. Other studies have shown some consistent results and suggest that extraverts are more likely to engage in social activities with friends, distracting them from important tasks, and, thus, facilitating procrastination (Fischer, 2001; Froehlich, 1987; Haycock, 1993; Strongman & Burt, 2000). In Steel's (2007) meta-analytic work on procrastination, an extremely weak association between procrastination and extraversion was found with a correlation of -.12. In addition, the effect of extraversion was subjected to the energy rather than the impulsivity component of extraversion. Freeman et al. (2011) found that people high in extraversion are more likely to engage in arousal procrastination. On the basis of Eysenck's arousal-based theory (1967), extraverts and introverts are subjected to behavioural differences. People who are higher in extraversion are believed to have lower levels of ascending reticular activating system activity than people who are lower in extraversion (Eysenck, 1967; Freeman et al., 2011). Therefore, extraverts may actively engage in arousal procrastination in terms of seeking to increase their internal arousal. That is, working against a deadline or under extreme pressure may result in a sort of peak experience. Extraverts, who are naturally low in arousal, may purposely put off tasks and wait until the last minute in order to achieve an optimal level of arousal (Ferrari, 1992; Freeman et al., 2011).

Agreeableness

Rebelliousness, hostility, and disagreeableness, from the perspective of clinical psychology, are considered to be major motivations for procrastination (Burka & Yuen, 1983; Knaus, 1998). Individuals with these personality traits are

expected to rebel against those externally imposed deadlines, and, thus, will procrastinate on them. By delaying those schedules and work, they intend to start doing it based on their own plan (Steel, 2007). Solomon and Rothblum (1984) investigated the antecedence of procrastination by conducting factor analysis and found a dimension labeled as *rebellion against control* was related to procrastination. No other significant results are reported for agreeableness in explaining procrastination.

Openness

According to McCrae et al. (1996), openness is defined as "a broad and general dimension, seen in vivid fantasy, artistic sensitivity, depth of feeling, behavioral flexibility, intellectual curiosity, and unconventional attitudes" (p.323). Of the Big Five personality traits, there is a strong association between openness and intelligence (Beier & Ackerman, 2001). Students high in openness are expected to be more imaginative, therefore may be more likely to attend class consistently and manage new learning which is essential to academic achievement (e.g. Lounsbury, Sundstrom, Loveland, & Gibson, 2003; Richardson, Abraham, & Bond, 2012; Zeidner & Matthews, 2000). Most procrastination research indicates that no direct correlation has yet been found between openness or intelligence and procrastination (Steel, 2007).

However, Milgram and Tenne (2000) proposed that people who are high in openness are more likely to engage in task avoidance toward academic assignments. That is, academic homework is often rote and lacks intellectual challenge, academic examination often assesses memory of facts and do not

elicit creative integration. Thus, students who are associated with not being perceptive, imaginative, or original, are more likely to complete their academic assignments. Students who are the opposite, on the other hand, are prone to elicit strongly avoidant reactions to those tasks.

In summary, the review of studies in this section supports the empirical grounds for adopting the Big Five personality model in the current investigation. The review found that the relationship between conscientiousness and procrastination are strong and consistent, whereas the findings of the associations between the other four traits and procrastination were inconclusive.

2.4.3. Self-efficacy

Although trait-based approaches to procrastination has been dominant in the literature, there is ample evidence that other conceptualisations of assessing procrastination deserve consideration (Flett, Stainton, Hewitt, Sherry, & Lay, 2012). More specifically, many researchers investigating the role of cognition related to delayed tendencies have introduced a cognitive approach. One is to focus on the cognitive process and beliefs of procrastinators, such as self-efficacy, and self-esteem. Self-efficacy often refers to people's self-assessment of their own capacities to organise and execute courses of action required to achieve designated types of performances (Bandura, 1997). Zimmerman (2008) conceptualises self-efficacy as the anticipation of success based on individuals' own competencies. In addition, Bandura (1997) proposed two related but distinct components of self-efficacy: (a) efficacy expectations and (b) outcome

expectations. Efficacy expectations refer to beliefs about one's ability to accomplish specific tasks while outcome expectations are beliefs about the possibility that certain behaviours will result in expected outcomes. In addition, there is a common mischaracterisation of self-efficacy as narrow in scope in which individuals evaluate their efficacy for a specific performance on a specific task (Bandura, 2012). Bandura (2012) indicated that general self-efficacy need to be assessed within a broad scope rather than a task-specific narrow measure which often bear weak relation both to domain-related self-efficacy beliefs and to behaviour.

According to Bandura (1997), self-efficacy has a strong impact on the choices people make, the effort they execute, and how long they persist when presented with a challenge. Perceived self-efficacy is positively related to academic motivation, learning, and achievement (Bong, 2001; Hen & Goroshit, 2014). Self-efficacy beliefs strongly influence task choice, effort, persistence, resilience, and achievement (Bandura, 1997; Pajares, 1996). Bandura (1997) suggested that in the presence of adequate levels of skills and motivation, high self-efficacy would create a positive influence on task initiation and persistence whereas, low self-efficacy would result in task avoidance, withdrawal, and other self-handicapping activities. This is supported by several research findings that a negative relationship between self-efficacy and self-handicapping was found (Martin & Brawley, 2002; Stewart & De George-Walker, 2014). Students with lower levels of self-efficacy for social or general daily tasks report more tendencies of self-handicapping behaviours, such as procrastination (Haycock, McCarthy, & Skay, 1998; Wolters, 2003).

Given the hypothesised effect that self-efficacy has played on initiating and completing behaviours, a significant number of studies reported a significant negative relationship between self-efficacy and self-reported academic procrastination (Seo, 2008; Steel, 2007; van Eerde, 2003a) with Steel's (2007) meta-analytic review reporting its average correlation as -.38. For instance, Tan et al. (2008) found that self-efficacy was negatively correlated with academic procrastination and students with high self-efficacy were reported to have high expectations of doing well academically.

A recent study by Cao (2012) found no significant relationship between self-efficacy and academic procrastination among graduate students, but reported that graduated students' self-efficacy was positively associated with Chu and Choi's (2005) characterisation of active procrastination. That is, graduate students may purposefully postpone academic tasks when they have strong beliefs about their capacity to accomplish tasks on time.

In addition, previous literature has suggested that self-efficacy plays a key role in mediating the effects of perfectionism on procrastination. A theoretical relationship between maladaptive perfectionism and self-efficacy was first addressed by Burns (1980) who suggested that "the higher the standard of success, the less likely it is that a successful result will be perceived as a probable outcome" (p.38). That is, perfectionists often set unrealistic goals and expectations that compromise their levels of self-efficacy. Although perfectionism is repeatedly considered to be one of the major causes of

procrastination, such as in popular self-help books and counselling resources, a meta-analytic review by Steel (2007) argued that there is no significant relationship between perfectionism and procrastination as the average correlation for this relationship was .17. Moreover, Seo (2008) proposed that the influence of self-oriented perfectionism on procrastination is fully, rather than partially, mediated by self-efficacy. Characteristics of self-oriented perfectionism are self-imposition of relatively high standards of one's behaviours and performance, and solely focus on either success or failure in the results attained (Flett, Hewitt, & Martin, 1995; Hewitt & Flett, 1991). Thus, self-oriented perfectionists, who believe they have the capacity to achieve the required standard are less likely to procrastinate on their tasks. Therefore, investigating the relationship between self-efficacy and academic procrastination among PhD students would clarify how students' judgment of their academic capabilities affects the tendency to procrastinate during their doctoral studies.

2.4.4. Self-esteem

Rosenberg (1965) defines self-esteem as a positive or negative attitude developed toward the self that comes from the evaluation of the self under different impact situations. Although self-esteem may seem to be similar to self-efficacy in terms of self-referent thought, it was argued that they are two different constructs (Haycock et al., 1998). Self-efficacy concerns individuals' perception of their ability to achieve desired outcomes, while self-esteem pertains to the levels of how people perceive themselves as valuable, talented, important or successful (Kandemir, İlhan, Özpolat, & Palancı, 2014). The

levels of self-esteem influence people's lives in many aspects, such as in academic and work achievement (Baumeister, Campbell, Krueger, & Vohs, 2003; Stajkovic & Luthans, 1998), social relationships (Steinfield, Ellison, & Lampe, 2008), and dealing with daily problems (Duru & Balkis, 2014). Baumeister, Tice, and Hutton (1989) suggested that people with low levels of self-esteem are encouraged to protect themselves by concentrating essentially on failures, possible losses, and the risks of losing self-worth, and they are more likely to engage in postponing or withdrawing without any efforts when they face failure (Di Paula & Campbell, 2002). Thompson (1999) proposed that if people were not confident about their abilities and performances, they would employ certain strategies, such as postponing their duties or responsibilities, in order to protect themselves from being hurt or judged and to protect their self-esteem.

With regard to the relationship between self-esteem and procrastination, previous research has shown a consistent negative correlation of r=-.27 according to Steel's (2007) meta-analytic findings. Procrastination is viewed as protecting people's vulnerable self-esteem (Burka & Yuen, 1983; Ferrari et al., 1995; Solomon & Rothblum, 1984). In other words, procrastination is viewed as a motivational strategy, serving temporarily to avoid a threat to one's self-esteem (Van Eerde, 2000), especially for those with low self-esteem. This is supported on the basis of experimental evidence with Ferrari (1991) identifying that procrastinators, who reported significantly lower levels of self-esteem, were more likely to choose "distracting noise" when accomplishing an experimental task compared to non-procrastinators. That is, high

procrastinators try to protect their self-esteem by providing themselves with an excuse for their (expected) poor performance. Ferrari and Tice (2000) found that procrastinators tend to postpone practice for a task when they are informed that the task would evaluate their intelligence, but not when the same task was described as non-evaluative. Procrastination may be activated under conditions that threaten the ego, because it appears that procrastination is the result of fear of failure in terms of low self-esteem.

2.4.5. Anxiety and depression

Procrastination is a complex phenomenon with cognitive, affective, and behavioural components (Rothblum et al., 1986; Watson, 2001). In fact, the clinical psychological perspective concerning academic procrastination has long considered procrastination as a behavioural problem primarily related to dysfunctional beliefs and accompanied by an internal, subjective discomfort usually thought to be anxiety in terms of persistently delaying academic tasks (Haycock et al., 1998; Pychyl & Flett, 2012; Watson, 2001). Irrational belief, cognition, or thought is a broad term that consists of several dysfunctional or anxiety-related norms (Steel, 2007). Procrastination is thought to heighten anxiety at various stages of task accomplishment. This anxiety may be a general response to certain tasks or may be regarded as a response that relates to fear of failure, perfectionism, irrational belief or low self-efficacy, and low self-esteem (Lay & Silverman, 1996). Thus, procrastinators will conduct some other, less anxiety-provoking activities to delay the initial task (McCown & Johnson, 1991). Aitken (1982) explained:

> The higher the possibility of rejection (real or imagined), the more likely it is that the individual will experience anxiety as he approaches the task. Since even talking about the project evokes feeling of anxiety, the procrastinators starts an alternate task or distraction. (p. 32)

McCown, Petzel, and Rupert (1987) argued that it is equally plausible that neurotics might be extremely motivated to remove the aversive tasks accompanied with discomforts. The consequences of facing a deadline unprepared may be so unpleasant that anxious people work extremely hard to escape ever confronting such stressful circumstances. It is plausible that anxiety can motivate people to work, but it also can become a source of delaying. Milgram, Gehrman, and Keinan (1992) suggested that procrastinators with low levels of anxiety tend to do the work more quickly if they have been give leeway, while high levels of anxiety make those procrastinators avoid their tasks and postpone more when given leeway. Onwuegbuzie and Collins (2001) investigated graduate students' academic procrastination in terms of their writing skills and found that graduate students with the lowest perceived scholastic competence and perceived creativity reported having the highest anxiety about writing.

Senécal, Lavoie, and Koestner (1997) identified self-evaluation to be the source of anxiety that contributes to academic procrastination. That is, procrastinators took significantly more time to commence a boring, difficult task when they expected their performance to be evaluated, compared to when no evaluation existed. It suggested that the threat of evaluation itself led to irrational delay rather than the aversiveness task. Nevertheless, the causal nature of the anxiety/procrastination relationship is presently unclear

(Onwuegbuzie & Wilson, 2003), and, it is often difficult to differentiate cause and effects between anxiety and procrastination (Ahern & Manathunga, 2004; Byrne, 1984).

PhD students might perceive a considerable amount of pressure to acquire research knowledge and skills that are needed for their professional practice (Hwang et al., 2015). Although many doctoral programmes build research projects into their studies, many of these students may still experience perceived anxiety in relation to conducting their research projects, such as research anxiety, statistics anxiety, library anxiety, and writing anxiety (Onwuegbuzie, 1997; Onwuegbuzie & Wilson, 2003). Onwuegbuzie (1997) found that research students who experience these perceived anxieties would struggle to initiate and accomplish their doctoral programmes by hindering them from acquiring knowledge and skills in research courses (e.g., quantitative and qualitative courses, mixed research courses), and decreasing their perceived confidence in conducting or completing their doctoral programmes. In other words, these anxieties may lead to procrastination during their doctoral studies.

Depression, low energy, learned helplessness, and pessimism are closely related to each other and to neuroticism (Steel, 2007). For example, Beck (1993) identified depression as resulting from irrational beliefs that lead to pessimism and self-dislike. A number of studies have shown that there is a positive correlation between neuroticism and depression (Kendler, Kuhn, & Prescott, 2004; Ruiz-Caballero & Bermúdez, 1995; Saklofske, Kelly, & Janzen,

1995). Costa and MacCrae (1992) described depression as a facet of neuroticism in their Big Five personality trait scale. McCown et al. (1989) performed a principle components analysis on several psychological inventories subjected to a group of self-reported procrastinators. The findings suggested that depression, neuroticism, and diminished feelings of control over situations tended to load together, which suggesting that collectively they could be considered as, at least, one possible source of procrastination.

From a clinical psychological perspective, depression consisted of some characteristics that could potentially cause the tendency of problematic delay. Depressed people tend to lack energy, cannot enjoy pleasure in life's activities, and are unable to concentrate on doing things. All of these are likely to cause people to postpone initiation and completion of tasks (Flett, Blankstein, & Martin, 1995; Solomon & Rothblum, 1984; Steel, 2007). One leading theory of depression was developed by Beck, Ward, and Mendelson (1961). The Beck Depression Inventory (Beck et al., 1961) has an item regarding procrastination: "I put off making decisions more than I used to." When energy in life waned, it is difficult and painful to work on tasks or even hard to initiate tasks (Burka & Yuen, 1983; McCown & Roberts, 1994).

The lives of doctoral students are undeniably stressful. In stressful situations, students might experience negatively affective states, such as anxiety and depression. Depression has been shown to be a serious problem for students and is related to loneliness, isolation, and other problematic outcomes (Saddler & Sacks, 1993). In Goplerud's (1980) study of graduate students' stressful

events in their graduate studies, 58% of negative life experiences that students reported were related to academia. Furthermore, 82% of these graduate students reported high levels of anxiety and 50% reported depressive symptoms. In addition, Stecker (2004) found that graduate students reported alarming symptoms of depression, stress, and substance use. As a result, they may become less effective students and their personal and professional lives may suffer (Byars, 2005). Depressed encounters may lead to the inability to effectively manage stressful situations from research tasks, as well as reduce concentration and lowered energy. Collectively, depression, fatigue and impaired concentration may undermine the students' capabilities to execute various research tasks resulting in delay.

The rationale for investigating depression as a source of academic procrastination was supported by Saddler & Sacks's (1993) study, which indicated that academic procrastination has independently been related to depression in university students.

There are a few studies that have examined the depression-procrastination relationships (e.g. Flett, Blankstein, et al., 1995; Flett et al., 2012; Saddler & Sacks, 1993), but information about these relationships is sparse and, empirically, their associations remain under-developed in comparison to the relationships between, for instance, procrastination and personality. Given the current position of research on academic procrastination among PhD students, the association of anxiety, depression and procrastination requires further exploration and clarification.

2.4.6. Doctoral satisfaction

Hwang et al. (2015) employed a mixed research design to investigate doctoral students' perceived barriers that slow the progress toward completing a PhD thesis. The results revealed six themes: External obligations, practical/logistical constraints, emotional concerns, challenges to doctoral-level researchers, programme structure, and lack of support for completion. Of the six themes, the first two themes were the most prevalent with corresponding frequency rates of 36% and 34% respectively. It suggests that the compartmentalised life of doctoral students involves multiple roles and obligations which are simultaneously allocated to students. As a consequence, these multiple roles, such as family or job obligations, might distract them from persistently focusing on achieving the requirements for their doctoral or professional development (Hwang et al., 2015). In other words, PhD students with family issues or extra paid-work obligations might be prevented from not being initiated and engaged in their own research projects.

A PhD student has many new responsibilities and challenges, such as attending research courses, acquiring new research skills, growing the knowledge to becoming a scholar, and communicating with research peers and professors. These might easily generate conflicts with their existing roles (Hwang et al., 2015). Moreover, Sanford (1966) indicated that it would be positive both for professional and personal development for people to make an effort to improve their challengeable situations by searching for a support system. The important role of support systems in doctoral programmes is consistent with Gardner's

(2009) findings that PhD students encounter too many challenges but not enough institutional support, which might lead to them being less actively engaged in their research studies and even dropping out from their doctoral programmes. In a study investigating the causes of research students' academic procrastination and lack of progress, Ahern and Manathunga (2004) found that students' dissatisfaction, in terms of lacking of integration with the institution's research culture, may be an underlying source of students' academic procrastination. The idea of integration types has been proposed by Lovitts (2001) who divided them into academic and social integration. Doctoral students need to be involved in the collective community of the department and be familiar with its disciplinary practices. In order to do this, doctoral programmes need to build a feeling of belonging into students' studies through establishing research or reading groups and seminar programmes to incorporate their students into the research culture (Ahern & Manathunga, 2004). Conversely, PhD students' dissatisfaction about their capabilities is likely to have an adverse impact on their motivation as well as task initiation and persistence. Thus, their dissatisfaction might lead to behavioural procrastination.

Another important component within the doctoral programme that might influence/delay PhD completion is PhD supervision. Several studies have acknowledged the integral role of the PhD supervisor (Lee, 2008; Lovitts & Nelson, 2000; Seagram et al., 1998). A few studies have highlighted the importance of the supervisory role of supporting the essential activities of PhD studies. For example, Bargar and Mayo-Chamberlain (1983) addressed the key

roles of supervisors and suggested that supervisors ought to encourage students' initial efforts, withhold criticism, and undertake a critical analysis of PhD studies throughout their studies. In addition, Lee (2008) identified a framework with five concepts of research supervision: (a) functional - encourage a rational progression through tasks; (b) enculturation - being 'gatekeepers' to their students to becoming a member of the disciplinary community; (c) critical thinking - challenge their students to question and analyse their work; (d) emancipation - supporting their students to develop themselves; and (e) developing a quality relationship - using emotional intelligence to enthuse and care for their students. Furthermore, in terms of thesis writing, Murray (2011) suggested that supervisors should motivate their students to initiate writing their thesis and to persist on writing throughout their doctoral studies. This was supported by a recent work by Lindsay (2015), who identified that doctoral students appreciate good relationships with their supervisors and indicated that students preferred supervisors who provided ongoing, constructive, and timely feedback on their research work. Ahern and Manathunga (2004) addressed a key source of emotional procrastination which could be a 'personality clash' between supervisor and the student (p. 248). More specifically, a clash of unclear, unrealistic, or unnegotiated expectations of each other might result in procrastination periods in which students seem to stall, drop their motivation, and are unable to make any progress.

Previous studies have provided further support for considering doctoral satisfaction as potential sources of academic procrastination in the current investigation. Unfortunately, PhD students have received relatively little

attention with regard to their perceived satisfaction towards their doctoral programmes and progress, and so far there has been no research that has investigated the relationship between doctoral satisfaction and academic procrastination. Based on previous research, it is reasonable to assume that PhD students who perceived dissatisfaction within the programme (e.g. doctoral programme structure, institutional support for research initiation and completion, practical constraints, supervision) can allow this to influence their doctoral progress in terms of delaying task initiation and completion, which leads to academic procrastination. The knowledge that doctoral students' perceived satisfaction may cause procrastinatory behaviour has important practical implication. This information can help both individual students and universities gain recognition and attention to the sources that compromise their perceived satisfaction, which in return can hamper a PhD student from being actively engaged in their research studies. It allows the university to make more informed adjustments about allocating resources to improve institutional factors and address supervision in need of attention.

2.5. Relationships between the study variables and academic procrastination

The previous sections have provided a comprehensive review of the study context, relevant procrastination theories, and the psychological factors under investigation in the current thesis, which include the Big Five personality traits, self-efficacy, self-esteem, anxiety, depression, and doctoral satisfaction. The review indicated that these psychological factors have been investigated frequently in procrastination studies, and that they have consistently shown to

have an important influence on procrastination. Despite the salience of these variables, and some similarities between them, it has been uncommon for researchers to study these factors together. In the current investigation these variables are investigated together and, it is important that they are not treated as entirely separate constructs with no discussion of their interrelationship or possible common core. Some studies, for example, Judge and Bono (2001) found that self-esteem, general self-efficacy and neuroticism can be derived from clear conceptual similarities among the higher order traits. In addition, personality psychology has also helped to identify versus specific factors (Judge, Erez, Bono, & Thoresen, 2002). Eysenck (1990), for example, considered self-esteem to be one of the lower order indicators of neuroticism. Hojat (1982) also found that self-esteem, locus of control, and neuroticism had their highest loadings on a common factor. While Judge, Erez, et al. (2002) indicated that self-esteem and generalised self-efficacy correlate somewhat strongly with the other Big Five personality dimensions (conscientiousness and extraversion) than does neuroticism.

In contrast to the consistent findings between conscientious and academic procrastination, the association between neuroticism and academic procrastination is rather inconsistent and more complex. On the one hand, it is a common belief that neuroticism relates negatively to individual's persistence in the academic context. Due to their fear of failure, neurotic students are expected to avoid failure by becoming less dedicated and persist on academic engagement (De Feyter, Caers, Vigna, & Berings, 2012; Furnham & Monsen, 2009; Komarraju & Karau, 2005). On the other hand, some researchers

suggested a positive impact of neuroticism on academic motivation. Previous findings indicated that neurotic individuals are unstable and emotional, thus may be more sensitive to stressful situations that generate anxiety and guilty thoughts. Consequently, instead of avoiding academic engagement, neurotic students might cope with their anxiety about failure by dedicating their efforts to academic work to prevent failure (Assor, Vansteenkiste, & Kaplan, 2009; Bidjerano & Dai, 2007; De Feyter et al., 2012).

In the literature on cognitive learning strategies, findings suggested that defensive pessimism and self-handicapping strategies were two different strategies to cope with anxiety about failure. Defensive pessimists cope with their anxiety by decreasing their success expectations with attempts to protect their self-esteem for academic failure (De Feyter et al., 2012; Elliot & Church, 2003; Eronen, Nurmi, & Salmela-Aro, 1998). In addition, Lim (2009) found that those people expected the conditional outcome of failure and understand that they cannot demage their academic performance by avoiding their studies. Self-handicapping strategies, on the other hand, deal with anxiety and fear of failure in terms of avoiding study engagement and procrastinating, in such a way that prevent the judgments of lacking of abilities (Eronen et al., 1998). Moreover, some researchers investigated the underlying cognitive process that determines students' coping strategies in the academic setting. Findings suggested that the self-handicapping strategy may be attributed to low levels of self-efficacy, while the defensive pessimist strategy was associated with medium levels of self-efficacy (De Feyter et al., 2012; Määttä, Nurmi, & Stattin, 2007). These findings suggested that neurotic students with fear of

failure would be more motivated in task persistence when they believed in their capacity to succeed. Otherwise, students with anxiety about failure would pursue to academic avoidance behaviours, such as procrastination.

Like all behaviours, understanding the process of procrastinatory behaviours would not be satisfied merely in ascertaining whether one factor has an effect on this behaviour by focusing on a specific context. Instead, researchers seek to explore further by identifying "what are the causal pathways through which a message exerts its effect?" and "what role does communication play in the transmission of the effects of other variables over time and space" (Hayes, 2009, p. 408). In this light, the current investigation proposes that a person's general evaluation of his/her PhD study – doctoral satisfaction - may play an important role in understanding academic procrastination as it partially mediates the relationship between those psychological constructs and procrastination. That is, PhD students' reactions to doctoral experiences and the research environment may be influenced by individuals' personality traits or psychological wellbeing, which in turn influences their tendency to procrastinate.

Research on the relationship between personality, job satisfaction and job performance indicated that job satisfaction explains, in part, the personality-performance relationship (Mount, Ilies, & Johnson, 2006). Based on previous research which has shown that personality traits are distal variables that affect behaviours through the mediating effects of proximal motivation processes

(e.g. Barrick, Mount, & Strauss, 1993; Judge, Heller, & Mount, 2002; Kanfer, 1990; Templer, 2012), the current thesis seeks to investigate why students' personality predicts procrastination by examining the one-way personality traits that influence students' doctoral satisfaction.

In turn, doctoral satisfaction may influence students' tendency to procrastinate through the motivational mechanisms explained above. In addition, research has shown that negative psychological well-being has the potential to create a bias in individuals' self-reporting on a wide range of variables, such as job satisfaction and coping behaviours (Bond & Bunce, 2003). More specifically, students with higher levels of negative psychological well-being, who feel depressed and anxious, may affect the extent to which their general attitudinal evaluation of their doctoral studies (e.g. doctoral stisfaction), which in return resulted in problematic delay. Although there is limited evidence addressing the anxiety/depression-doctoral satisfaction-procrastination relationship, some evidence does link psychological well-being to job satisfaction, and to performance (e.g. Bond & Bunce, 2003; Cropanzano, Rupp, & Byrne, 2003; Wright & Bonett, 1997).

In terms of self-efficacy and self-esteem, Judge and Bono's (2001) meta-analysis study reviewed the relationships between core self-evaluations (e.g. self-esteem, self-efficacy, emotional stability) and job satisfaction. It found that the correlations of the core trait with job satisfaction ranged from 0.24 for self-esteem to 0.45 for self-efficacy. Furthermore, Srivastava, Locke, Judge, and Adams (2010) found that management students' core self-evaluations influence

their task satisfaction. As reviewed in previous sections, with existing research showing a negative relationship between self-efficacy, self-esteem and procrastination, it is possible that self-efficacy, self-esteem influences procrastination in part because positive students obtain more intrinsic motivation on task accomplishment, and may also perceive the work to be more fulfilling and satisfying, thus leading to less procrastination.

2.6. Implications for further investigation in academic procrastination research

While procrastination research has indicated that the relationships between the Big Five personality traits, self-efficacy, self-esteem, anxiety, depression, and academic procrastination exists, there are a number of areas that remain inconsistent and unclear. The following section will focus on the areas that require clarification with the aim of highlighting the limitations that will be addressed in the current investigation.

The first major limitation of academic procrastination research is that these investigations rarely attempt to explore academic procrastination among PhD students and to discover relationships between these psychological constructs and procrastination. Previous literature has focused mainly on the single aspect of undergraduate students or college students. Because PhD students share different academic responsibilities and obligations compared with undergraduate students, and doctoral study is research-oriented, further work is required that emphasises positive behaviour that directly serves the objectives of the research projects and contributes to achieving their professional

identities. This might involve addressing different relationships between psychological constructs and procrastination because of the various individual characteristics and institutional and/or environmental factors associated with doctoral programmes.

The second major limitation of procrastination research is that the majority of studies are based on a cross-sectional research design. Most procrastination studies reviewed in this thesis have collected data at a single point in time. In this type of study the prevalence of specific predictor factors and outcomes (e.g. procrastination) can be calculated for a given population and levels of exposure to factors and outcome status can be compared. Previous investigations using such designs often provided various important scientific contributions, such as developing a new procrastination measurement, addressing possible associations between risk factors and procrastination, explaining a novel questions or testing a complex hypothesis (e.g. mediator or moderator) that had not previously been tested. Therefore, a cross-sectional research design remains a popular method for procrastination research. It should be noted, however, one potential reason for some inconsistencies in previous research associating a set of psychological constructs (e.g. neuroticism, self-efficacy, anxiety) with procrastination may be attributed to the timing of the single assessments used in those studies (Rice, Richardson, & Clark, 2012). A careful search through the peer-reviewed journals indicated that the number of procrastination studies using longitudinal designs was relatively low. Academic procrastination has been generally treated as an example of a fundamental personality trait and implicitly assumed as a stable

disposition across tasks, contexts, and time (Ferrari et al., 1995; Pychyl & Flett, 2012; Schouwenburg & Lay, 1995). However, some contradicting theoretical and empirical studies have provided evidence to conceptualising academic procrastination as a situation-related dynamic behaviour that would change over time (Blunt & Pychyl, 2000; Moon & Illingworth, 2005; Tice & Baumeister, 1997; Van Eerde, 2000). The question about whether academic procrastination is stable over time has yet to be answered. As a consequence, it highlights the importance of introducing a longitudinal design to the current investigation to examine the stability of academic procrastination over time.

Most procrastination studies using longitudinal design have assessed the relationships between psychological wellbeing, academic performance, and procrastination among college students across a semester. For example, Tice and Baumeister (1997) found that procrastinators reported lower stress and fewer health symptoms earlier in the semester, but those effects were reversed later in the term. Moon and Illingworth (2005) found higher procrastinator reported lower performance throughout their semester-long study with no shift in the effect of procrastination. A recent study by Rice et al. (2012) using a similar cross-panel design examined the stability of maladaptive perfectionism, procrastination, and psychological distress across 3 time points within a college semester. The lack of research examining the lagged effects of personality, self-efficacy, self-esteem, doctoral satisfaction, anxiety and depression in relation to academic procrastination, highlighted the importance of investigating how these relationships would be affected over time.

Longitudinal designs collect data at multiple time points, which allows researchers to find stronger evidence to address the stability of relationships in the dataset. Steel (2007) also recommended and emphasised the value of assessing relationships between studied constructs and procrastination over longer time periods to gain a clear understanding of these associations. In addition, collecting data and measuring relationships at multiple time points improved the capacity of research by reducing common method variance and excluding third variable explanations for the relationships in question. Moreover, in longitudinal research the researchers examine temporal effects from that allow them to assess whether changes in the outcome variables are related to the changes in the predictor variables. In sum, the strengths of longitudinal research hold strong emphases on the need for studies that collect data from multiple time points to clarify the stability of associations and establishing causal relationships.

The third major limitation of procrastination research literature is the need for further investigation into PhD students' actual voices and subjective theories that might acquire new insights for theoretical groundwork in procrastination research and for the development of procrastination interventions. With regard to procrastination interventions, researchers argued that current procrastination intervention programs failed to receive overall but marginal effectiveness (Ferrari et al., 1995; Klingsieck, Grund, Schmid, & Fries, 2013). One possible explanation might be that essential aspects of academic procrastination for interventions remain underdeveloped. That is, interventions are subjected to specific theoretical considerations (e.g.; procrastination is trait-like personality

variables) and crucial ideas for developing interventions programmes might still be unclear because of the fact that specific reasons and correlates of procrastination have not been fully investigated (Klingsieck et al., 2013). Procrastination studies reviewed so far point towards two characteristics: Firstly, most procrastination research has focused on investigating procrastination as a dispositional variable; more specifically, relating it to trait-like personality variables (Díaz-Morales, Cohen, & Ferrari, 2008; van Eerde, 2003a). Most studies have used a cross-sectional design involving instruments assessing procrastination and other constructs. As a consequence, researchers have called for consideration of situational aspects of procrastination. Secondly, existing procrastination studies have predominantly used a quantitative design, and students' perspectives of their own experience of procrastination and their subjective theories about their problematic delaying have often been neglected. In addition, Klingsieck et al. (2013) indicated that the focus on personal aspects of procrastination and the predominant quantitative research design might lead to some form of foreclosure. More specifically, researchers might fail to notice situational, specific, or personal aspects of procrastination (e.g. procrastination among PhD students), because the quantitative design involves instruments assessing procrastination and other constructs based on a specific research background. Therefore, conducting a qualitative study to investigate PhD students' own perspective on academic procrastination would provide insight into the thinking underlying their subjective experiences.

A careful search through the peer-reviewed literature since Steel's (2007) meta-analysis review indicated that the number of procrastination studies using

qualitative design is relatively low. Schraw et al. (2007) conducted the first qualitative study on investigating antecedents and consequences of academic procrastination among undergraduate students. Although their findings were argued by other researchers on the basis of reports of "successful procrastinators" (p. 24), it was the first qualitative study which extended the current understanding of academic procrastination and provided many new ideas for procrastination interventions. A recent work from Klingsieck et al. (2013) employed an interview study which provided initial insights into antecedents of academic procrastination. Grunschel, Patrzek, and Fries (2013) extended previous studies by conducting a microanalysis on antecedents and consequences of academic procrastination from students' subjective perspective within different subgroups of procrastinating students (e.g. counselling group vs. non-counselling group). However, most studies have been conducted concerning the causes and effects of procrastination, few have focused on identifying possible coping strategies that guide students' procrastination (Owens, Bowman, & Dill, 2008). Schraw et al. (2007) indicated that students' experienced coping strategies would be valuable objects of future studies aiming at assisting academic procrastinators to reduce their difficulties. Given that these researchers have only investigated undergraduate students in past research, the current investigation will adopt a qualitative approach implemented through interviews with PhD students. Therefore, adopting both quantitative and qualitative research design in the current investigation would help the researcher to gain a more in-depth understanding of PhD students' academic procrastination. More specifically, a qualitative study could provide a holistic perspective and shed light on the

findings from both the cross-sectional and longitudinal studies, and explore the reasoning behind participants' responses.

2.7.The current investigation

The procrastination literature reviewed in this chapter had informed the propositions to be examined in the current investigation. This review recognised that academic procrastination remained underrepresented in procrastination research, and highlighted the importance of focusing on PhD students' academic procrastinatory behaviours. The review also examined existing knowledge regarding the relationship between Big Five personality traits, self-efficacy, self-esteem, anxiety, depression, PhD students' perceived satisfaction towards their doctoral studies, and academic procrastination. It also uncovered the essential areas that have often been overlooked in previous research. These involve identifying the extent to which PhD students procrastinate, examining the stability of relationships between academic procrastination and a set of psychological constructs, doctoral satisfaction, and investigating academic procrastination more thoroughly by conducting a qualitative approach with PhD students' own perspectives. The limitations of previous procrastination research have led to the overall objective of the current investigation, which will be described in the following section.

2.7.1. Study aims

The overall objective of the current investigation is to explore the nature and provide a more in-depth descriptive account of academic procrastination among PhD students. The findings of this research are expected to provide a

more detailed understanding of the antecedents of academic procrastination, the relationships between the studied variables and procrastination, which will help inform effective intervention programmes. The current research also aims to reduce academic procrastination among PhD students by suggesting effective coping strategies and support mechanisms.

The literature reviewed in the current chapter has led to four specific aims of the current investigation. The first aim is to examine the prevalence of academic procrastination among PhD students in the UK, and explore the gender and age difference in academic procrastination. As reviewed in the current chapter, Onwuegbuzie (2004) indicated that between 40% and 60% of graduate students in the United States reported that they nearly always or always procrastinated on writing a term paper, studying for examinations, and completing weekly reading assignments. Flett et al. (2012) found procrastination levels are lower among graduate students in Canada. However, it appears that no research has examined the extent to which PhD students in the UK procrastinate during their doctoral studies. This is the first aim of the current research. In addition, literature reviewed in this chapter indicated that both gender and age differences, with respect to academic procrastination, remain controversial and may be hard to predict (Steel, 2007). Although some studies reported significant gender and age differences (Milgram, Marshevsky, & Sadeh, 1995; Pychyl et al., 2002), other studies found no such gender and age differences (Ferrari, 2001; Steel, 2007). It is important to investigate the effects of gender and age on academic procrastination to further understand the factors contributing to procrastination.

The second aim of the current research is to investigate the relationships between academic procrastination and a set of psychological constructs, such as Big Five personality traits, self-efficacy, self-esteem, anxiety, depression, and doctoral satisfaction. There are strong theoretical and contextual grounds for using the multidimensional Big Five personality traits to explain academic procrastination as a trait-like variable, and of the five personality variables, conscientiousness is expected to explain variance in academic procrastination. Self-efficacy, self-esteem, anxiety, and depression are expected to explain variance in academic procrastination above and beyond that explained by the Big Five personality traits.

The third aim of the current investigation is to use a longitudinal research design to clarify the stability and mechanism of relationships between academic procrastination, psychological constructs, and doctoral satisfaction. Given the lack of longitudinal research in this area, the present study employed a longitudinal design with a 12-month interval to clarify the strength of these effects over a significant time period. The findings are expected to build on the results of cross-sectional studies. The longitudinal research design is also expected to test the predictive power of the conscientiousness trait and other psychological constructs through time. Moreover, the mediational effect of doctoral satisfaction on the relationship between the psychological constructs and academic procrastination were tested in a longitudinal model.

The final aim of the current investigation is to conduct a qualitative approach to gain more in-depth understanding of the patterns behind PhD students' academic procrastination and shed light on the findings from both cross-sectional and longitudinal studies. The key questions behind this qualitative study are 'what are the antecedents and consequences of procrastination in PhD students?' and 'what coping strategies do PhD students apply when procrastinating?' The systematic investigation into PhD students' actual voices and subjective theories about academic procrastination would be an important step towards extending procrastination research. The findings are expected to form both a foundation for new lines of procrastination research and a basis for developing intervention programmes to reduce procrastinatory behaviours.

2.7.2. Research questions and hypotheses

The review of the literature in this chapter tailored the development of several hypotheses with specific focus on identifying the extent to which relationships between academic procrastination and a set of psychological constructs, and doctoral satisfaction, are stable over time. The first set of research questions responds to the first aim of examining the prevalence of academic procrastination among PhD students in the UK and investigating the gender and age difference in procrastination. Accordingly, the first set of research questions for the current investigation is as follows:

Question 1a: what is the prevalence of academic procrastination amongst PhD students?

Question 1b: Are there gender differences in academic procrastination among PhD students?

Question 1c: Are there age differences in academic procrastination among PhD students?

The next hypotheses focus on the extent to which the effect of satisfaction with doctoral content and progress may be associated with academic procrastination. Accordingly, the hypothesis is formed:

Hypothesis 1: satisfaction with doctoral content and progress accounts for a significant portion of the variance in PhD students' academic procrastination after accounting for students' age and gender.

From a personality research perspective, the trait approach to procrastination has predominated in the procrastination literature. As reviewed in this chapter, procrastination is consistently associated with the Big Fiver personality traits. More specifically, a recent meta-analysis pointed to conscientiousness as the strongest predictor of academic procrastination (Steel, 2007). Accordingly, the next sets of hypotheses were formed:

Hypothesis 2a: Big Fiver personality traits accounts for a significant portion of the variance in PhD students' academic procrastination over and above that accounted for by doctoral satisfaction.

Hypothesis 2b: there is a negative direct relationship between conscientiousness and academic procrastination, and the relationship is stronger than the other four personality traits.

Sources of academic procrastination among PhD students will be examined in more detail by investigating the effects of self-efficacy, self-esteem, anxiety and depression on their procrastinatory behaviours. As mentioned earlier,

several studies from the literature have addressed the contribution of these psychological constructs to academic procrastination. However, the extent to which procrastination is influence by self-efficacy, self-esteem, anxiety, and depression remains underdeveloped according to some inconsistent findings from previous studies. Therefore, the next hypothesis focuses on examining the extent to which the effects of these variables may be associated with academic procrastination. Accordingly, a hypothesis is formed:

Hypothesis 3: Self-efficacy, self-esteem, anxiety and depression account a significant portion of the variance in PhD students' academic procrastination over and above that accounted for doctoral satisfaction and personality.

Finally, the stability of the aforementioned relationships will be examined over a12-month follow-up, as it is important to observe whether the effects are constant over a longer period, for example, 12 months. Accordingly, the final sets of hypotheses with regards to the associations between predictors at the baseline time point (Time 1) and the outcome at the follow-up time point 12 months later (Time 2), and the mediational effect of doctoral satisfaction on the relationship between psychological constructs and procrastination. These hypotheses are as follows:

Hypothesis 4: Satisfaction with doctoral content and progress at Time 1 are associated with academic procrastination at Time 2 after controlling students' age and gender.

Hypothesis 5a: Big Five personality variables at Time 1 are associated with academic procrastination at Time 2 over and above after controlling doctoral satisfaction.

Hypothesis 5b: Conscientiousness trait at Time 1 will significantly predict academic procrastination at Time 2, and the impact is stronger than the ones with the other four personality traits.

Hypothesis 6: Self-efficacy, self-esteem, anxiety, and depression at Time 1 are associated with academic procrastination at Time 2 over and above that accounted for doctoral satisfaction and personality.

Hypothesis 7: Doctoral satisfaction at Time 1 mediates the relationship between personality factors at Time 1 and academic procrastination at Time2.

Hypothesis 8: Doctoral satisfaction at Time 1 mediates the relationship between self-efficacy, self-esteem, anxiety at Time 1 and academic procrastination at Time 2.

2.8. Chapter summary

This chapter reviewed the current literature on academic procrastination with regard to its background, theories, and empirical work. A range of putative risk or predicting factors were reviewed. The overall aim of the current investigation is to explore the nature and underling mechanism of academic procrastination among UK PhD students. In order to achieve this, the current investigation applied both quantitative (cross-sectional and longitudinal) and qualitative approaches. Several hypotheses were developed based on the literature and aforementioned aims. The first study is cross-sectional study and will answer the research questions 1a, 1b &1c and examine the relationships considered in Hypotheses 1 to 3. It provided the baseline results for determining the stability of relationships over time. The method, results, and discussion of the findings of the cross-sectional study are presented in the next

chapter (Chapter 3). The second study is the longitudinal study and will identify whether relationships found at baseline carry over to the next 12 months. The longitudinal study tested Hypotheses 4 to 8, and this study is presented in Chapter 4. The third study is a qualitative study and investigated PhD students' subjective experiences and perspectives of antecedents, consequences and coping strategies toward academic procrastination. This study is discussed in Chapter 5. Chapter 6 discusses general findings and implications.

Chapter 3. Time 1 Cross-sectional associations between doctoral satisfaction, psychological constructs, and academic procrastination

3.1 Chapter Overview

This chapter presents findings from the cross-sectional (Time 1) phase of the current investigation. The aims of this cross-sectional study are threefold. First, to profile the degree to which PhD students engage in academic procrastination in the UK, and explore the gender and age differences in academic procrastination. The second aim is to explore the nature and strength of relations between doctoral satisfaction, a set of psychological constructs, and academic procrastination. The third aim is to generate baseline data to examine the lagged effects (these are presented in the longitudinal study described in Chapter 4).

This chapter is divided into six sections. The first section states a brief description of the theoretical and empirical background of this study, leading to Hypotheses 1 to 3. The second section presents the method used to collect the data, and includes a detailed description of, and justification for, the data collection procedure, recruitment strategy, and study measures. The third section presents the ethical consideration of this study. The next two sections state the procedures of data analysis and the descriptive and inferential results. The sixth section presents a discussion of the results in relation to extant theory and evidence.

3.2 Rationale and aims of the current study

Research into academic procrastination has often drawn on undergraduate student samples, probably for reasons of availability (Klingsieck, 2013). There are relatively few studies that have investigated procrastination among graduate student samples (e.g. Collins, Onwuegbuzie, & Jiao, 2008; Onwuegbuzie & Collins, 2001; Washington, 2004). Onwuegbuzie (2004) suggested that procrastination is detrimental to the individuals who are in the higher education context, with prevalence rates of between 40 and 60% of graduate students in the United States. However, it appears that a study has yet investigate the extent to which PhD students procrastinate in the UK. Thus, further research with PhD student populations in the UK is warranted. In addition, previous research found the demographic variables (e.g. age, gender) as potential indicators of procrastination tendencies, although age and gender differences with regard to academic procrastination is still a controversial issue that is somewhat inconsistent (Özer et al., 2009; Steel, 2007). In the course of comparing procrastination across different age and gender groups, the current research is also expected to explore the effects of age and gender on academic procrastination among PhD students. Consequently, the first aims are to examine the prevalence of academic procrastination among PhD students in the UK, and investigate the gender and age difference in procrastination. Accordingly, the first three research questions that correspond to the first aims are as follows:

Question 1a: what is the prevalence of academic procrastination amongst PhD students?

Question 1b: Are there gender differences in academic procrastination among PhD students.

Question 1c: Are there age differences in academic procrastination among PhD students

As stated in the previous chapter, research on procrastination has shown that college students' satisfaction with academic life was associated with persistence and continuation with their academic study (Chow, 2011; Lent, Singley, Sheu, Schmidt, & Schmidt, 2007). Thus, the effect of PhD students' academic satisfaction may play an important role in understanding academic procrastination. Previous studies also investigated the relationship between personality and procrastination (Aitken, 1982; Lee et al., 2006; McCown & Johnson, 1991; Milgram & Tenne, 2000; Watson, 2001). Many claims have been made with respect to the Big Five model of personality of those who experience procrastination; more specifically, people low in conscientiousness and high in neuroticism are more likely to procrastinate, and the conscientious trait was considered as a significant predictor of procrastination (Lee et al., 2006; Ross, Canada, & Rausch, 2002; Scher & Osterman, 2002; Schouwenburg & Lay, 1995; Steel, 2007). Moreover, low levels of self-efficacy and self-esteem have also been found to be associated with students' problematic delay (Bandura, 1997; Chow, 2011; Kandemir, İlhan, Özpolat, & Palancı, 2014). In other words, academic procrastination may be influenced by the extent to which individuals intrinsically believe in their abilities to complete their academic tasks successfully, and to what extent they believe that failure at work suggests inadequacy. Furthermore, anxiety and depression have often been suspected as cues for delaying the completion of academic tasks (Costa & MacCrae, 1992; Ferrari et al., 1995; Steel et al., 2001).

On the basis of foregoing, the current study seeks to test the following hypothesis:

Hypothesis 1: Satisfaction with doctoral content and progress accounts for a significant portion of the variance in PhD students' academic procrastination after accounting for students' age and gender.

Hypothesis 2a: Big Fiver personality traits accounts for a significant portion of the variance in PhD students' academic procrastination over and above that accounted for by doctoral satisfaction.

Hypothesis 2b: There is a negative direct relationship between conscientiousness and academic procrastination, and the relationship is stronger than the other four personality traits.

Hypothesis 3: Self-efficacy, self-esteem, anxiety, and depression account for a significant portion of the variance in PhD students' academic procrastination over and above that accounted for by doctoral satisfaction and personality.

3.3 Method

3.3.1 Participants

The population for the current study was students registered on a course of PhD study at a UK university. Participants were sampled in two phases. PhD students from the University of Nottingham were invited to participate in the study during the first stage of data collection between April and May 2013. In May and June 2013, the questionnaire was made available to students at other UK universities.

3.3.2 Procedures

A self-reported questionnaire was developed that comprised of a series of previously published scales of the variables under investigation. It was sent to three PhD colleagues from the researcher's department for pilot-testing. The questions were revised in response to feedback from the reviewers. For the first phase of data collection, all postgraduate students from the University of Nottingham were informed of the study in an email sent by an administrator who was able to access students' internal University of Nottingham email addresses.

The email explained the purpose of the study and participants ethical rights. In addition, it provided a link to the online questionnaire that was hosted on the survey tool SurveyMonkey. Three reminder emails were sent to all eligible PhD students over a span of 6 weeks from April 2013 through May 2013 after the initial distribution. In the second phase of data collection (from May 2013 to July 2013), UK PhD participants were recruited from online postgraduate forums to increase the sample size. This included postgraduateforum.com at which postgraduate students gather to discuss any issues relating to postgraduate study. An advertisement relating to the study was placed in the forum.

3.3.3 Measures

The survey consisted of seven sections that included measures of PhD student's procrastination, satisfaction with doctoral content and progress, self-efficacy, Big Five personality traits, self-esteem, depression, and anxiety.

Demographic information (age, gender, types of PhD) was also collected. The full measures can be found in Appendix 5. These measures were as following:

Academic procrastination. This was measured by the Aitken Procrastination Inventory (API) which is a self-report inventory developed to differentiate chronic procrastinators from non-procrastinators among college students (Aitken, 1982). Some terms in some of the API items were revised to ensure their relevance to PhD students. The measure consists of 19 items involving a 5-point response scale ranging from 'strongly disagree' (1) to 'strongly agree' (5), the item scores are summed to yield the scale score. Higher scores indicate higher levels of procrastination. Previous studies have shown the scale to have high reliability and validity (Duru & Balkis, 2014; Moon & Illingworth, 2005). It was found to have a coefficient Alpha of 0.82 in the current sample, which is consistent with that achieved in Aitken's original study (1982). Sample items include: 'I delay starting things for so long that I don't get them done by the deadline' and 'It often takes me a long time to get started on something'.

Doctoral satisfaction. This was measured using two single-item questions 'How satisfied are you with the progress of your PhD' and 'How satisfied are you with the content of your PhD so far'. Responses were given on a five-point Likert scale, from *Satisfied (5)* to *Not satisfied (1).* These two questions were specifically developed for PhD students to think about their PhD life with regard to self-perceived satisfaction with regard to their doctoral content and progress. Single-item measurements provide an appropriable and convenient way to data collection under the researcher's wishes to limit the

overall length of the questionnaire (Bowling, 2005). The approach is valued also when the objective of the research is to possess a 'snapshot' of a subject rather than detailed diagnostic information (Houdmont, Kerr, & Randall, 2012). The responses for the two single-item questions were summed up to give a total score, and the higher the participants' score, the higher their self-perceived doctoral satisfaction.

Personality. The Big Five personality traits were measured using the 10-item personality scale (Big Five Inventory-10 [BFI-10] (Rammstedt & John, 2007). This short version of the well-established BFI-44 was developed to provide a measure of personality in contexts of extreme time constraints (Rammstedt & John, 2007). In general, an extremely brief measure is needed (Bosnjak et al., 2013). Moreover, traditional BFIs with 20 items or more were much too lengthy in the present study that required participants to rate themselves on several traits on multiple occasions; multi-item scales would have burdened participants excessively so the short BFI-10 version was used to assess the five dimensions using only two items for each dimension. Sample items include: 'I see myself as someone who has an active imagination' and 'I see myself as someone who does a thorough job'.

An examination of the retest reliability, factorial and inter-rater validity of this short personality measure across several US and German student samples suggests that the BFI-10 showed acceptable psychometric properties and respectable levels of stability (Freudenthaler, Spinath, & Neubauer, 2008; Rammstedt & John, 2007). However, internal consistency coefficients were not presented for the BFI-10 scales as they did not display appropriate indicators of

their reliabilities. It is, however, unrealistic to expect high alphas when the 2-item scales of the BFI were primarily selected to measure a maximum bandwidth of each Big Five domain (Freudenthaler et al., 2008; Gosling, Rentfrow, & Swann Jr, 2003). The BFI-10 scales also showed respectable convergent and discriminant validity with regard to both their associations to the NEO-PI-R scales (Costa & MacCrae, 1992) and their relations to peer ratings of the participants' personality traits (Freudenthaler et al., 2008). In comparison with the intercorrelations among the NEO-PI-R domain scales in which the highest exceed 0.40 (Costa & MacCrae, 1992), the BFI-10 scales indicated to be quite independent from each other with mean intercorrelations ranged from 0.08 to 0.13, offering further evidence of their discriminant validity (Freudenthaler et al., 2008; Rammstedt & John, 2007).

Self-efficacy. The General Self-efficacy (GSE) scale developed by Schwarzer and Jerusalem (1995) was used to measure self-efficacy. It consists of 10 items designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. Responses were recorded on a four-point scale ranging from 'not at all true' (1) to 'exactly true' (4). The responses for each of the ten items were summed to give a total score, and the higher the participants' scores, the higher their self-efficacy. The GSE scale has been shown to possess high reliability, stability, and construct validity (Leganger, Kraft, & Roysamb, 2000; Luszczynska, Scholz, & Schwarzer, 2005; Schwarzer, Mueller, & Greenglass, 1999). This scale was found to have a coefficient Alpha of 0.81 in the present study. Sample items include: 'I can solve most problems if I invest

the necessary effort' and 'It is easy for me to stick to my plans and accomplish my goals'.

Self-esteem. Self-esteem was assessed with the 10-item Rosenberg Self-esteem Scale (RSE) (Rosenberg, 1965), a commonly used and well-validated measure of global self-esteem (Robins, et. al., 2001). Responses were recorded on a five-point scale ranging from 'strongly disagree' (1) to 'strongly agree' (5). The responses for each of the ten items were summed to give a total score with a high score reflecting a high level of self-esteem. The RSE has been found to demonstrate high reliability and validity in previous studies (Ferrari, 1994; Kuster, et. al., 2012), and it was found to have a coefficient Alpha of 0.90 in the present study. Sample items include: 'On the whole, I am satisfied with myself' and 'I feel that I have a number of good qualities'.

Anxiety and Depression. The Hospital Anxiety and Depression Scale (HADS) was used to measure levels of anxiety and depression. The HADS was developed by Zigmond and Snaith (1983) to identify cases of anxiety and depression disorders and has been shown to perform well in the identification of symptom severity and caseness for anxiety disorders and depression in both psychiatric and primary care patients and in the general population (Andrea et al., 2004; Bjelland, Dahl, Haug, & Neckelmann, 2002; Hinz & Brähler, 2011). The 14-item self-report questionnaire features seven questions for anxiety (HAD-A) and seven for depression (HAD-D). The answer format of the items has four options scored with values 0 to 3. Anxiety and depression scores were obtained by summing up the scores of the seven items. Coefficient Alpha in

this study were 0.85 for HAD-A and 0.76 for HAD-D. Sample items include: 'I still enjoy the things I used to enjoy' and 'Worrying thoughts go through my mind'.

Demographic information. Demographic variables such as age, gender, PhD type, year of PhD study, and ethnicity were included in the questionnaire. The relationship between procrastination and age is well established according to previous literature (Roberts et al., 2006; Jurado & Rosselli, 2007). For example, on the basis of 16 studies, Steel (2007), meta-analytically presented a strong negative relationship found between age and procrastination after correcting for range restriction; and procrastination seems to decrease with age (Steel & Ferrari, 2013). Results vary when the literature concerning the relationship between procrastination and gender is reviewed. For example, some studies found no gender difference in terms of procrastination (Solomon & Rothblum, 1984; Ferrari, 1991, 1992; Hess et al., 2000; Watson, 2001; Alexander & Onwuegbuzie, 2007; Sirin, 2011). Some research suggested that females exhibit more procrastination behaviour than males (Dolye & Paludi, 1998; Washington, 2004); whereas other studies referred that males tend to procrastinate more than females (Gröpel & Steel, 2008; Steel, 2007; Steel & Ferrari, 2013).

3.4 Ethical considerations

Before the study was initiated, a research protocol was submitted to the Research Ethics Committee of the University of Nottingham to review and approve this study. This was to ensure that it was undertaken in a manner

consistent with the British Psychological Society's (2009) Code of Ethics and Conduct as well as the code of ethical research conduct of the University of Nottingham. Following this, the study received approval from the Research Ethics Committee (REC) of (then) the Institute of Work, Health and Organisations.

3.4.1 Ethical Principle: Respect

A. Consent. Participants were provided with the information sheet and consent sheet which clearly explain the nature and purpose of the survey, the approximate time required for completion of the survey, and the researcher's contact detail.
B. Confidentiality. The information sheet provides an assurance that responses are anonymous and will remain confidential. It also states that no identifying information will be collected.
C. Self-determination. The information sheet and content sheet clearly indicated that participant was voluntary and respondents were permitted to withdraw from the study before they submitted the survey, due to the anonymous nature of this questionnaire. Participants were asked to leave their email address if they were willing to take part in a future study.

3.4.2 Ethical Principle: Responsibility

A. Protection of participant. The information sheet provided assurances that the completion of the online survey is unlikely to be trigger distress. It noted also, however, that any issues be raised participants

can contact graduate school which provides individual support for PhD students, and the contact details of which were given.

B. Debriefing of participants. The information sheet indicated that the finding and a summary report will be available on request.

3.5 Data analyses

The dataset was subjected to bivariate correlation and hierarchical multiple regression analyses in order to examine relations among the variables under investigation. This section presents the data screening and assumption testing conducted before the regressions, following by the step-by-step procedures used when applying the regressions.

3.5.1 Factor analyses of BFI-10

The current study explored the factor structure of the multidimensional personality measure proposed by Rammstedt and John (2007) before including the measure in the correlation and regression analyses. A distinct characteristic of the BFI-10 is that it was designed to assess the Five Factors of personality in a very short amount of time with two items for each personality dimension (Guido, Peluso, Capestro, & Miglietta, 2015; Rammstedt & John, 2007). The BFI-10 scales have been demonstrated to be a valid alternative for longer personality inventories. However, the BFI-10 scales are relatively new and its psychometric qualities have not been investigated as extensively as other measures employed in the current study. It has originally been subjected to common-factor analyses with varimax rotation to test its structural validity (Rammstedt & John, 2007), and the expected five dimensions were found in

both US and German samples. A small number of studies employed a similar factor analysis and suggested that the five-factor structure fit their data set as well (Credé, Harms, Niehorster, & Gaye-Valentine, 2012; Gallego & Oberski, 2012; Guido et al., 2015; Spengler, Lüdtke, Martin, & Brunner, 2013).

Given that samples from most previous literature examining the factor structure of the BFI-10 involved US, German, Italian and Spanish samples, there is a need to examine the psychometric quality of the BFI-10 in UK samples. With regard to factor analysis, there are two distinct factoring techniques that can be applied, which are the exploratory factor analysis (EFA) approach and the confirmatory factor analysis (CFA) approach. EFA, conducted initially with CFA, is a data-driven approach which may help specify a certain number of factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999); whereas CFA is a theory-driven approach in which the latent factors are pre-specified based on proposed strong empirical or conceptual theories (Brown, 2014). Given the fundamental differences between EFA and CFA, the current study will investigate the dimensionality of the BFI-10 through an EFA approach. It was expected that the BFI-10 provided a valid assessment of the Big Five dimensions in the present samples.

Principle component analysis (PCA) is primarily used for identifying factors of observed variables for three major purposes. First, in hypothesis testing, applying techniques based on the general linear model; second, to compress most of the original information into a minimum number of factors; and third, to identify latent variables in large data sets based on highly correlated input

variables (Boslaugh, 2012; Hair, Black, Babin, Anderson, & Tatham, 2006). The current investigation was subjected to the PCA to provide better comparability with earlier studies. Further, the oblimin rotation was applied because the five factors were empirically correlated and diverged from the theoretically assumed simple structure (McCrae et al., 1996; Spengler et al., 2013).

EFA using SPSS 21.0 was applied to the BFI-10. The EFA results returned a five-factor solution consistent with the Big Five factors, with the eigenvalues of 2.49, 1.36, 1.35, 1.26 and 1.03, explaining 24.86 per cent, 13.63 per cent, 13.50 per cent, 11.56 per cent and 10.33 per cent of the variance, respectively. The total explained variance was 73.87 per cent. The factor structure corresponded clearly to the Five-Factor structure, with the loading of each of the fairness items in the model was shown to be strong on relevant components. The ten items that properly loaded the five factors showed acceptable levels of internal consistency, which were assessed using the Spearman-Brown coefficients. Eisinga, Te Grotenhuis, and Pelzer (2013) proposed that this type of reliability coefficient performs better than traditional Cronbach's alpha in assessing the internal consistency of two-item subscales. In the current investigation, the Spearman-Browns coefficients were .47 or higher, which indicated an acceptable reliability because each subscale of the BFI-10 only consisted of two items. The results of the analyses are reported in Table 3.1.

Table 3.1 Factor loadings of BFI-10 (n=280)

Item	Factor Loading				
(I see myself as someone who...)	1	2	3	4	5
Factor 1: Openness					
…has an active imagination	**.89**	.01	-.06	.07	.01
…has few artistic interests ®	**.86**	.03	.05	-.07	-.08
Factor 2: Conscientiousness					
…does a thorough job	-.003	**.87**	.16	-.09	.09
…tends to be lazy ®	.05	**.78**	-.17	.10	-.07
Factor 3: Extraversion					
…is outgoing, sociable	-.03	.15	**.80**	.09	-.11
…is reserved ®	.03	-.12	**.79**	-.03	.06
Factor 4: Agreeableness					
…is generally trusting	-.15	.04	-.04	**.86**	-.06
…tends to find fault with others ®	.18	-.06	.11	**.75**	.06
Factor 5: Neuroticism					
…get nervous easily	.04	0.02	-.08	.07	**.92**
…is relaxed, handles stress very well ®	-.11	.01	.06	-.07	**.85**
Eigenvalues	2.49	1.36	1.35	1.26	1.03
% of variance	24.86	13.63	13.50	11.56	10.33
Spearman-Brown coefficients	.47	.57	.75	.50	.76

Note: ® = Item is reverse scored. Underlined values indicate the loading that is the highest for each item.

3.5.2 Median split procedure and correlation analysis

Demographic data regarding PhD type, year of PhD study and ethnicity was not considered during analysis. This was due to the fact that the voluntary nature of the data collection procedure led to, the completion rate of such information being low, which led to insufficient statistical power for data analysis. As a result, only information regarding age and gender was used to explore the relationship with academic procrastination in the current investigation.

To answer the first three research questions conrning the prevalence, age and gender differences of academic procrastination among PhD students, a median split procedure, MANOVA, and cross-sectional analysis were conducted. A median split procedure has been frequently used in academic procrastination studies to identify the procrastinators and nonprocrastinators, therefore, to address the prevalence of academic procrastination among the studies population (Brownlow & Reasinger, 2000; Özer et al., 2009; van Eerde, 2003a). A MANOVA was performed to test for the gender differences between male and female PhD students on academic procrastination. In addition, correlation analysis was conducted to explore the strength of association between age groups, dependent variables and academic procrastination.

3.5.3 Data screening and assumption testing for multiple regression

The reasons for choosing multiple regression analysis are twofold. First, multiple regression is used to investigate the strength of associations among several observed variables (Tabachnick & Fidell, 2012). This capacity of the

regression analysis was considered most suitable to the core purpose of the current study, which was to examine the relationships between satisfaction with doctoral progress and content, psychological constructs, and academic procrastination. In addition, multiple regression allows for the influence of demographic variables such as age and gender to be controlled for, which enables the researcher to focus solely on the contribution to the criterion variable made by the predictor variables. It also aligns with the major aim of the current study; for example, any possible effects of demographic variables on academic procrastination could be factored out in the current investigation in order to examine the extent to which these studied variables account for academic procrastination.

Another reason for choosing multiple regression analysis for the current study was that regression has been widely accepted in non-experimental research, and there is better understanding about the assumptions underlying the approach, its strengths, and its limitations (Tabachnick & Fidell, 2012). In addition, knowledge about how and when it is suitable to apply multiple regression analysis has been thoroughly discussed.

For example, there is a simple rule of thumb for calculating the ratio of cases to the number of independent variables that the multiple regression technique requires is $N \geq 50+8m$ (where m is the number of independent variables) (Tabachnick & Fidell, 2012). An effective sample size of 280 was received which was found to be appropriate, on the basis of previous formula for calculating sample size.

3.5.4 Steps for hierarchical multiple regression

Hierarchical multiple regression analyses using SPSS 21.0 examined the relations between the predictor variables and the criterion variables. The order in which the predictor variables were entered into the multiple regression analyses was as follows. Two demographic variables, age and gender, were entered first to control for their effects. Doctoral satisfaction with PhD content and progress were entered in the second step in order to assess their degree of relationship with the criterion variable. The third step consisted of the Big five personality variables. Anxiety, depression, self-efficacy, and self-esteem were entered in the fourth step of the regression model.

3.6 Results

3.6.1 Study Population and Descriptive statistics and responses to research questions 1a & b

One hundred and ninety-two responses were received from PhD students registered at the University of Nottingham. Once the questionnaire was made available more widely across the UK higher education sector (via the online PhD student forum) the total number of responses rose to 280.

Table 3.2 presents the means and standard deviations for the study variables. More than half of the sample was female (n=182, 65%). To examine the extent to which the sample was representative of the population from which it was drawn, a chi-square analysis was employed to compare the demographic

characteristics of the sample with those of the University of Nottingham from where the majority of the responses were drawn. Chi-square analyses identified that the sample and the population of the University of Nottingham presented some differences in terms of gender *($\chi 2 = 42.42, p<0.001$).* However, previous literature suggested that women are more likely to participate in surveys than men (Curtin, Presser, & Singer, 2000; Moore & Tarnai, 2002; Smith, 2008). There was, however, no difference in age when compare with the population at the University of Nottingham *($\chi 2 = 2.43, p>0.0$).*

PhD students' mean score on the Aitken Procrastination scale was 45.55 (SD = 9.02). Procrastination scores were dichotomized using the median split technique to categorize participants into two groups, low procrastinators (procrastination score of 28-45) with 143 participants (52.5%) and high procrastinators (procrastination score of 52-81) with 136 participants (47.5%). This corresponded to research question 1a and indicated that 47.5% of the PhD students engaged in frequent academic procrastination. However, the findings corresponding to research Question 1b revealed that no gender differences were present in academic procrastination, F (4, 276) = 1.95, p>0.05.

Table 3.2. Respondents' Demographic Characteristics, Means and Standard Deviations of the Study Variables T1 (N=280)

	N (%)	M	SD
Gender			
Female	182 (65.0)		
Male	96 (34.3)		
Not specified	2 (0.7)		
Age		28.99	6.92
<30	191 (69.0)		
30-39	63 (22.7)		
40-49	16 (5.8)		
50+	7 (2.5)		
Procrastination		45.55	9.02

BFI-10		
Openness	7.20	1.77
Conscientiousness	6.69	1.79
Extraversion	6.01	1.96
Agreeableness	6.87	1.60
Neuroticism	6.54	1.96
Self-efficacy	28.39	3.98
Self-esteem	24.66	7.87
Anxiety	9.35	4.37
Depression	5.23	3.48
Doctoral satisfaction	6.20	2.12

3.6.2 Pearson correlation analyses and responses to research Question 1c

Pearson's correlations were performed to investigate the relationship between the PhD students' academic procrastination and personality, self-efficacy, self-esteem, doctoral satisfaction of PhD study, anxiety, and depression. The correlation coefficients showed in Table 3.3 indicate a number of significant relationships between the study variables. Most of the Pearson correlation coefficients fell between .00 and .49, which demonstrated weak to moderate relationships (Cohen, 2013). Very few presented strong associations exceeding .50 (Cohen, 2013). None showed a correlation coefficient value of more than .70.

One notable feature in the correlation matrix was the relationship between procrastination and the Big Five personality traits; three out of five were significant correlated with procrastination. However only the conscientiousness trait showed a strong and negative association with PhD students' procrastination ($r = -0.55; P < 0.01$); while extraversion involved a negative but weak correlation with procrastination ($r=-0.13$, $p<0.05$) and a positive correlation was found between procrastination and neuroticism (*r=0.16;*

p<0.01). PhD students' procrastination was negatively correlated with self-efficacy (*r = -0.36; P < 0.01*) and self-esteem (*r = - 0.38; P < 0.01*), but positively with their anxiety symptoms and depression symptoms with correlation coefficients of 0.29 and 0.43 respectively (*P < 0.01*). There was a strong and negative association between procrastination and doctoral satisfaction (*r = -0.50; P < 0.01*). The correlation analysis suggested that students with low conscientiousness, low self-efficacy, low self-esteem, and low doctoral satisfaction with regard to PhD content and progress may procrastinate more frequently, and students who experienced high levels of anxious and depressed about their PhD might be more likely to procrastinate. However, no significant association was found between age and procrastination tendencies. Accordingly, this responded to the research question 1c.

Table 3.3. Pearson Correlations Among the Study Variables at Time 1 (n=280)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Procrastination	1.00											
2. Age	.03	1.00										
3. Gender	-.05	.11	1.00									
4. Personality-O	.002	.07	-.05	1.00								
5. Personality-C	-.55**	.04	.10	-.002	1.00							
6. Personality-E	-.13*	-.01	.06	.07	.13*	1.00						
7. Personality-A	-.12	.08	.04	.11	.11	.17**	1.00					
8. Personality-N	.16**	.02	.22**	-.06	-.11	-.38**	-.18**	1.00				
9. Self-efficacy	-.36**	.00	-.11	.18**	.34**	.28**	.15*	-.50**	1.00			
10. Self-esteem	-.38**	.05	-.09	.12*	.36**	.34**	.27**	-.57**	.57**	1.00		
11. Anxiety	.29**	-.03	.30**	-.01	-.15*	-.20**	-.17**	.61**	-.37**	-.64**	1.00	
12. Depression	.43**	.12*	.01	-.13*	-.30**	-.26**	-.15*	.33**	-.32**	-.54**	.54**	1.00
13. Doctoral satisfaction	-.50**	-.06	.01	-.01	.37**	.15*	.12	-.31**	.43**	.43**	-.31**	-.39**

*p<0.05; **p<0.01

3.6.3 Hierarchical multiple regression analyses and responses to Hypothesis 1 to 3

Hierarchical multiple regression was conducted to further investigate the relationships evident in the correlation analyses. The multiple regression technique enables interrelationships among a relatively large number of variables to be explored simultaneously, which was considered appropriate for the aims of this exploration (Tabachnick & Fidell, 2012).

Table 3.4 shows the results of the multiple regression analyses in which the relationship between academic procrastination and doctoral satisfaction, and psychological constructs were examined. After the demographic covariates (age and gender) were controlled (Model 1) in the first step, PhD students' self-perceived doctoral satisfaction accounted for 25% of the variance in their procrastination (Model 2) ($F=32.13$, $p<0.001$). This result showed that, hypothesis 1, which predicted the association between doctoral satisfaction and academic procrastination after key demographics were accounted for, was supported. The Big Five personality traits (conscientiousness, extraversion, neuroticism, openness, and agreeableness) explained an additional 14% of the variance in procrastination (Model 3) ($F=23.21$, $p<0.001$), but only conscientiousness variable was a statistically significant individual predictor of academic procrastination in model 3 ($\beta=-0.35$, $p<0.001$). Accordingly, Hypothesis 2a, which posited the effects of the Big Five personality variables over and above the doctoral satisfaction, was supported. Hypothesis 2b, which hypothesised a negative association between conscientiousness and

procrastination, and the relationship is stronger than the other four traits, was confirmed. Other psychological variables (i.e., depression, anxiety, self-esteem and self-efficacy) were entered into the final regression model, accounting for an extra 4% of the variance in the procrastination scores (Model 4) ($F= 24.20$, $p<0.001$). However, anxiety ($\beta=0.11$), self-efficacy ($\beta=0.01$) and self-esteem ($\beta=-0.10$) failed to be significant predictors of procrastination ($p>0.05$). Depression was the only statistically significant predictor in the model ($\beta=0.17$, $p<0.05$). As a result, model 4 was significant, so Hypothesis 3, which predicted the association between these psychological constructs and academic procrastination, was supported. Overall, the regression model accounted for 43% of the variance in procrastination.

Table 3.4. Summary of Hierarchical Regression Analysis for Variables Predicting Academic Procrastination (T1) n=280

	Model 1		Model 2		Model 3		Model 4	
Variable	B	β	B	β	B	β	B	β
Model 1								
Age	.05	.04	.01	.01	.04	.03	.02	.02
Gender	-.91	-.05	-.77	-.04	-.02	-.00	-.48	-.03
Model 2								
Doctoral satisfaction			-2.17	-.51***	-1.48	-.35***	-1.14	-.27***
Model 3								
BFI-Conscientiousness					-2.08	-.41***	-1.77	-.35***
BFI-Extraversion					-.08	-.02	.05	.01
BFI-Neuroticism					.02	.00	-.56	-.12
BFI-Openness					.03	.01	.18	.04
BFI-Agreeableness					-.15	-.03	-.04	-.01
Model 4								
Depression							.45	.17*
Anxiety							.23	.11
Self-esteem							-.01	-.01
Self-efficacy							-.23	-.10
R^2		0.003		0.26		0.41		0.46
ΔR^2		-0.004		0.25		0.39		0.43
F for the Change in R^2		0.47		32.13***		23.21***		18.58***

*p<0.05; **p<0.01; ***p<0.001

3.7 Discussion of results from Study 1 (Time 1 cross-sectional study)

In the cross-sectional study, the nature and strength of associations between a set of psychological constructs, doctoral satisfaction and academic procrastination among PhD students were investigated by using a series of correlation and regression analyses. Overall, the current findings replicated a number of previous procrastination studies on the relationship among procrastination, conscientiousness, neuroticism, and other psychological variables (Lee et al., 2006; Scher & Osterman, 2002; Steel, 2007). In addition, PhD students' self-perceived doctoral satisfaction and the conscientiousness trait explained a relatively large proportion (25%) of the variance in academic procrastination compared with other study variables. Moreover, self-perceived satisfaction with doctoral content and progress may provide unique insights into reducing students' problematic delaying behaviour.

The following section provides a detailed discussion of the cross-sectional results from Study 1. One notable feature about the current study was that it provided baseline data for determining the stability of the associations between study variables and academic procrastination over time in the subsequent longitudinal study (see chapter 4). Therefore, results from the longitudinal study must be considered prior to developing firm conclusions regarding the findings of Study 1. The discussion of the longitudinal findings can be found in Chapter 4, while a discussion of the overall findings, implications and conclusions will follow in the final chapter, Chapter 6.

3.7.1 Prevalence of PhD students' academic procrastination

This initial cross-sectional study provided a useful baseline profile concerning procrastination among PhD students at UK universities. Overall, just under half of participants (47.5%) reported engaging in frequent academic procrastination. This is consistent with the level found in previous studies which have shown that academic procrastination is prevalent among graduate student (Collins et al., 2008; Glick, Millstein, & Orsillo, 2014; Jiao, DaRos-Voseles, Collins, & Onwuegbuzie, 2011).

The current rate of academic procrastination is considerably lower than that of approximately 80% found in college students by O'Brien (2002). Compared with previous literature, for example, Schouwenburg and Lay (1995) found more than 70% of undergraduate students reported that they procrastinated on their academic tasks at least half of the time, while more than 50% of them considered their procrastination as consistent and problematic (Day et al., 2000; Ferrari et al., 2005). The current findings suggested that graduate students have been found to procrastinate less frequently than do undergraduates. These findings are in accordance with previous research which showed that procrastination reaches its peak from middle to late 20s and then declines gradually by reaching the age of 60 (Ferrari et al., 1995; Khan, Arif, Noor, & Muneer, 2014). In addition, Ferrari, Özer, and Demir (2009) studied a sample of Turkish adults and found that those with higher levels of education report less procrastination. However, Onwuegbuzie (2004) found that graduate student tend to procrastinate more than undergraduate students with between 65% and 75% of graduate students trying to reduce their procrastination. It is

worthy investigating the correlation between academic procrastination and the levels of education to determine whether procrastination declines with increasing levels of education. Nevertheless, research demonstrates that academic procrastination can have a significant impact on both undergraduate and graduate students. Therefore, it would be fruitful to continue exploring academic procrastination through additional methodologies and a large and diverse samples in future studies.

3.7.2 The predictive capacity of students' self-perceived satisfaction with doctoral content and progress

Given the associations between doctoral satisfaction and academic procrastination, the present findings suggested that students who perceived higher levels of satisfaction with their doctoral content and progress are more likely to report less procrastination. Consistent with the correlation results, students' self-perceived doctoral satisfaction is a new factor in this study that provides a statistically significant role in explaining academic procrastination. The current findings were therefore among the first to suggest the effects of doctoral satisfaction in explaining academic procrastination. This result is informative, suggesting that students who are satisfied with their doctoral content and progress are likely to persist at their study, and therefore reduce the extent to which they engage in academic procrastination. Conversely, students who perceived high doctoral-dissatisfaction, particularly those characterised as choosing to escape the problem, are more likely to delay strategically to reduce emotional distress. These results are in line with the work of Lent et al. (2007) who found that satisfaction with one's academic life was expected to lead to

additional outcomes, such as continuation with one's academic study. In addition, Chow (2011) also found that as students' satisfaction with school life decreases, their tendency for procrastination behaviour may increase.

It is possible that the effect of students' perceived doctoral satisfaction may have influenced their procrastination in a different way. For instance, with respect to the satisfaction with doctoral content, it is possible that PhD students are not satisfied doing a doctoral project they are not interested in, therefore resulting in a lower degree of task-directed activity for high procrastinators. On the other hand, PhD students need to set research plans for themselves and achieve their academic goal on time if they want to succeed. To be a successful PhD student, one should be able to acquire the required knowledge and research skills, transfer and make use of the acquired knowledge. Hence, receiving adequate the environmental/social support and resources to conducting their research project is another essential factor for doctoral satisfaction that might prevent some doctoral students from initiating and completing their PhD programmes (Gardner, 2009; Hwang et al., 2015; Sanford, 1966). Thus, universities should enable students to receive essential and adequate academic support, such as research training opportunities or statistical knowledge, that may increase students' academic satisfaction and motivate students to take action for achieving their academic goal without delaying.

In addition, interventions targeted at enhancing students' goal progress and research-training opportunities may facilitate academic satisfaction and reduce

procrastinating tendencies. Findings revealed that higher levels of dissatisfaction regarding PhD progress were associated with higher academic procrastination. These results may be a reflection of previous studies in which several 'warning signs' have been identified as indicating that students were not making progress on their PhD, such as constantly changing topic, avoiding communication with supervisors, isolating themselves from academics, and not submitting study reviews (Kearns et al., 2008; Manathunga, 2002). Therefore, it may be helpful to tie assessment to students' academic goals, although students registered on research degrees are subject to review annually or biennially at most universities. These should be more focused on framing and supervising procrastinators' goals and progress towards students' goals, and should provide environmental support and resources regarding the research skills necessary for goal attainment. Furthermore, because students' satisfaction within the context of academia may contribute to, and be affected by, overall life satisfaction, future studies would benefit from investigating the relationship between academic procrastination and life satisfaction (Balkis, 2013; Ozer & Saçke, 2011; Savithri, 2014).

3.7.3 The influence of the Big Five personality traits on academic procrastination

Given the association between procrastination and three of the Big Five personality traits, the findings of the current study supported the hypothesis that procrastination was negatively associated with the conscientiousness trait, but it showed weaker positive correlations with neuroticism and extraversion. These findings are consistent with previous procrastination literature which

suggested that conscientiousness has a strong inverse relationship with procrastination, with *rs* ranging from -0.57 to -0.79 (Costa & MacCrae, 1992; Lay et al., 1998; Lee et al., 2006; Scher & Osterman, 2002; Schouwenburg & Lay, 1995). However, the neuroticism trait was positively associated with procrastination, with *rs* ranging from 0.18 to 0.42 (Ferrari et al., 1995; Johnson & Bloom, 1995; Milgram & Tenne, 2000; Ross et al., 2002; Steel, 2007). One explanation of the weak association between procrastination and neuroticism might be the disruptive effects of anxiety, depression, and self-consciousness, characteristics subsumed under the heading of neuroticism, on effective scheduling and adherence to schedule (Milgram & Tenne, 2000). On the other hand, the relationship of task procrastination to neuroticism may be because of their common relationship to conscientiousness. Therefore, neuroticism may only be weakly correlated with task procrastination when conscientiousness is partialed out (Costa & MacCrae, 1992; Milgram & Tenne, 2000). A weak inverse relationship of extroversion to procrastination may be justified because people high in the extroversion trait may have greater self-confidence and social competence and be more likely to receive advice and support that facilitates their completion of tasks (Milgram & Palti, 1993; Milgram & Tenne, 2000).

The important role of conscientiousness in predicting procrastination is further strengthened by the current finding that conscientiousness was the only Big Five factor to be significantly associated with academic procrastination (Flett et al., 2012; Milgram & Tenne, 2000; Schouwenburg & Lay, 1995). As Lubbers, Van Der Werf, Kuyper, and Hendriks (2010) indicated,

"conscientiousness, expressing a person's self-discipline, organization, and need for achievement, is the strongest personality predictor of academic performance" (p.203), noting later that conscientiousness is strongly related to procrastination which is more likely to lead to poor academic performance (Noftle & Robins, 2007; O'Connor & Paunonen, 2007; Steel, 2007). This finding suggested that doctoral students might benefit from personality assessments and those found to be low in conscientiousness directed towards procrastination training. In addition, university-counselling services could focus on procrastinators' level of organisation and goal-directedness, and help students strengthen their persistence in pursing their goals and organisation. With regard to self-control, the major facet of conscientiousness (Costa & MacCrae, 1992; Fayard, Roberts, Robins, & Watson, 2012), future studies may profit from conducting intervention methods to develop students' problem-focused coping strategies, and target problematic situations with alternative solutions, thus reducing academic procrastination.

3.7.4 PhD students' academic procrastination and other psychological constructs

Contrary to hypothesis, self-efficacy and self-esteem did not contribute to the regression model predicting PhD students' procrastination, but both of them indicated a moderate and significant association with procrastination. In line with previous self-efficacy literature, there is an inverse significant relationship between academic procrastination and self-efficacy. That is, the more self-efficacy the students has, the lower the level of academic procrastination (Bandura, 1997; Chow, 2011; Kandemir et al., 2014; Klassen et al., 2008; Ozer

& Saçke, 2011). Self-esteem shared a similar result with self-efficacy in explaining academic procrastination in the current findings. That is, a self-esteem-procrastination relationship is significantly modest. Although self-esteem failed to predict academic procrastination in the regression model, it is possible that some PhD students with perfectionism do not appear to be low in self-efficacy or low in self-esteem, but still procrastinate. Moreover, most previous studies that examined self-efficacy-procrastination and self-esteem-procrastination relationships were based on undergraduate students' experiences. Considering the results of the current study investigated the PhD students, it would be possible that some PhD procrastinators believed they are able to accomplish their PhD studies and graduate successfully without the feeling of worthlessness.

The results of this study also showed that anxiety and depression had a moderate but significant positive association with procrastination. However, anxiety failed to be a significant individual predictor of procrastination in the regression model. When students experience anxiety towards potentially challenging or threatening academic situations, procrastination may not be the response related to anxiety. Depression, on the other hand, was a significant predictor of procrastination. Previous studies which focused on the affective aspects of procrastination, suggested that procrastination was correlated with depression. In particular, individuals who experienced negative emotions at peak level could lead to problematic delay (Ozer, O'Callaghan, Bokszczanin, Ederer, & Essau, 2014; Steel, 2007). This finding may be explained by a closer

look at the components of depression, such as sadness, guilt, self-dislike, and worries,

The results of the current findings also showed that the procrastination tendency does not differ with regard to gender and age. When the relationship between gender and procrastination is considered, previous studies have produced inconsistent results (Steel, 2007). For example, some studies stated that female students were less likely to experience problematic delay (Gröpel & Steel, 2008; Prohaska, Morrill, Atiles, & Perez, 2000; Senécal, Julien, & Guay, 2003; van Eerde, 2003b). Other studies have suggested however that male students had lower levels of procrastination tendency (Doyle & Paludi, 1998; Solomon & Rothblum, 1984; Washington, 2004). There were also studies which showed some agreement with the current findings that there was no significant relationship between procrastination and gender (Alexander & Onwuegbuzie, 2007; Curtin et al., 2000; Ferrari, 1991, 1992; Hess et al., 2000; Johnson & Bloom, 1995; Milgram & Palti, 1993; Rothblum et al., 1986). Considering the participants of the aforementioned studies were undergraduates, more studies are needed to explore the relationship between procrastination and gender among PhD students.

3.8 Chapter summary

This chapter presented the methods, findings and a discussion of the main findings from the first quantitative study conducted for the current investigation. In this study, a cross-sectional research design was employed to investigate the associations between satisfaction with doctoral progress and

content, psychological constructs, and academic procrastination. The findings are generally consistent with the proposition that the conscientiousness trait was significantly associated with academic procrastination, and it was also found to have a significant association with procrastination. In addition, students' self-perceived satisfaction with doctoral content and progress was a new factor in the current study that accounted for relatively large portions of variance in procrastination. The results suggested that students' satisfaction may offer valuable opportunities for capturing dissatisfaction-induced problematic delay. Therefore, future research examining the relationship between academic satisfaction and academic procrastination could benefit from adopting a broad definition of resources that take into account life satisfaction.

The regression results provided little support for the cognitive variables of self-efficacy and self-esteem in explaining academic procrastination, yet there was evidence that these variables showed a moderate association with procrastination. In addition, the regression results suggested that depression was valuable in identifying procrastination. That is, procrastination was more likely to be depression-related rather than anxiety-related according to the current findings.

Importantly, a major limitation of the current study was that the findings were based on cross-sectional data. Therefore, longitudinal research is required to establish the stability of the current findings and examine the nature and strength of the aforementioned relationships. Consequently, the following chapter (Chapter 4) will introduce the methods, results, and discussion of Study

2. This study employed a longitudinal research design with a 12-month time lag. The aim of this longitudinal study was to examine the lagged effects associated with the study variables investigated in the cross-sectional study. That is, doctoral satisfaction and other psychological constructs at the first time point (Time 1) will be assessed for their relationships with academic procrastination at the second time point (Time 2).

Chapter 4. Relationship between doctoral satisfaction, psychological constructs, and academic procrastination – A 1-Year Follow-up Study Among PhD students

4.1. Chapter review

This chapter focuses on the longitudinal phase of the current investigation (Study 2), which reports the method and results of statistical analyses applied to one-year follow-up (Time 2) data. Using a longitudinal full panel research design, data was collected on all variables measured at baseline (Time 1) at a 12-month follow-up. The primary aim of the current analyses was to investigate the effect of time between the predictor variables and the outcome variable, academic procrastination. To the present author's knowledge, previous studies have not employed a longitudinal design to examine these relationships on academic procrastination among PhD students. The second aim of the current study was, therefore, to test the mediational role of doctoral satisfaction.

This chapter, in a similar way to the previous chapter, has been divided into five sections. The first section involves the rationale of the current study, followed by the second section that presents the method used to collect data. The third section states the ethical considerations for the study. The results and discussion of this 1-year follow-uo study are described in the fourth and fifth sections.

4.2. Rationale and aims of the current study

The previous chapter presented cross-sectional associations between doctoral satisfaction, psychological constructs, and academic procrastination. However, the limitations of the cross-sectional design are such that it was not possible to establish patterns of causation between variables; rather, it was possible only to provide information on the co-occurrence of variables (Taris & Kompier, 2003).

Moreover, the cross-sectional design was unable to establish the stability of relations between the variables over time. Where a series of statistically significant relationships are identified between the independent and dependent variables in a cross-sectional study, it is possible to draw erroneous conclusions on the nature of relations between variables owing to the dynamic and fluid nature of links between constructs. The longitudinal design that involves data collection at multiple points in time can overcome this limitation. Such was illustrated clearly in a study of relations between stress-related working conditions and self-reported health status among employees of a French electrical company (Niedhammer & Chea, 2003). The authors found that: *"Whereas the cross sectional analysis showed significant associations between the four scales…and self reported health for both men and women, the prospective [longitudinal] analysis showed that at one year follow up, psychological demands for both sexes, decision authority for men only, and social support and physical demands for women only, were significant predictors of poor self reported health"* (p.513). Thus, whereas the cross-sectional examination showed that several aspects of the work environment

were associated with health, when explored longitudinally several of these statistically significant relationships fell away, leaving a small set of robust and stable relationships.

These cross-sectional design limitations can be overcome through the application of a longitudinal design in which all variables are measured repeatedly at two or more time points. To date, no study has used a longitudinal design to explore relations between doctoral satisfaction, psychological constructs, and academic procrastination among PhD students. The first aim of the analyses presented in the current chapter was therefore to investigate whether normal causation was present in terms of the extent to which doctoral satisfaction, and a set of psychological constructs, predicted the status of academic procrastination over a 12-month period. A full panel design was applied whereby all variables were measured at both time points. The expectation was that doctoral satisfaction and a set of psychological constructs measured at baseline (Time 1) would each explain a unique portion of the variance in the target variables measured at follow-up (Time 2). This design allowed for the establishment of three key conditions that are required for a causal inference to be drawn, namely that (i) the causal variable precedes the outcome variable in time (temporal order), (ii) there is a statistically significant relationship between the predictor variable and outcome variable, and (iii) a theoretical interpretation of the relationship should be possible (Taris & Kompier, 2003). It is important to note that fulfillment of these three criteria in themselves does not permit the researcher to conclude categorically that causation has occurred because it is impossible – even with a longitudinal

design – to rule out possible alternative explanations for any statistically significant relationships identified. Rather, *"the best we can do is argue that it is plausible that certain statistical associations can be understood in causal terms"* (Taris & Kompier, 2003, p. 1).

The second aim was to longitudinally test the mediational effects of doctoral satisfaction on the relationship between the psychological constructs and academic procrastination. Tests of mediation can be conducted using cross-sectional data. However, a number of limitations have been raised regarding the mediational model in a cross-sectional model (Cole & Maxwell, 2003; MacKinnon, 2008; MacKinnon, Coxe, & Baraldi, 2012; Maxwell & Cole, 2007). One conceptual problem is that mediation is characteristically a process that develops over time, and cross-sectional data fails to measure this development over time (MacKinnon et al., 2012). Another statistical problem with regard to findings from previous studies is that tests of the cross-sectional-mediated influence have been shown to be severely biased when compared with the mediational model developed using longitudinal data (Maxwell & Cole, 2007). Consequently, the best-designed studies are subject to the longitudinal approach, which profoundly strengthens the power to detect mediational effects.

On the basis of foregoing, the current study seeks to test the following hypotheses:

Hypothesis 4: Satisfaction with doctoral content and progress at Time 1 are associated with academic procrastination at Time 2 after accounting for students' age and gender.

Hypothesis 5a: Personality variables at Time 1 are associated with academic procrastination at Time 2 over and above that accounted for by doctoral satisfaction.

Hypothesis 5b: Conscientiousness at Time 1 significantly predicts academic procrastination at Time 2.

Hypothesis 6: Self-efficacy, self-esteem, anxiety and depression at Time 1 are associated with academic procrastination at Time 2 over and above that accounted for doctoral satisfaction and personality.

Hypothesis 7: Doctoral satisfaction at Time 1 will mediate the relationship between personality factors at Time 1 and academic procrastination at Time2.

Hypothesis 8: Doctoral satisfaction at Time 1 will mediate the relationship between self-efficacy, self-esteem, anxiety at Time 1 and academic procrastination at Time 2.

4.3. Method

The following section focuses on the method for conducting Study 2. It includes details of the longitudinal research design, data collection procedures, participants, and measures used.

4.3.1. The study design

This study employed a longitudinal correlational design in which data was drawn from the same research project conducted in Study 1 (see section 3.2.1).

Twelve months after the gathering of baseline data in April 2013, participants were re-approached with an information sheet and consent sheet about the second phase of the current study. Participants who consented to the second phase were asked the same questions as those at Time 1. Responses from Time 2 were matched with those from Time 1 based on the email address that respondents volunteered in both surveys.

With regard to the choice of the time lag, this longitudinal study drew on data collected with two measurement points, 12 months apart, to test the stability of associations between academic procrastination and doctoral satisfaction, and the studied psychological constructs. The baseline data collection was labeled Time 1 (T1), and the follow-up data collection Time 2 (T2). The longitudinal design was presumed to offer good opportunities to add further to the knowledge of the causal processes involved in the phenomena of interest (Taris & Kompier, 2003). However, there are few studies on academic procrastination that have used a longitudinal design, and the duration of follow-ups in previous longitudinal studies vary considerably. For example, a few procrastination studies have examined behavioural postponement by recording the data on which a term paper is submitted (Tice & Baumeister, 1997), the number of surveys returned to the researcher (Lay, 1986), the timing of quiz completion (Moon & Illingworth, 2005; Steel et al., 2001), and the timing of laboratory task initiation and completion (Senécal et al., 1997). In addition, Rice et al. (2012) employed a cross-panel longitudinal design to assess procrastination in three-wave data collection within a college semester.

Causal processes are often complicated with regard to the causal impact of one variable on another variable may be presumed to be mediated by other variables (Taris & Kompier, 2006). Theories across many disciplines involve mediating processes as explanations for how and why a predictive variable is related to a criteria variable (MacKinnon et al., 2012). The behavioural sciences are no exception. Thus, a further examination of the causal process for procrastinatory behaviour requires that the precise relationships among the observed variables should be tested to investigate whether the presumed causal chain exists. According to the classic mediation source from Baron and Kenny (1986) who proposed a simple procedure to test whether a specific variable (M) (e.g. doctoral satisfaction) acts as a mediator of the effect of variable X (e.g. conscientiousness) on Y (e.g. academic procrastination).

A longitudinal design is considered as the most desirable approach of estimating a meditational process compared with the cross-sectional study (MacKinnon et al., 2012; Maxwell & Cole, 2007; Taris & Kompier, 2006). In addition, the methodological literature has emphasised the importance of longitudinal mediation models for evaluating the mediation process (Judd & Kenny, 1981; MacKinnon, 2008; MacKinnon et al., 2012; Maxwell & Cole, 2007). In this case, a two-wave longitudinal design will be employed to provide some indication of the presence and direction of a potential mediational process through Time 1 doctoral satisfaction in understanding Time 2 academic procrastination among PhD students.

4.3.2. Participants

Individuals who participated in the first study were asked to provide contact details if they were willing to participate in future studies concerning academic procrastination. A total of 135 participants provided an email address; 80 of these responded to the follow-up questionnaire.

The 80 matches and valid responses at Time 2 represent 28% of the valid responses at Time 1 (n=285). The modest retention rate is consistent with previous occupational psychology studies that used a similar research design and a follow-up of at least 12 months (e.g. Hall, Dollard, Tuckey, Winefield, & Thompson, 2010; Tekleab, Takeuchi, & Taylor, 2005; Tepper, 2001). The relatively low retention rate may have been because of reliance on university-based email addresses that students either did not regularly use, or perhaps no longer used by the time of follow-up data collection.

4.3.3. Measures

The measures used in this study were the same as those from the cross-sectional study (see Section 3.2.3). Time 1 independent variables were doctoral satisfaction, the Big Five personality traits, self-efficacy, self-esteem, anxiety and depression, and the dependent variable was academic procrastination. The control variables were Time 2 age, gender, and Time-1 procrastination.

4.3.4. Preliminary analyses

Prior to running the analyses, data screening for multiple regression was performed following the procedures recommended by Tabachnick and Fidell (2012). To examine possible differences between students who completed both questionnaires (Time 1 and Time 2) and students who only completed the Time

1 questionnaire, a MANOVA with Time 2 response (Time 2 responder vs. Time 2 non-responder) as between participants' factors and the 11 Time 1 variables (academic procrastination, doctoral satisfaction, the Big Five personalities, self-efficacy, self-esteem, anxiety, and depression) as dependent variables. The test was non-significant with $F(11, 273)=1.39$, *ns* indicating that students who completed both questionnaires were not significantly different from students who completed only Time 1. Next, data was screened for multivariate outliers regarding the 22 variables involved in the longitudinal analyses (Time 1 and Time 2 doctoral satisfaction, the Big Five personality, self-efficacy, self-esteem, anxiety, depression, and academic procrastination). Outliers that had standardised residual values above ± 3.3 were deleted from the data set. Consequently, one participant was excluded from all further analyses, which resulted in a remaining sample size of 79 participants.

4.3.5. Statistical analyses

Similar to Time 1, descriptive analyses as well as Pearson product-moment correlations (r) were performed to examine how the studied variables were related to academic procrastination in the 1-year follow-up study.

4.3.5.1. Cross-sectional analyses

Pearson correlation analysis and hierarchical linear regression on the basis of follow-up (Time 2) data were performed to examine the strength of associations between the studied variables.

Hierarchical linear regression was used to identify the relative contribution of doctoral satisfaction and a set of psychological constructs to the estimation of

academic procrastination among PhD students at Time 2. This technique enabled examination of the contribution of these variables over and above that of demographic variables (age and gender). The order in which the predictor variables were entered into the multiple regression analyses was similar to study one. Two demographic variables, age and gender, were entered first to control for their effects. Doctoral satisfaction at Time 2 was entered in the second step. The third step consisted of the Big five personality variables at Time 2. The other four psychological constructs at Time 2 were entered in the final step of the regression model.

4.3.5.2. Longitudinal analyses

To test the strength of association between the predictor variables at baseline and academic procrastination at follow-up, Pearson correlation analysis was conducted. It also enables the researcher to make comparison regarding the strength and direction of the correlations found in both studies.

The unadjusted relationship among the studied variables at Time 1 and academic procrastination at Time 2 was examined with a bivariate linear regression analysis. Next, a multiple hierarchical liner regression analysis was conducted, which adjusted for procrastination, gender, age, doctoral satisfaction, personality, self-efficacy, self-esteem, anxiety, and depression at Time 1.

When performing the longitudinal multiple regression analyses, the order in which the study variables were entered into the regression was as follows.

Time 2 demographics and the Time 1 outcome were entered in the first step and acted as control for their effects. The correction for baseline academic procrastination allowed for conclusions to be drawn about the effects of the baseline determinants on changes in procrastination during the follow-up year. Hereafter, students' perceived doctoral satisfaction was entered in the second step in order to assess their degree of relationship with the criterion variable. The Big Five personality variables were entered in the next step. Anxiety, depression, self-efficacy, and self-esteem were entered in the fourth step of the regression model. For all statistical analyses, SPSS 21.0 was used.

The meditational effects of doctoral satisfaction on the relationship between the Big Five personality traits, other psychological constructs (self-efficacy, self-esteem, and anxiety), and academic procrastination were tested using a process analysis (Hayes, 2013). Taris and Kompier's (2006) points suggested that more data phases enhance the strength of findings regarding the mediational effects, therefore, the mediational models were tested in a longitudinal data set. As a result, a process analysis was conducted in order to examine whether the relationship between Time 1 psychological predictors (X) and Time 2 academic procrastination (Y) was mediated by Time 1 doctoral satisfaction (M) (see Figure 4.1)

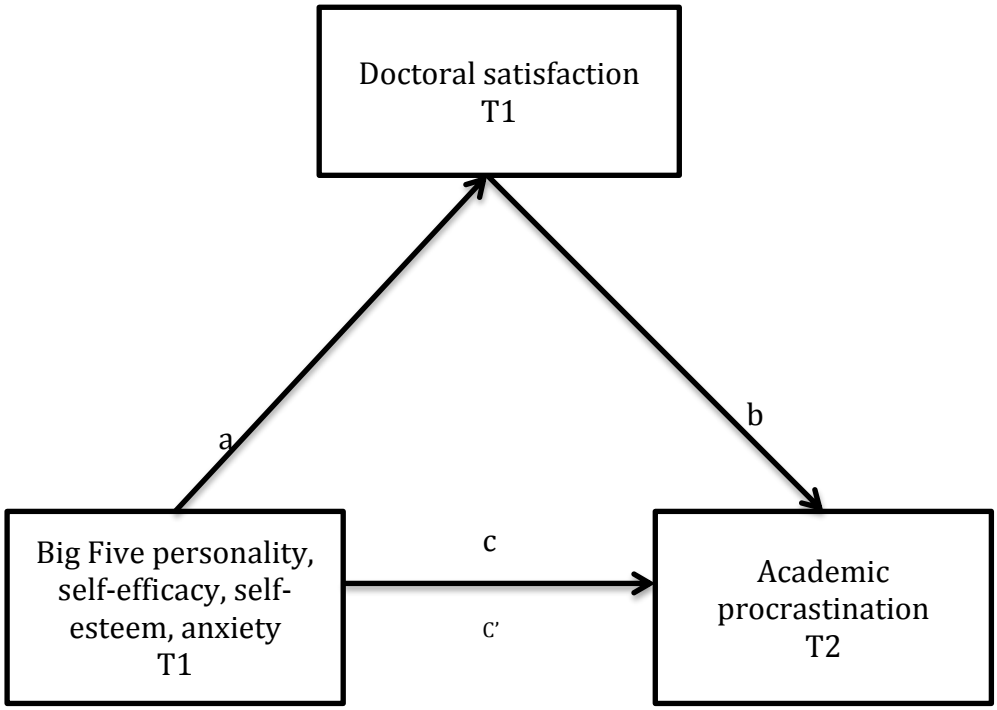


Figure 4.1. Graphical representation of the simple mediation model.

Note: a = effect of psychological constructs T1 on doctoral satisfaction T1; b = effect of doctoral satisfaction T1 on academic procrastination T2; c = total effect of psychological constructs T1 on academic procrastination T2 when doctoral satisfaction T1 is not included as a mediator; c' = direct effect of psychological constructs T1 on procrastination T2 when doctoral satisfaction T1 is included as a mediator.

The regression-based mediation analyses with regard to the process analysis provided by Preacher and Hayes (2008) was conducted. The main idea of this approach was to assess the statistical significance of the indirect effect; more specifically, the path from the independent variable (X) via the mediator variable (M) to the outcome variable (Y). A bootstrapping procedure which requires repeatedly drawing samples from the original sample to develop an 'empirical approximation of the sampling distribution of the indirect effect'

(Strobel, Tumasjan, & Spörrle, 2011, p. 45) was used to receive confidence intervals for the indirect effect. First, 1000 bootstrap samples were generated from the original data set (n=79). Second, the mediation model was tested 1,000 times with these subsamples. Third, the estimation of the mediation effect (X -> M -> Y) was calculated by multiplying 1,000 pairs of path coefficients. If the 95% CI for the estimates of the mediation model does not include *zero,* it suggests that there is a significant mediation effect (Shrout & Bolger, 2002). The advantage of this procedure was its independence from distributional assumptions regarding the parameter estimates for the indirect path (Strobel et al., 2011).

4.4. Results

4.4.1. Study population and descriptive statistics

Table 4.1 presents the means and standard deviations of the study variables measured at Time 2. It shows that the majority of the sample (N=55, 70%) of the participants were women. The mean age of the sample was 32 years old (SD=9.23). PhD participants' mean score on the Aitken Procrastination scale was 54.45 (SD=9.60).

Table 4.1 Means and Standard Deviations of the Study Variables T2 (N=79)

	N (%)	M	SD
Gender			
Female	55 (70)		
Male	24 (30)		
Age		32.18	9.23
Procrastination		54.45	9.60
BFI-10			
Openness		7.24	1.87
Conscientiousness		6.68	1.73

Extraversion	5.69	1.97
Agreeableness	6.81	1.58
Neuroticism	6.46	1.96
Self-efficacy	28.09	4.04
Self-esteem	23.31	8.07
Anxiety	9.20	4.06
Depression	5.59	3.9
Doctoral Satisfaction	5.86	2.03

4.4.2. Pearson correlation analyses (Time 2 cross-sectional results)

Pearson's correlations of the variables in the Time 2 study were given in Table 4.2. It showed moderate but statistically significant negative associations between conscientiousness trait and procrastination ($r=-0.27$, $p<0.05$). Neuroticism was positively correlation with procrastination ($r=0.23$, $p<0.05$), however openness showed unexpected positive relationships with procrastination ($r=0.34$, $p<0.01$). In addition, high levels of anxiety and depression were associated with significantly higher procrastination with correlation coefficients of 0.41 and 0.53 respectively ($p<0.01$). Participants' self-esteem and self-perceived doctoral satisfaction were significantly and positively related to procrastination with correlation coefficients of -0.45 and -0.51 respectively ($p<0.001$).

4.4.3. Hierarchical multiple regressions (Time 2 cross-sectional results)

Table 4.3 shows the results of the regression analyses at Time 2 ($n = 79$). The demographic variables (age and gender) were entered in model 1, which found these variables to be not statistically significant. As was the case in Study 1, participants' self-perceived doctoral satisfaction at Time 2 explained 24% of the variance in their procrastination at follow-up (model 2) ($\beta = -0.50$, $F(3, 75)$

= 9.31, p<0.001). The Big Five personality accounted an additional 1% of the variance in procrastination (model 3) (F(6, 72) = 5.36, p<0.001). Other psychological variables (i.e., depression, anxiety, self-esteem and self-efficacy) were entered into the final regression model. These accounted approximately 8% of the variation in the procrastination scores (*F*(10, 68) = 5.22, p<0.001). However, only depression in model 4 was a statistically significant individual predictor of academic procrastination (β = 0.39, p<0.051).

Table 4.2. Pearson Correlations Among the Study Variables Time 2 (n=79)

Variables	1	2	3	4	5	6	7	8	9	10
1. Procrastination_T2	1.00									
2. Personality-O_T2	.34**	1.00								
3. Personality-C_T2	-.27*	-.10	1.00							
4. Personality-E_T2	-.19	-.12	.03	1.00						
5. Personality-A_T2	-.10	-.11	.16	.36**	1.00					
6. Personality-N_T2	.23*	-.13	-.03	-0.30	-.12	1.00				
7. Self-efficacy_T2	-.21	-.06	.17	.35**	.16	-.44**	1.00			
8. Self-esteem_T2	-.45**	-.28*	.27	.43**	.28*	-.52**	.53**	1.00		
9. Anxiety_T2	.41**	.36**	-.04	-.31**	-.09	.60**	-.29**	-.64**	1.00	
10. Depression_T2	.53**	.19	.02	-.37*	-.15	.33**	-.15	-.59**	.64**	1.00
11. Doctoral satisfaction_T2	-.51**	-.12	.27**	.19	.21	-.19	.36**	.47**	-.24*	-.40**

*p<0.05; **p<0.01

Table 4.3. Summary of Hierarchical Regression Analysis for Variables Predicting Academic Procrastination (T2) n=79

	Model 1		Model 2		Model 3		Model 4	
Variable	B	β	B	β	B	β	B	β
Model 1								
Age	-.16	-.14	-.10	-.09	-.07	-.06	-.05	-.05
Gender	-1.45	-.07	.16	.01	-.47	-.02	-.20	-.01
Model 2								
Doctoral Satisfaction_T2			-2.26	-.50***	-1.90	-.42***	-1.32	-.29**
Model 3								
BFI-Conscientiousness_T2					-.74	-.13	-1.07	-.19
BFI-Openness_T2					1.36	.27**	1.12	.22*
BFI-Agreeableness_T2					.47	.08	0.47	.08
BFI-Extraversion_T2					-.30	.53	.30	.06
BFI-Nueroticism_T2					.47	.51	.09	.02
Model 4								
Depression_T2							1.01	.39**
Anxiety_T2							.07	.03
Self-esteeM_T2							.01	.01
Self-efficacy_T2							-.01	.00
R^2		0.02		0.27		0.38		0.49
ΔR^2		0		0.24		0.31		0.39
F for the Change in R^2		0.93		9.31***		5.35***		5.22***

*p<0.05; **p<0.01; ***p<0.001

4.4.4. Pearson correlation analyses (Longitudinal results)

Pearson's correlations of the variables in the follow-up study are given in Table 4.4. Several significant relationships were evident. Similar to Study 1, most of the Pearson correlation coefficients fell between .18 and .49, which demonstrate weak to moderate relationships (Cohen, 2013). Only two variables (Time 1 procrastination and doctoral satisfaction) presented strong associations exceeding .50 (Cohen, 2013). None showed a correlation coefficient values were more than .80. Multicollinearity was not expected to cause problems in the subsequent regression analyses (Field, 2009).

While the nature and strength of the correlations found in Study 2 were comparable to those found in Study 1, there were fewer correlations identified in Study 2. There were eight statistically significant correlations between procrastination and the study variables in the cross-sectional study; in comparison, only six of the correlations between Time 1 predictors and Time 2 academic procrastination in the longitudinal study were significant. In particular, extraversion, neuroticism, and self-efficacy at baseline failed to present any significant association with procrastination at follow-up. Correlations between the Time 1 procrastination and the Time 2 procrastination were the strongest, with the correlation coefficient of 0.73. This suggested that academic procrastination was stable over the 12-month period.

Another important difference between the correlation results of Study 2 and those from Study 1 concerned the Big Five personality variables. Only the

conscientiousness trait showed a moderate but statistically significant negative association with procrastination at both baseline and follow-up (r = -0.32, $p<0.01$). Neuroticism and extraversion showed no significant association with procrastination in Study 2. However, openness showed unexpected positive relationships with procrastination (r = 0.39, $p<0.05$). As was the case in Study 1, higher levels of anxiety and depression were associated with significantly higher procrastination (r = 0.31 and r = 0.41 respectively, $p<0.01$). Another noteworthy finding in the correlation matrix was that the strength of the relationships between participants' self-perceived doctoral satisfaction and academic procrastination was a little weaker in Study 2 than for the same relationships in Study 1 with coefficient r falling from -.50 to -.33 ($p<0.01$).

Table 4.4. Pearson Correlations between T1 Predictive variables and T2 procrastination (n=79)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Procrastination_T1	1.00											
2. Procrastination_T2	.73**	1.00										
3. Personality-O_T1	.18	.26*	1.00									
4. Personality-C_T1	-.49*	-.32**	-.05	1.00								
5. Personality-E_T1	-.15	-.08	-.20	.19	1.00							
6. Personality-A_T1	-.20	-.09	-.00	.18	.23*	1.00						
7. Personality-N_T1	.17	.08	.17	-.06	-.28**	-.17	1.00					
8. Self-efficacy_T1	-.30**	-.18	.01	.42**	.27*	.16	-.45**	1.00				
9. Self-esteem_T1	-.49**	-.33**	-.10	.48**	.25*	.37**	-.55**	.57**	1.00			
10. Anxiety_T1	34**	.31**	.21	-.16	-.21	-.26*	.63**	-.39**	-.72**	1.00		
11. Depression_T1	.47**	.41**	-.02	-.23*	-.22	-.40**	.33**	-.32**	-.63**	.59**	1.00	
12. Doctoral satisfaction_T1	-.53**	-.33**	-.19**	.37**	.14	.24*	-.33**	.41**	.51**	-.38**	-.32**	1.00

*p<0.05; **p<0.01

4.4.5. Prospective regressions and responses to Hypotheses 4 to 6

Table 4.5 shows the results of the prospective analyses in which variables at baseline predicted procrastination at follow-up in a linear regression. After the demographic variables (age and gender) were controlled in the model 1, participants' self-perceived doctoral satisfaction at baseline accounted for 9% of the variance in procrastination at follow-up (model 2) (β=-0.32, $F(3, 75)=3.64$, $p<0.01$). Accordingly, Hypothesis 5, which predicted the Time 1 doctoral satisfaction over and above Time 2 demographics was supported. Model 3 shows that the inclusion of the Big Five personality variables at baseline explained an additional 3% of the variance when compared with model 2 (including only the demographic variables and doctoral satisfaction). However, contrary to Hypothesis 6b, conscientiousness at Time 1 was not found to be a significant predictor of procrastination at Time 2 in model (β=-0.23, $p>0.05$); openness trait at Time 1 was the only significant predictor of procrastination among these five personality variables (β=0.22, $p<0.05$). Accordingly, Hypothesis 6a, which proposed that Time 1 personality variables are associated with Time 2 academic procrastination after accounting for demographics and doctoral satisfaction received only limited support. Other psychological variables at baseline (i.e., depression, anxiety, self-esteem, and self-efficacy) were entered into model 4, which accounted for an additional 10% for the variance in procrastination at follow-up ($F(10, 68)=2.38$, $p<0.05$). As was the case in Study 1, depression at Time 1 was the only significant predictor of academic procrastination at follow-up in model 4 (β=0.39, $p<0.01$). Therefore, it partially supported Hypothesis 7 that posited that Time 1 self-efficacy, self-esteem, anxiety and depression are associated with Time 2

procrastination. Overall, the regression model accounted for 22% of the variance in procrastination.

Table 4.5. Prospective analysis: variables at baseline as predictors of procrastination at follow-up in a hierarchical linear regression analysis (n=79)

	Model 1		Model 2		Model 3		Model 4	
Variable	B	β	B	β	B	β	B	β
Model 1								
Age	-.16	-.14	-.13	-.11	-.11	-.10	-.05	-.05
Gender	-1.45	-.07	-1.45	-.07	-1.12	-.05	-.90	-.04
Model 2								
Doctoral Satisfaction_T1			-1.53	-.32**	-1.01	-.21	-0.73	-.16
Model 3								
BFI-Conscientiousness_T1					-1.17	-.23	-1.10	-.22
BFI-Openness_T1					1.14	.22*	1.27	.25*
BFI-Agreeableness_T1					.01	.00	0.68	.11
BFI-Extraversion_T1					.23	.00	.32	.07
BFI-Nueroticism_T1					-.13	-.03	-.68	-.14
Model 4								
Depression_T1							1.16	.39**
Anxiety_T1							.22	.10
Self-esteem_T1							.07	.07
Self-efficacy_T1							.01	.01
R^2		0.02		0.13		0.21		0.34
ΔR^2		0		0.09		0.12		0.22
F for the Change in R^2		0.93		3.64*		2.38*		2.80**

*p<0.05,**p<0.01

Table 4.6 Longitudinal analysis: procrastination at baseline as predictor of procrastination at follow-up in a hierarchical linear regression analysis (n=79)

	Model 1		Model 2		Model 3		Model 4	
Variable	B	β	B	β	B	β	B	β
Model 1								
Age	.00	.00	.01	.00	-.01	-.01	.03	.03
Gender	-1.47	-.07	-1.47	-.07	-1.51	-.07	-1.92	-.09
Procrastination_T1	.72	.73***	.77	.78***	.76	.77***	.71	.72***
Model 2								
Doctoral Satisfaction_T1			0.38	.08	.38	.08	.41	.09
Model 3								
BFI-Conscientiousness_T1					.07	.01	-.10	-.02
BFI-Openness_T1					.76	.15	.76	.15
BFI-Agreeableness_T1					.25	.04	0.47	.08
BFI-Extraversion_T1					.22	.05	.28	.06
BFI-Nueroticism_T1					-.07	-.01	-.45	-.09
Model 4								
Depression_T1							.37	.13
Anxiety_T1							.38	.18
Self-esteem_T1							.14	.12
Self-efficacy_T1							-.09	-.03
R^2		0.54		0.55		0.57		0.60
ΔR^2		0.52		0.52		0.52		0.52
F for the Change in R^2		29.63***		22.33***		10.23***		7.44***

***p<0.05

4.4.6. Longitudinal multiple regressions

Table 4.6 shows the results of the longitudinal regression analyses. As expected, procrastination at baseline significantly predicted procrastination at follow-up. The adjusted R^2 for the regression model with procrastination at baseline, age and gender showed that this model explained 52% of the total variance in procrastination at follow-up (F=29.90, p<0.001). However, PhD students' doctoral satisfaction (model 2), personality variables (model 3), and other psychological constructs (model 4) (i.e., depression, anxiety, self-esteem and self-efficacy) failed to explain any additional proportion of the variance in procrastination at follow-up.

4.4.7. Mediational analyses and responses to Hypotheses 7 & 8

4.4.7.1. Consideration of doctoral satisfaction as a mediator of the Big Five personality-procrastination relationship

One notable result from the prospective regression analyses was that most personality factors had no statistically significant effects on academic procrastination when doctoral satisfaction was entered into the model. This called for further analyses of the interrelationships between personality factors, doctoral satisfaction and academic procrastination. The results of the mediation analyses that showed the indirect relationship between personality variables at Time 1 and academic procrastination at Time 2 through doctoral satisfaction at Time 1 were presented in table 4.7.

Table 4.7. Mediation analyses of the effects of personality factors (T1) on academic procrastination (T2) through doctoral satisfaction (T1)

									Indirect effect		
	Path a		Path b		Path c		Path c'		Point estimate	BCa 95% CI	
Scales	β	p	β	p	β	p	β	p	β	Lower	Upper
Openness	-0.20	0.09	-1.39	0.008	1.34	0.02	1.06	0.06	0.28	0.012	0.872
Conscientiousness	0.40	0.00	-1.17	0.03	-1.64	0.003	-1.17	0.05	-0.47	-1.163	-0.085
Agreeableness	0.31	0.03	-1.57	0.004	-0.55	0.42	-0.07	0.92	-0.48	-1.173	-0.073
Neuroticism	-0.34	0.00	-1.63	0.004	0.41	0.47	-0.16	0.78	0.57	0.135	1.329

Note: BCa = bias corrected and accelerated; CI = confidence interval; 1,000 bootstrap samples

Table 4.8 Mediation analyses of the effects of other psychological constructs (T1) on academic procrastination (T2) through doctoral satisfaction (T1)

									Indirect effect		
	Path a		Path b		Path c		Path c'		Point estimate	BCa 95% CI	
Scales	β	p	β	p	β	p	β	p	β	Lower	Upper
Self-efficacy	0.23	0.00	-1.47	0.01	-0.49	0.11	-0.15	0.65	-0.35	-0.881	-0.072
Self-esteem	0.12	0.00	-1.05	0.08	-0.37	0.003	-0.25	0.08	-0.13	-0.324	0.002
Anxiety	-0.17	0.00	-1.20	0.03	0.64	0.007	0.44	0.07	0.20	0.002	0.531

Note: BCa = bias corrected and accelerated; CI = confidence interval; 1,000 bootstrap samples

Time 1 conscientiousness was related to Time 1 doctoral satisfaction, which in turn associated Time 2 academic procrastination. Doctoral satisfaction continued place an influence over academic procrastination when the effects of conscientiousness were controlled, and explained an additional 28% of the variance in academic procrastination. However, the effect of conscientiousness on procrastination was no longer significant once the effects of doctoral satisfaction were controlled. Therefore, doctoral satisfaction at Time 1 was found to be a statistically significant mediator on the relationship between conscientiousness at Time 1 and academic procrastination at Time 2, $\beta = -0.47$, BCa 95% CI [-1.163 to -0.085]. This represents a medium effect, $k^2 = 0.091$, 95% BCa CI [.016, .202].

There was also a significant indirect effect of Time 1 doctoral satisfaction for the influence of agreeableness (β=-0.48, BCa 95% CI [-1.173, -0.073]) and neuroticism (β=0.57, BCa 95% CI [0.135, 1.329]) on Time 2 academic procrastination. However, the role of Time 1 doctoral satisfaction in mediating the relationship between Time 1 openness trait and Time 2 procrastination was not supported. Because openness was not associated with doctoral satisfaction (β=-0.20, $p>0.05$). Accordingly, Hypothesis 8, which posited that doctoral satisfaction at Time 1 mediates the relationship between personality factors at Time 1 and academic procrastination at Time 2 received partial support.

4.4.7.2. Consideration of doctoral satisfaction as a mediator on the relationship between other psychological constructs and academic procrastination

Similar procedures were applied to test the role of Time 1 doctoral satisfaction in mediating the relationship between other Time 1 psychological constructs (self-efficacy, self-esteem, anxiety) and Time 2 academic procrastination (see Table 4.8). The mediational role of doctoral satisfaction in the anxiety-procrastination relationship was supported. Anxiety was related to doctoral satisfaction (β = -0.17, $p<0.001$), which in return was associated with procrastination (β = 0.64, $p<0.01$). Doctoral satisfaction continued to exert an influence over procrastination when the effects of anxiety were controlled (β = -1.20, $p<0.05$). However, the influence of anxiety on procrastination was no longer significant once the effects of doctoral satisfaction were removed (β = 0.44, $p>0.05$), thus doctoral satisfaction fully mediated the relationship between anxiety and procrastination, β = 0.20; BCa CI [.002, .531]. This represents a medium effect, k^2 = 0.09, 95% BCa CI [.017, .230].

There was a significant indirect effect of Time 1 self-efficacy on Time 2 academic procrastination through Time 1 doctoral satisfaction, β = -0.35, BCa CI [-0.881, -0.072]. This represents a medium effect, k^2 = 0.12, 95% BCa CI [0.029, 0.262]. However, contrary to hypotheses, no significant indirect effect of Time 1 doctoral satisfaction for Time 1 self-esteem on Time 2 academic procrastination was found, β =-0.13, 95% BCa CI [-0.324, 0.002]. Accordingly, Hypothesis 9 only received partial support.

4.5. Discussion

The first aim of the present research was to investigate the stability of the associations between the independent variables and academic procrastination identified in Study 1 (see Chapter 3) over time using a longitudinal design with two measurement points. In Study 1, a cross-sectional study was conducted and the results provided some interesting implications of the relationships between doctoral satisfaction, conscientiousness, depression, and academic procrastination. In general, these relationships signaled the need for universities to consider PhD students' perceived doctoral satisfaction as a means of reducing academic procrastination. The cross-sectional study also proposed that conscientiousness was significantly associated with problematic delay, and it was found to be a key predictor of procrastination. Furthermore, another notable finding from Study 1 suggested that academic procrastination was related to depression among doctoral students. The second aim was to investigate PhD students' perceived satisfaction with doctoral content and progress as a mediator on the relationship between the Big Five personality traits, other psychological constructs (self-efficacy, self-esteem, anxiety), and academic procrastination.

Overall, academic procrastination was a persistent behaviour pattern, because it was rather stable over time (cross-time correlations r=0.73 for academic procrastination). Thus, when the effect of procrastination at Time 1 was controlled in the first step, a large proportion of the variance in procrastination (ΔR^2=52%) was already accounted for by the same indicators measured 12 months earlier. This means that the proportion of variance left to be explained

was rather difficult to detect. As was the case in the longitudinal regression analysis, doctoral satisfaction, personality variables and other psychological constructs failed to add any additional proportion of the variance in procrastination.

The significant R^2 results from the prospective regression analysis supported previous cross-sectional findings from studies examining the predictive role of doctoral satisfaction and depression on academic procrastination among PhD students. The current findings from the longitudinal analyses also provided more information about the relationships that were no longer significant at the 12-month follow-up. These results lead to mediation analysis being conducted which suggested that doctoral satisfaction acted as a mediator on the relationship between the observed psychological constructs and academic procrastination. The findings from the longitudinal study will be discussed in more detail in the following sections.

4.5.1. The predictive capacity of PhD students' self-perceived satisfaction of doctoral content and progress

The findings from the longitudinal study supported the cross-sectional findings that PhD students' doctoral satisfaction was a key variable in predicting academic procrastination. There are relatively few studies that had investigated the dissatisfaction-procrastination relationship. Thus, the current investigation might be the first study that asked UK PhD students to assess their attitudinal evaluations closely related to their doctoral studies and examined the effects of their self-perceived satisfaction placed on their problematic delay. A number of

recent studies have only examined satisfaction-related variables on the relationship between life satisfaction and academic procrastination (Chow, 2011; Kandemir, 2014; Savithri, 2014). For example, Kandemir (2014) suggested that there was a negative correlation between students' life satisfaction and academic procrastination and that life satisfaction is an important variable in predicting academic procrastination. However, most research has not assessed the stability of such relationship because of many studies using a cross-sectional design. In contrast, the current investigation was able to reveal that students' perceived satisfaction with their doctoral studies was a new factor in explaining academic procrastination at a 12-month follow-up. The current finding suggested that students are more likely to procrastinate on their doctoral studies if they experience higher levels of dissatisfaction with their doctoral content and progress. In addition, the doctoral satisfaction-procrastination relationship identified in Study 2 was quite strong with high beta values found among all variables to be statistically significant longitudinally (β=-3.2, $p<0.01$). Although the overall regression equations for the outcome variable were relatively small, the amount of R^2 that doctoral satisfaction attributed to the model was still significant and was the largest among all the predictive variables. The predictive capacity of PhD students' doctoral satisfaction in explaining academic procrastination, which was stable over a 12-month period, is of particular importance. These results provide practical implications for future procrastination-reduction interventions that focus on doctoral satisfaction.

The statistically significant findings of the satisfaction-procrastination relationship were valuable, although using two single-item questions to assess self-perceived satisfaction with regard to doctoral content and progress could be a limitation. However, previous research indicated that single-item measures of overall satisfaction "are more robust than the scale measures of overall job satisfaction" (Wanous, Reichers, & Hudy, 1997, p. 250). Moreover, Nagy (2002) provided empirical evidence to support the use of a single-item measure of facet satisfaction in terms of producing valuable results in the comparison of multiple-item scales.

The findings of the satisfaction-procrastination relationship have showed consistency with previous studies. For example, Levy (2007) postulated that students who received higher levels of perceived satisfaction were more likely to persist in e-learning courses. In addition, Sachs and Hale (2003) suggested that colleges and universities needed to focus on students' satisfaction, which was an important component in the development and persistent utilisation of academic support services. Therefore, future studies may profit from examining whether interventions to help increase perceived satisfaction from PhD studies are associated with a decreased tendency to procrastinate.

4.5.2. The predictive capacity of the Big Five personality traits on academic procrastination

Unlike the cross-sectional study in which conscientiousness trait was found to be a significant predictor in explaining academic procrastination, the predictive role of conscientiousness trait was not supported in the longitudinal study.

However, the role of conscientiousness in predicting procrastination was supported by previous studies (e.g. Lee et al., 2006; Scher & Osterman, 2002; Steel, 2007). For example, Schouwenburg and Lay (1995) reported that conscientiousness was the only Big Five factor to significantly predict trait procrastination. It should be noted that previous findings were on the basis of cross-sectional studies and the overall model of the Big Five personality variables in explaining academic procrastination in the current longitudinal study was still significant. Among the five personality traits, openness was identified as a significant source in understanding procrastination.

Although relatively few studies have investigated the role of openness on academic procrastination, some support can be found for the differential effects identified in the longitudinal study. Such as, Milgram and Tenne (2000) found that students higher in openness were more likely to complete a task with perceptive and imaginative characteristics. One possible explanation for this openness-procrastination relationship might be the character of tasks in academic settings. For example, tasks that are rote and intellectually unchallenging may induce mildly procrastination in students who are unimaginative and uncritical; by contrast, they are likely to prompt strong procrastination in those of the opposite character (Milgram & Tenne, 2000). Watson (2001) investigated the relationship between the five factors of personality and six domains of procrastination (exams, papers, reading, meeting attendance, administrative, and general school activities). The findings from this study indicated that openness trait contributed to procrastination when tasks requiring reasoning, such as papers and reading, were associated

with the fantasy facet of openness. Therefore, with regard to the current findings that highlighted the role of openness trait in explaining procrastination, it is possible that PhD procrastinators who are higher in openness trait were more task-oriented and preferred to delay tasks lacking skill variety, such as doing a literature review, which is one of the mundane tasks for early stage PhD students. For universities and supervisors, the findings suggest that providing sufficient skill variety in PhD tasks might help students high on openness to reduce unnecessary delaying behaviour. Nevertheless, there is very little research on the long-term relationship between openness trait and procrastination. Whether or not the factor of 'time' plays a role in the present effects remains inconclusive, and there is a need for further studies to investigate the relationships among openness trait, task characteristics, and procrastination further.

The effect of conscientiousness trait corresponds to previous findings reported in job satisfaction literature (e.g. Furnham, Eracleous, & Chamorro-Premuzic, 2009; Judge, Higgins, Thoresen, & Barrick, 1999; Lapierre & Hackett, 2007; Salgado, 1997), which proposed a predictive role of conscientiousness on job satisfaction. Researchers suggested that conscientious people in relation to their efficient nature are more likely to obtain higher intrinsic and extrinsic rewards, and increased job satisfaction as a result (Judge & Ilies, 2002). Moreover, most job satisfaction and motivation research literature indicates that the extent to which an individual is satisfied at work can influence their drive to work persistently (Furnham et al., 2009; Stress & Porter, 1991). Previous findings provided some support for understanding the mediational

role of doctoral satisfaction on the relationship between conscientiousness and procrastination. That is, though PhD students low in conscientiousness are not predisposed to engage in procrastination according to the longitudinal regression results, lower doctoral satisfaction reported by conscientious PhD students provides a plausible explanation for their weaker motivation to persist in their doctoral studies. More specifically, the present results suggested that one possible reason for people low on conscientiousness to engage in frequent problematic delay is because they were dissatisfied with their doctoral programmes.

4.5.3. The predictive capacity of other psychological constructs

It should be noted that the amount of variance the overall model of anxiety, depression, self-esteem, and self-efficacy could explain the longitudinal study (ΔR^2=0.10) was larger than that accounted for by the model in the cross-sectional study (ΔR^2=0.04). In addition, the effects of depression were found to remain significant in explaining academic procrastination in the longitudinal study, which captured the majority of the variance accounted for by the final model when regressed against procrastination. These results reinforce the cross-sectional results, indicating that academic procrastination does appear to be depression-related (Ozer et al., 2014). Therefore, the current findings suggested that to address students' academic procrastination, it is important to take into account its relations with cognitive and affective components. Ellis (1973) suggested that individuals develop behaviours interactively or transitionally. That is, emotions, internal thoughts, and perceptions could directly determine a person's behaviour. Hence, providing training to improve

PhD students' emotion-regulation skills may help students change the appraisal of a task that is causing them to procrastinate; they will be more likely to feel differently about it and may change the way they react behaviourally toward it. Furthermore, previous studies found that perfectionism was strongly related to depression which was found to significantly predict academic procrastination in the current findings (Hewitt & Flett, 1991; Hewitt, Flett, & Ediger, 1996). Perfectionism was also found to be highly related to procrastination in previous studies (Egan, Wade, & Shafran, 2011; Rice et al., 2012; Steel, 2007). Therefore, future studies could investigate the relationships between perfectionism, depression, and academic procrastination, such as putting perfectionism, depression, or procrastination as mediators.

Although the causal relationship between anxiety at Time 1 and academic procrastination at Time 2 was not supported in the prospective regression model, doctoral satisfaction at Time 1 fully mediated this relationship. This result indicated that anxiety is significantly related to the perception of some aspects of doctoral satisfaction. This was in line with previous studies which found the relationship between anxiety and job satisfaction (e.g. Newbury-Birch & Kamali, 2001). Regarding previous procrastination studies that found no direct links between anxiety and academic procrastination (e.g. Steel, 2007), These may have underestimated the importance of the mediating effects of doctoral satisfaction in anxiety-procrastination relationship. One potential explanation regarding the mediational effects might be that PhD students experience unavoidable anxiety in doctoral studies. This may lead to them perceiving high levels of dissatisfaction in their doctoral programmes; for

instance, they may not be satisfied with the institution or may view their supervisors as being unsupportive, and this may lead to problematic delaying of their doctoral studies.

As was the case in the cross-sectional study, self-efficacy, and self-esteem did not contribute to the regression model predicting PhD students' procrastination, they shared the same results in the longitudinal study. However, a significant mediating effect of doctoral satisfaction for the influence of self-efficacy on academic procrastination was detected. That is, no evidence was found for the effect of self-efficacy on procrastination, but there was a route via doctoral satisfaction: students high in self-efficacy are predisposed to be more satisfied with their doctoral programmes, which in turn leads to less procrastinatory behaviour.

4.6. Summary of Study 2

This chapter presented the method, results, and a discussion of results of the longitudinal study. Overall, the stability of academic procrastination over time was supported by the current study. In addition, results from the prospective analysis regarding relationships that were found to be stable over 12 months are particularly important. That is, PhD students' doctoral satisfaction, openness trait, and depression measured at Time 1 proved to be capable of explaining variance in academic procrastination at Time 2, whereas the conscientiousness trait and other psychological constructs at Time 1 failed to show any significant capacity in explaining procrastination over 12 months. However, further mediational analysis supported that the effects of personality

traits, self-efficacy, and anxiety on academic procrastination can be explained through the mediational influence of doctoral satisfaction. Chapter six will integrate the cross-sectional and longitudinal results and discuss the similarities and differences between the two studies, along with a discussion of the implications and limitations of the current investigation.

Chapter 5. An interview study of academic procrastination in PhD students

5.1. Chapter overview

This chapter presents the qualitative research design used for the second stage of the current study. It will begin by outlining the rational for the use of a qualitative approach, followed by a review of its strengths and limitations. This chapter also presents the results from 21 semi-structured participant interviews which were subjected to thematic analysis. A description of the themes causes, and effects of academic procrastination on PhD students, and their coping strategies used to help reduce procrastination, is provided. All themes described in this chapter will be supported with extracts from the interview transcripts. Chapter Five will conclude with a discussion of the main findings from the interviews.

5.2. Research paradigm of the present study

The present research is theoretically guided by a postpositivist position on scientific knowledge. All scientific investigation is conducted within a paradigm that sets the context for researchers (Denzin & Lincoln, 2005). The post-positivist position is critical of the traditional positivist position that an objective reality can be perfectly apprehended (Denzin & Lincoln, 2005). While postpositivists acknowledge that human intellectual mechanisms are flawed and the reality exists independently of the observer, and therefore, an objective reality can be only imperfectly and probabilistically pursued (Kuhn,

2012). The postpositivist framework serves as the primary foundation for the qualitative research which emphasises that the goal of the qualitative data is to approximate and study objective knowledge with more probability (Alexander, 1995). Furthermore, postpositivists acknowledge that scientific knowledge is the best available understanding of the world and is open to further empirical investigation (Alexander, 1995).

5.3. The qualitative research design

5.3.1. Rationale for the qualitative approach

A qualitative approach has the ability to understand the social phenomena in-depth within a particular context (Silverman, 2013). This thesis aimed to investigate the phenomenon of academic procrastination in PhD students and, consequently, employed a qualitative approach to define and explain procrastinatory behaviour in PhD students. In addition, the exploration of individual in-depth accounts of experience in the qualitative approach is ideal for theory development, and the themes identified from a qualitative approach may later be measured quantitatively (Strauss & Corbin, 1990). More specifically, future research on academic procrastination would benefit from qualitative data which demonstrates an additional dimension to knowledge. This in turn, provides multidimensional knowledge on this social phenomenon when a qualitative approach is used in association with quantitative methods (Mason, 2002).

5.3.2. Limitations of the qualitative approach

Many of the criticisms of a qualitative study design focus on the issue of reliability, which refers to "the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions" (Hammersley, 1992, p. 67). Concerns over consistency arise because many qualitative studies provide readers with little more than brief data extracts (Bryman, 2003). Another criticism of the qualitative study design relates to the problem of anecdotalism; the use of brief conversations and snippets from interviews as the evidence of a social phenomenon (Bryman, 2003). This complaint of 'anecdotalism' is presented as a challenge to the validity of qualitative studies (Silverman, 2013).

However, the current post-positivist theoretical position considers that the measure of social reality lies in its capability to reduce human bias where possible and accurately report the study settings and context (Lincoln & Guba, 1985). Qualitative researchers share the same goal as the quantitative researcher. The scientific investigator can ensure the generalisability or transferability of study results to other settings (Lincoln & Guba, 1985; Silverman, 2013). In order to overcome these limitations, a detailed account is provided with regard to the interview design, setting, participants, and analysis.

5.3.3. Rationale for choosing interview as a qualitative method

Qualitative researchers share a common belief that they can provide a more in-depth understanding and explanation of social phenomena which could not be obtained from a purely quantitative approach (Silverman, 2013). In qualitative research, the interview style involves some form of "conversation with a purpose" (Burgess, 1984, p. 102). The style is typically described as flexible and fluid, and the purpose is obtained from the active engagement between interviewer and interviewee within relevant topics and experiences during the interview itself (Mason, 2002). Interview methodology involves three styles: Unstructured, semi-structured, and structured. Unstructured interviews can be a free-flowing conversation between interviewer and interviewee within frameworks for meaningful interaction. Structured interviews consist of a set of questions for which answers lie on the theoretical orientations (Burgess, 1984; Mason, 2002). Semi-structured interviews are conducted with predetermined questions that involve a mixture of open-ended questions. A semi-structured style of interviewing consists of a set of predefined questions that serve as an interview schedule, but interviews receive greater flexibility in the order and the precise terminology of questions between interviews (Patton, 2002). Murphy and Dingwall (2003) suggested that a semi-structured interview was ideal for researchers to investigate new ideas during interviews, especially when there is a lack of previous research. As a result, a semi-structured style of interviewing was selected because it allows new ideas of academic procrastination to be raised and explored on the basis of PhD participants' own experiences, as

few previous studies relating to the present topic have been traced. The benefits of a semi-structured interview are that it allows open questions and conversational styles in which the interviewer 'works to an outline of specific mandatory topics which are then covered in the order dictated by the subject's own train of thought' (Millwood & Heath, 2000, p. 26). At the same time, open questions serve as stimulus which allow the interviewer to add questions that are not on the interview schedule, if they are perceived as being related to the research aims (Patton, 2002).

5.3.4. Limitations of the use of interviews and a semi-structured style

There are several limitations that should be recognised and addressed regarding semi-structured interviews. Additional questions may be added from interviews with some participants, but not with others. The lack of standardisation in interviewing has been argued as creating difficulties in analysing the data compared to structured interviews (Smith & Osborn, 2015). The reliability and validity of the study depend significantly on the interviewer's ability in interviewing and the articulacy of respondents; the possibility of misinterpretation and inaccuracy could also be raised at many stages of interview and data analysis (Becker & Geer, 1957). Gomm (2008) addressed demand characteristics, which is when the interviewee's responses are affected by what they perceives the situations requires. This highlights the importance in addressing he purpose and topics planned to be discussed at the beginning of an interview, thus putting the interviewee at ease.

It has also been argued in Patton's (2002) interview guide approach that topics may be inadvertently missed. Comparability is more likely to be reduced because of the fact that sequencing and wording would be different for each participant (Patton, 2002). However, what is potentially lost here is made up for by allowing interviews to build their own coherence, which itself can be analysed (Newton, 2010). Whether or not the findings mirror the reality that the interview data is attempting to reflect is likely to be affected by how people perceived and responded to the interviewer; "in particular, the sex, the age, and the ethnic origins of the interviewer have a bearing on the amount of information people are willing to divulge and their honesty about what they reveal" (Denscombe, 2007, p. 184). It is essential to fully evaluate these effects within qualitative studies. Therefore, a detailed description of the study purpose and method is provided to allow participants to receive the fullest possible details about the study contexts (Seale, 1999).

5.4. Objectives of the qualitative study

The present interview study aims to gain more in-depth information and a thorough understanding of the patterns behind PhD students' academic procrastination with attempts to answer the following key questions:

- What antecedences and consequences do PhD procrastinatory students experience?
- What coping strategies do PhD students apply?

5.5. Methods

5.5.1. Recruitment strategy and participants

PhD students who participated in the first study were asked to leave their contact details if they are willing to participate in future studies about academic procrastination. These participants were re-approached and re-consented into the current qualitative study.

Convenience sampling was employed in this study and twenty-one PhD participants were recruited. An email advertising the study was sent to previous participants to ask if they would be interested in sharing their experiences about procrastination and participating in a interview. Individuals who responded to the email advertisement were sent a participant information sheet and consent form, which they were advised to read and provide a time at which they would be available to interview.

Of the twenty-one participants recruited, five were first year PhD students, five were in their second year PhD, six were third year PhD students, and two were in their fourth year. Two participants were interviewed shortly after passed their vivas and one participant had recently received her PhD degree. Fourteen of the participants (67%) were female. Table 5.1 presents the characteristics of the sample.

Table 5.1.
Characteristics of participants

Participant No.	Gender	Grade	Type
1	Female	1st Year PhD student	Full-time PhD
2	Female	2nd Year PhD student	Full-time PhD

3	Female	3rd Year PhD student	Full-time PhD
4	Female	3rd Year PhD student	Full-time PhD
5	Female	2nd Year PhD student	Full-time PhD
6	Female	3rd Year PhD student	Full-time PhD
7	Female	Just Completed her PhD	Full-time PhD
8	Female	3rd Year PhD student	Full-time PhD
9	Male	1st Year PhD student	Full-time PhD
10	Male	3rd Year PhD student	Full-time PhD
11	Male	4th Year PhD student	Full-time PhD
12	Female	Just Passed her Viva	Full-time PhD
13	Female	3rd Year PhD student	Full-time PhD
14	Female	4th Year PhD student	Part-time PhD
15	Female	2nd Year PhD student	Full-time PhD
16	Female	2nd Year PhD student	Full-time PhD
17	Male	1st Year PhD student	Full-time PhD
18	Female	2nd Year PhD student	Full-time PhD
19	Male	1st Year PhD student	Full-time PhD
20	Male	1st Year PhD student	Full-time PhD
21	Male	Just passed his Viva	Full-time PhD

5.5.2. Procedure and setting

Focus groups are a type of group interview that organises discussions between the research participants in order to generate data (Kitzinger, 1994). They allow researchers to collect data in a convenient way from several participants simultaneously. Five PhD participants from the University of Nottingham originally agreed to participate in a focus group for this study. However, two participants did not attend the focus group and the group was conducted with three participants. The original plan of focus group interview was, therefore, changed to individual interviews to accommodate PhD students' works and time issues. The remaining 17 participants were, therefore, involved in an individual interview. All interviews were conducted in a private study room in one of the university libraries, and two interviews took place through Skype. All interviews were conducted over a two-month period from the middle of February 2014 until the beginning of April 2014.

Before the interview took place, each participant was given a participant information sheet (see Appendix 6) and a consent form (see Appendix 7) to read. If they agreed to take part, participants were asked to provide written informed consent. They were verbally informed that the interview would be recorded using a digital voice recorder, but that all recorded information would remain confidential. The voice recorder was switched on when participants were ready and the interview commenced. Interviews lasted an average of 35 minutes and ranged from 19 minutes to 49 minutes. The audio recordings were transcribed by a professional transcription company who signed a confidentiality agreement. The researcher checked all transcripts against the audio recordings to make sure the interviews were transcribed accurately.

5.5.3. Formulating and developing research schedules

Interview questions were developed from literature review and results from Study One. The areas of inquiry were set as:

A. The definition of academic procrastination.
B. Situations and conditions of academic procrastination.
C. Antecedence of academic procrastination.
D. Affective information: effects of confidence on procrastination.
E. Consequences of academic procrastination.
F. Coping strategies.
G. Supportive information: ways to reduce academic procrastination.

Detailed questions were discussed and developed with the research supervisor. Open-ended questions were used in line with suggestions of question construction, which enable the researcher to "gain a detailed picture of participant's belief, or perception, or accounts on the topic" (Smith, 1995, p. 10). More specifically, it is possible to allow participants to response the questions with detailed or longer answers (Smith & Osborn, 2015). The interview schedule is provided in Appendix 8.

5.5.4. Ethical considerations

A research protocol was submitted to the Research Ethics Committee to review and approve this study. This was to ensure that the project was undertaken in a manner consistent with the British Psychological Society's (2009) Code of Ethics and Conducts as well as the code of ethical research conduct of the University of Nottingham. The project was approved by the Faculty of Medicine & Health Sciences Research Ethics Committee with the Ethics Reference S12122013 SoM PAPsych.

5.5.4.1. Ethical Principle: Respect

A. Consent: the information sheet and consent sheet clearly explained the nature and purpose of the study, the approximate time for completion of the focus group or interview, and the researcher's contact details. Before the interview started, participant were given time to read the information sheet and consent form. If they agreed to take part, participants, provided written informed consent. Permission to audio

record the interviews was obtained from each participant via the consent form.

B. Confidentiality: the information sheet provided an assurance that responses would be rerated as anonymous and would remain confidential. Digital audio files and transcript files were stored on a secure computer with password protection only accessible to the researcher. Interview recording were transcribed by a professional transcription company who signed a confidentiality agreement. Any identified information such as participants' name, project and department information, or year of their PhD studies were removed from audio recording by using audio editing software in advance to sending to the transcription company.

C. Self-determination: the information sheet and consent sheet clearly indicated that participation in the interviews was voluntary and respondents could withdraw from the study before or after the interview starts without providing a reason.

5.5.4.2. Ethical Principle: Responsibility

D. Protection of participant: the information sheet and consent sheet clearly indicated that participant may decline to answer any questions. And any issues or concerns be raised participants could ask and speak to the researcher who will do their best to answer; and the contact details of which were given. If participants remain unhappy and wish to complain formally, contact details of the FMHS Research Ethics Committee Administrator were given by the information sheet.

E. Debriefing of participants: the information sheet indicated that the finding and a summary report will be available on request.

5.5.5. Data analyses

Qualitative data analysis is concerned with interpreting participants' experiences and understanding of the topic that aims to "shed light on how people make sense of experiences and what their behaviours means to themselves and to others" (Willig, 2012, p. 22). The thematic analysis approach was employed to interpret and understand the interview dataset (Braun & Clarke, 2006). Procrastination research, specifically focused on the postgraduate research students, has rarely been studied and lacked theory to drive the present analysis. In this sense, themes within the present data were identified in an inductive, data-driven approach (Patton, 2002), in which no theories were applied. All themes were identified, analysed and reported from the data (Braun & Clarke, 2006). Since thematic analysis is a flexible approach and not theoretically bounded, it has been criticised as being too subjective. To address this criticism, Braun & Clarke's (2006) best practice guidelines for thematic analysis were followed with detailed descriptions of how data was coded. The stages of the analysis are now described in the following sections. Interview transcriptions were imported into the qualitative data management software NVivo (QSR International Pty Ltd., Version 10, 2014).

5.5.5.1. Familiarisation with data

Transcripts were read and re-read to ensure the accuracy of the transcription and to familiarise the present author with the data, and, then, initial points of interest for the researcher to mark and comment.

5.5.5.2. Generating initial codes

The next step of analysis involved initial coding where key discussion points were compared and guided by the aims of the current investigation. This basic and surface-level coding was very close to the raw data and considered as "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998, p. 63). Approximately 300 codes were generated at this stage and the coded data were summarised into meaningful groups. The next step therefore involved revising the codes and searching for potential themes.

5.5.5.3. Searching for themes

This stage began with a long list of initial codes, then involved revising the codes and sorting the different codes into potential themes that addressed the same phenomena. Tables and mind-maps were developed to make the data more organised the data and make it more manageable, as well as allowing for the creation of potential themes within the relevant codes data extracts. Some initial codes, were grouped to form main themes whereas others were grouped as as sub-themes. Some codes did not belong in the main themes nor subthemes, but were still considered in the next stages of the analysis. All themes were compared extensively with the raw data to ensure all extracts of

data had been coded in relation to the themes. The next stages of analysis involved further development of the themes.

5.5.5.4. Theme development

This stage involved reviewing the developed set of candidate themes. All coded data extracts were read to consider whether they were grouped according to shared characteristics, therefore ensuring previous revised codes were organised under a theme to which they formed a coherent pattern (Braun & Clarke, 2006). Some of the themes needed to be reorganised, and new themes were created for those data extracts that did not fit in already-existing themes. A 'thematic map' was developed with three categories: (1) nodes, (2) sub-themes, and (3) themes. Nodes were clustered together under a sub-theme, and sub-themes were clustered together under a theme.

5.5.5.5. Refining themes

All themes were re-examined to ascertain the 'thematic map' accurately in relation to the whole data set. A number of revisions of themes and sub-themes were made to ensure the entire data set was accurately represented. In addition, the entire data set was re-read to recode some additional data within themes that had been missed in earlier stages (Braun & Clarke, 2006). Another postgraduate researcher was invited to further review and criticise the relationships between themes and the hierarchy of themes, in order to generate the coding framework in which themes and sub-themes fit together.

5.5.5.6. Reanalysing the data set

In this stage, the entire data set was re-analysed to 'define and refine' the themes, which ensured that raw data had not been missed or misinterpreted during the development of the coding framework (Braun & Clarke, 2006). All transcripts were subjected to re-analysis was to ensure that no data was multiply-coded and that there was not too much overlap between themes. The themes, sub-themes, and nodes, along with the anonymised detailed transcripts were sent to another postgraduate researcher for comments and revision. Some changes were made to the themes and sub-themes after the differences in interpretations were discussed. More specifically, changes were mainly made with regard to the names of the themes and sub-themes on the basis of recommendations and discussions with the postgraduate researcher.

5.5.5.7.Producing the report

This final stage of the analysis involved reporting the findings. Data extracts were selected to demonstrate the account of the story within and across themes. Rather than merely providing the descriptions of the data, an analytic narrative along with the data extracts was developed to illustrate an argument in relation to the research questions (Braun & Clarke, 2006).

5.6.Results

Through thematic analysis, findings with regard to antecedences, effects and coping strategies toward academic procrastination in PhD students were organised by the themes, sub-themes and nodes which are presented in Table 5.2 and described in the following sections.

Table 5.2.PhD students' accounts of academic procrastination

Theme	Subtheme	Node
Understand PhD student's academic procrastination	Types of PhD students' procrastination	Avoidant procrastination
		Active procrastination
	Causes of PhD students' procrastination	Irrational belief
		Perceived task characteristics
		Childhood behaviour reinforcement
		Desire of self-destruction
		Work/study imbalance
		Supervisors and supervisions
		Perfectionism/high self-demand
		Feeling of incompetence/ low confidence
Effects of academic procrastination	Positive effects of procrastination	Processes of developing new ideas
		Doing necessary tasks
		Psychological benefits
	Negative effects of procrastination	Perceived anxiety & stresses
		Bad quality of performance
		The senses of guilt
		Negative self-concept
		Harm people within a social context
		Waste time
Strategies to cope and reduce procrastination	Create manageable tasks	Break down big tasks into small chunks
		Doing other constructive PhD-related tasks
		Make a to-do list/ checklist

		Develop realistic goals
	Reduce distraction	Commit a deadline to a third party Use computer applications to block distractions
	Reduce the sense of guilt	Being rational about procrastination Being understand and accept procrastination
	Strengthen study motivation	Gain positive effects of people's evaluation Give incentives to strengthen study motivation Gain positive effects of stress/ peer pressure
	Live a healthy life style	
Support Strategy Recommendations	University workshops and counselling services for procrastinators	
	University regulate supervision system	Limits PhD numbers for each supervisor Submit fixed-term reports to monitor PhD progress
	Develop work-friendly environment	
	Received social support	Gain support from friends/partner/family Join PhD/ procrastination support group

5.6.1. Theme 1: Understand PhD students' academic procrastination

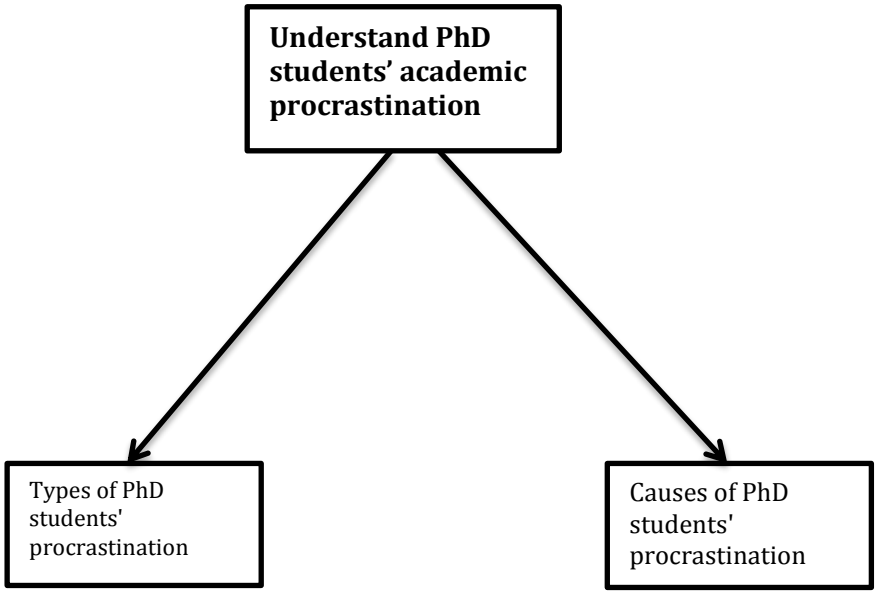


Figure 5.1. A thematic map of the 'Understand PhD students' academic procrastination' theme

This theme included two sub-themes: (a) types of PhD students' academic procrastination; (b) causes of PhD students' procrastination. All the nodes within these sub-themes are described in detail below.

5.6.1.1.Types of PhD students' academic procrastination

5.6.1.1.1. Avoidant procrastination

Participants commonly described academic procrastination as the tendency to frequently engage in postponing starting and/or completing tasks to meet a deadline. There are two types of academic procrastination in terms of PhD students' descriptions. One form of procrastination is *avoidant procrastination*; people avoid starting or completing a task which is viewed as adverse or threatening:

"Well procrastination I think is a known word like you actually have to do something but you don't do it because you have underlying basical feelings of you're doing, if that's fear or whatever. So I think that is procrastination, so if you avoid something or you can't go in your maximum performance and…I also feel every time I have to do something I don't want to do from the bottom of my heart, no matter why, it's just a feeling, then I procrastinate…"

Participant 3, 2nd year PhD student

Participants also suggested that the delay occurs when one distances oneself from a task produce high levels of discomfort, for example, stress. When people perceived the discomfort from a priority task, other activities with anticipated comfort would distract people from their priority tasks to experience immediate benefits:

"Doing things outside the main task that don't really contribute to the actual end goal of what you want to get from the actual task itself. You're just doing things outside like, I don't know, looking at Facebook or other websites and things like that just to try and distract yourself from the constant stress maybe of doing work."

Participant 9, 1st year PhD students

5.6.1.1.2. Active procrastination

Another form of PhD students' procrastination was active procrastination, which is defined as an individual's tendency to postpone a task by purposively by doing other non-urgent tasks. More specifically, participants had an awareness of what tasks needed to be prioritised, but they failed to undergo these tasks purposefully:

"Not getting on with your work by purposefully or on purposefully, sort of ignoring it or doing some other task that's not the thing you're trying to achieve. Yeah I suppose that's the best description of it."

Participant 20, 1st year PhD student

Some participants expressed their belief that they put off tasks until close to the deadline because they worked better under pressure. This pressure would stimulate them to actually complete the task:

"…if you know they intend to procrastinate. What I mean intended, I mean controlled. You procrastinate, because you delay the judgement. So you don't react, you don't want to just react or response. Naturally, you want to buy time, to let more creativity. That's different. That means you are actually delaying your instinct judgement. So you actually want to leave it behind, let sit on the problem until you got more alternatives to solve the problem."

Participant 11, 3rd year PhD student

5.6.1.2. Causes of PhD students' academic procrastination

5.5.1.2.1. Anxiety

The reason for PhD students' procrastination varies. A number of participants expressed the feeling of anxiety as they approached the task. One participant described the common characteristics about procrastination:

"I definitely feel anxious about the task. The tasks that I procrastinate are the ones that I feel anxious about. That would be a common characteristic of all the things…"

Participant 14, 4th year PhD student

"I'm working in primary care so if I need to make a call to a GP surgery or something like that I get quite nervous about that so I could sometimes put that off and leave it 'til the last minute."

Participant 17, 1st year PhD student

Some participants explained that their perceived anxiety from a task may result from participants' imagined rejection from the task. They acknowledged making certain tasks increasingly unpleasant, therefore sometimes even thinking about the task led them to experience a sense of anxiety, and they start worrying about that and procrastinating:

"… I'm a worrier, I'm a natural worrier. I will sit there and think of all of the ways in which a situation will go wrong before I do it. So, say contacting the participants, I would sit there and say, 'What if they say no? What if I don't describe myself properly? What if I don't describe my study properly? What if I say something which they then take forward and I can't actually carry through on it?' So I'd worry about it but then when you get into it, most of those things don't happen at all anyway. "

Participant 14, 4th year PhD student

A few participants described that they experienced a sense of inadequacy from a task which would demotivate and lead them to procrastinate. They believed that they were not good enough when compared with other PhD students, or when received some criticisms from supervisors, which resulted in them doing alternate tasks or engage in other distractions:

"…For example, I read once a very nice PhD and I thought, "Wow, that's amazing!" and then I had a look at my data and I thought, "Oh that's bullshit, what do I do now?" and that was really de-motivating and I procrastinated a lot because, yeah, I saw that… or I

thought that I couldn't bring a standard someone else was doing so I was comparing myself."

Participant 3, 2nd year PhD student

Participants stated that their procrastinatory behaviour were strategies that helped them delay producing unsatisfactory work. Participants had irrational beliefs that made them question their abilities to perform tasks well:

"…Coz it's also part of procrastination is that you worried you gonna do the wrong thing, you know what I'm gonna write would absolutely crap and doesn't make any sense, so you kind of put off doing it coz you think it's not gonna any good anyway."

Participant 14, 4th year PhD student

Another common reason about procrastination involved in the fear of failure. However, participants found that, ultimately, they could effectively perform the task, which was causing them to procrastinate once starting the task. The perceived feeling of fear of failure was considered an obstacle for participants to avoid tasks:

"So I can spend quite a lot of time trying to write the correct email and then I procrastinate sometimes about actually sending it because I'm… I mean, I don't know what's going to happen if they don't like the email. If they don't like the email they're not going to like come and tell me off or slap my wrists but I can spend quite a lot of time faffing around trying to do that."

Participant 17, 1st year PhD student

5.5.1.2.2. Perceived tasks characteristics

It was noted by participants that they were more likely to experience higher levels of procrastination for unpleasant or unenjoyable tasks than for tasks described as being interesting. One participant described how he felt about reading that he was most likely to procrastinate with regard to his PhD study:

> *"So for example, my boss writes in a different way I do. People like reading my boss's writing because he writes it exactly the way it's intended, so that reading is enjoyable, but sometimes the material you have to read is putting you off, because it's too difficult to understand or less information, so that makes you unpleasure to reading."*
>
> *Participant 21, just completed his PhD*

Some participants explained that they were more likely to procrastinate on tasks that required specific study skills or knowledge. One participant explained that the general nature of 'unknown' tasks was evident in their procrastination:

> *"Well I procrastinate before every new task because I don't know how to do it and I'm afraid of the unknown, it's quite hard then….new section of a project or something, so every time I do something that I have never done before so you have a new type of method you have used and I think I never used it. Of course I will read something about it or look what it is but to actually do it is always a difference between learning and doing. But if I have done it before it's not that much but I procrastinate when I think I've never done that before."*
>
> *Participant 3, 2nd year PhD student*

Many of the participants reported examples of tasks that attributed to their procrastination, including writing research reports or PhD thesis. Participants explained that research writing, especially writing a PhD thesis, led to doctoral students having barriers that slowed down their progress. One participant described how she procrastinated on writing papers that required high levels of creation:

> *"…Creation…need creation. Another thing is, it's about academic procrastination, in relation to academia, most of procrastinators try to write new paper as you need to create some new things, you can't just copy or do some routine work, so I think that's very important point about academic procrastination, like for me."*
>
> *Participant 7, just completed her PhD*

Participants tended to report that they persistently procrastinated with certain tasks because the task itself represented people's weakness. The motivation for this behaviour was often to protect self-esteem by giving people an external reason. For example, one participant stated that he intended to put off some activities (weakness) which were time-consuming (external reason).

> *"It's definitely things that my weakness. My biggest weakness is statistical analysis of my thesis. That's definitely one and I find I do that because it takes me a long time actually learn new skills in terms of statistics, like learning new approaches or new statistical tests. So I'm finding that I don't want to study things I knew it's gonna take me a lot of efforts and then it has implements into my thesis, so…so that's one sort of examples, the statistics side."*
>
> *Participant 14, 4th year PhD student*

Another characteristic of unpleasant tasks was boredom or repetitiveness. Some participants explained that a lot of PhD tasks were necessary, but were not interesting, such as organising references or doing the literature reviews. Many participants would leave these tasks until the deadline:

> *"So those things I used to be putting off. This wasn't a habit, but this was like, sometimes pressure demands me to do other stuff and this is like a less exciting task, or the same. By reading sometimes you don't exactly get what you want, so that gets boring, so you just… for a while and you start doing less important stuff, and you just keep doing that for days instead of coming back to the reading. That part is supposed to be done, but I ended up doing that later."*
>
> *Participant 21, just passed his viva*

Some participants discussed that pressure from deadlines would give them motivation to work on tasks, whereas some tasks were not so urgent, such as writing up thesis chapters. Some PhD students with good time management skills would start to write chapters during their second- or third-year PhD, while procrastinators were more likely to leave those tasks with long-term deadlines to their last year. One participant explained how she started to procrastinate during the PhD:

> *"…Whereas before I always had set time and I always finished things on time but now it's just difficult I think because you don't have as much, like, the supervisors there but he won't be after you every hour of the day. Whereas when you're school then you had set hours and you had a lot of subjects so you didn't have much time so you had to be forced to schedule. Now you have more free time, like, and you're doing your own thing and you arrange your own time so that's why I feel like I'm not really in control anymore and I just leave things until the very last minute. "*

Participant 4, 3rd year PhD student

5.5.1.2.3. Work/study imbalance

Participants from the lab-based sciences were concerned about their heavy workload in relation to their tendency to procrastinate. Some participants mentioned that their PhD responsibilities including work at the lab from morning untill late afternoon. It was felt too overwhelming and the time available to do other tasks, such as literature reviews, was inadequate:

"I think when you get into your second year I think that's when, because you've got much more laboratory work and I think that you end up putting off the easier tasks, as in the literature review, the reading in the evening, because you've got so much laboratory tasks to do during the day that when you then get home you don't really want to do it, so…"

Participant 15, 2nd year PhD student

"Yes. I mean, PhD is like training. The more you learn, good for your future, so reading is absolutely important. I'm sure my boss agrees on that as well. So according to him, you do your lab work at your lab and go home and read. So when you work from - I used to start at 8:30 in the morning and finish at 7:30, 7:00, so that was my working pattern. By the time you reach home, you are basically dead."

Participant 21, just passed his viva

5.5.1.2.4. Childhood behaviour reinforcement

Some participants viewed procrastination as a behaviour style which had been reinforced by their childhood experiences:

"I found I start to procrastinate when I was a child. When I was in primary school, most of my classmate would finish their homework

by the noon, but I just watch TV at home, procrastinate on my homework until 10pm. Because my parents come home very late, sometimes they back home at 10pm and see me still writing homework, my mum would said: you have too much homework. The truth was that I didn't want to write homework early. And every time I procrastinate, the results not very bad. So it becomes a reinforcement of my behaviour style. Because I don't have a very bad consequence that makes me change this behaviour."

Participant 7, just completed her PhD

5.5.1.2.5. Desire of self-destruction

Some participants described their procrastination with respect to the desire of self-destruction. Procrastination is the gap between intention and action. However, some procrastinators appear to voluntarily delay an intended course of action by making excuses to justify the unnecessary delay. A few participants indicated that they subconsciously intended to procrastinate to perceive the high-peak experience by working under high-pressure:

"It builds up you know, and I think it's quilt interesting, although you know there are unpleasant feelings, it always in your mind that there are something there, it's there it's there, you just let them there and push you to the deadline, because you really don't want to do it in that moment. And, you know it goes into troubles in the future…But you just do…Although it's unpleasant, it's a bad example you want to do it …maybe… on the other side you want that happen, because you would have the stress and you feel like that's very excited to do such thing."

Participant 8, 4th year PhD student

Another participant explained that her procrastinatory behaviour resulted from

the impulse desire of self-destruction:

> *"I can give you a very superior answer, about my self-undoing. This concept is from Freud, it's like self-destruction. For example, I have something very important to my career or my future, but my rational self tells me that I need to do this, it's good for me. But another self, the undoing self, just don't want to do it. For example, I have a little bit acrophobia, some theory about this height-anxiety, it's because if I stand in a high place, I may have such impulse of going to die. So I think I have a very strong self-undoing than other people. "*
>
> *Participant 5, just completed her PhD*

5.5.1.2.6. Supervisors and supervision

Supervision was another concern for students not making progress in relation to their PhD. Most participants shared a common opinion on the important role of supervisiors relating to their research studies. One participant described a type of procrastination that might be a result of her delayed feedback from supervisors:

> *Because I guess as a student, I would tend to procrastinate, because we have no clear directions from supervisors or no clear commitment. For example, I need to wait my supervisor to give me feedback before I can move on to the next step. If the supervisor did not confirm or did not reply, I would get lost. So it would affect my progress. So I have to say, the supervision is the key factor in terms of me, procrastinating fast or slow. I tend to procrastinate because I don't know. There is a lot of uncertainty from supervision".*
>
> *Participant11, 3rd year PhD student*

Some participants expected more detailed guidance and feedback from their supervisors, especially when they encountered difficulties in their research. An inexplicit supervision meeting might, therefore, increases participants' tendency to procrastinate:

> *"For example, if you have a task that you find difficult and you go to your supervisor and say, 'Look, I'm finding this difficult', I think it does depend on your supervisors but you may get something back like, 'Well go and research it' or 'Go and do this,' you don't sort of get… Obviously it's different for different people but sometimes you don't get the full support, I think. I mean, they do want you to go out and do it yourself a lot of the time but I think when you really do have no idea and you're not sure, even what the search terms are to look up in Google, that's where it's… and I think that's quite… it doesn't boost your confidence, that makes the procrastination even worse."*
>
> *Participant 15, 2nd year PhD student*

With respect to the responsibilities of supervisors, a number of participants indicated various expectations of support from their supervisors, including setting up study targets and providing support for conducting research studies. Some participants mentioned that supervisors sometimes tended to express praise which was not always warranted. A potential downside of such praise was described by a participant who felt somewhat unworthy of the attention when she was not making progress:

> *"My supervisor is very laid back as well so whenever I meet him he's like, 'Oh, you're doing fine.' Even if I don't write anything. He's like, 'No, it's fine. You can come back and rewrite it in your final year anyway.' So I think maybe because he's really busy as well it's … and because he doesn't give me, like, certain tasks to do then I'm,*

kind of, doing my own thing. Yes, that might aid my procrastination because I don't meet him unless I tell him I'm going to meet him. So sometimes I just try and to push myself and say, 'Oh, I'm going to send you this by Friday.' And then I have to do that. So that helps me do some work, but not as much as I would like to."

Participant 2, 3rd year PhD student

Participants described that their tendency to procrastinate would normally decrease in response to productive supervision meetings. One participant, on the other hand, found that supervision meetings were unlikely to have long-term effects on reducing procrastination if she was dissatisfied about their meetings:

"…because when I in general don't want to do something there is a reason behind that and then I have a bad feeling, and if my supervisor says, "You do it like Method A," and I think, "Oh Method A doesn't feel right," I can't tell necessarily but I'll say, "Okay, if they say it I will do it," and I don't feel good with it and it's not what I wanted. If they give me good reasons why I should do it and say, "This is why," it's fine because I can accommodate, that's alright, but if I do something I don't feel comfortable with I really much procrastinate because I think, "No, it doesn't feel right." I know it's just a feeling but… and I do not procrastinate by that I want to, it's just a feeling."

Participant 3, 2nd year PhD student

5.5.1.2.7. Perfectionism/High self-demand

Some participants often described their procrastination behaviour associated with their unrealistic high self-expectation:

"…and always I think other than the task it's always me because I set my own expectations….the most important thing is my expectation of something, so what I want to achieve, and I always to achieve too much and not realistically so that's the problem. So it's myself, yeah."

Participant 3, 2nd year PhD student

Participants reported that perfectionism not only delayed their initiation of a task but also affected their task completion. One participant described how perfectionism affected his progress:

"…that would be probably the main reason why I procrastinate. It's if I don't reach what I want to achieved level or standard, then I think…I really don't want to start it coz I know that's gonna be a long journey, and I constantly changing, and amending and not being happy with them. I only discovered the other day actually."

Participant 13, 4th year PhD student

5.5.1.2.8. Feeling of incompetence/low confidence

A few participants described one underlying reason of procrastination as the feelings of incompetence:

"Yeah I would say the times when I've procrastinated the most were the times when I had the least confidence that I could do it…..So, yeah, so I'd say my confidence, yeah, it really did affect my procrastination….I was talking about how I would procrastinate contact with participants … if I found a situation really difficult and I was like, 'Euch, that was a horrible meeting,' then I would procrastinate the next one because I just wasn't confident that it would go well, I think. Yeah, so I'd say that has a huge effect."

Participant 14, 4th year PhD student

"…In fact that my personality is not that sort of confident person. Certainly when it comes to my work as well, I push it the same way…That sort of…also increases your procrastination in some way anyway. So I definitely think there is a relationship between procrastination and confidence, or emotion you know, you know feeling a bit sad a bit down, low mood that can also cause you to procrastinate a lot, I find."

Participant 13, 4th year PhD student

A few participants described that high levels of confidence played a role in mediating their voluntarily delayed course of action:

"Yeah, the lower your confidence is, I think the more you procrastinate because you don't feel that you can complete the task because you don't have the confidence, you don't feel that you can do it, I would say anyway. I'm confident that it's always going to get done eventually so I'm confident in that I can procrastinate and it's not going to really have a detrimental effect on any of my work because eventually I'm confident that everything will get done and so I'm allowed to have procrastination periods. "

Participant 15, 2nd year PhD student

Regarding the effects of confidence on procrastination, one participant argued that sometimes she overestimated the time needed for task completion because of high levels of confidence that would result in procrastination:

"Yeah, and the second reason is I'm a very optimistic person. I find sometimes I couldn't properly estimate the time for the task. Sometimes I over estimate my efficacy and underestimate the time I need. It's about the sense of time. The wrong sense of time is from my optimism. I'm confident about my PhD project, I means for the

quantity of my project. But for PhD thesis, it requires high quality not just quantity, so I think the confidence makes me procrastinate more. "

Participant 5, just completed her PhD

5.5.2. Theme 2: Effects of academic procrastination

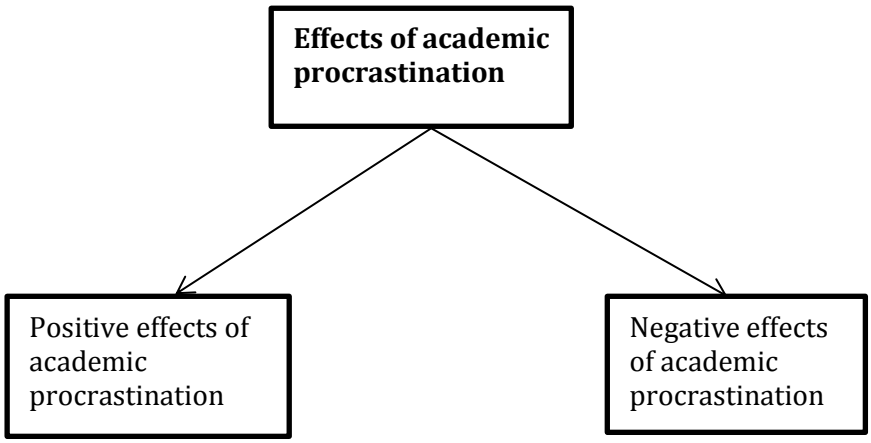


Figure 5.2.: A thematic map of 'Effects of academic procrastination'

This theme included two sub-themes: (a) Positive effects of academic procrastination; (b) Negative effects of academic procrastination. All the nodes within these sub-themes are described in detail below.

5.5.2.1. Positive effects of academic procrastination

5.5.2.1.1. Processes of developing new ideas

A number of participants suggested that procrastination did have some advantages. They suggested that good procrastination was a method of developing participants' thought processes and helping them actually tackle the problem. One participant viewed procrastination as a "mental planning tool" as he would keep thinking about the task despite delaying it:

"I think you can turn it into a positive to recharge your batteries, just chill out for a bit, think about the work. Because when I

procrastinate I do still think about it so I don't always fully switch off, it's always something going on your head, but I think that's a PhD student and I think when you're having a shower or brushing your teeth, you know, at all times, something's ticking away in the back of your head. So it can almost be used as a mental planning tool."

Participant 17, 1st year PhD student

Some participants described that getting over-involved in tasks might be a reason for students not making progress in relation to their PhD; procrastinating on tasks might detach people from the unproductive situation and help participants obtain a new perspective of one's work:

"…you distance yourself and you realize that: possibly I could look at it in a different way. So in that period of procrastination, there are new ideas come along. So it's like a curious period of me. So that would helpful."

Participant 6, 3rd year PhD student

5.5.2.1.2. Doing necessary tasks

A few participants described that procrastination was sometimes not about doing nothing, but rather doing something less important or less urgent. Therefore, they would receive benefits from such procrastination by finishing other less important tasks:

"But at the same time it is kind of positive because you reach that point where you've already done all the work before so you have a bigger view of everything so it's easier to do that final step of the deadline."

Participant 2, 3rd year PhD student

Another participant described specific situations in which her procrastination had reflected positively on her PhD as a whole:

> *"But if you procrastinate doing easier and maybe not as urgent but still relevant things for your thesis then they get done even though they didn't need getting done at that point in the end you still have…you've finished something that eventually you would have had to do anyway. So if you procrastinate by just checking all your bills and paying bills that needs to be done even if it's not you and very soon it's done. At some point you run out of the minor tasks and then you have to do the bigger tasks or do completely pointless things."*
>
> *Participant 7, 3rd year PhD student*

5.5.2.1.3. Psychological benefits

Some participants considered procrastination as a strategy to regulate negative emotions from stressful work. When participants experienced heavy workload or burnout from their PhD work, procrastination would remind individuals to distance themselves from those negative emotions:

> *"And sometimes I also think that if I have too much workload and I procrastinate towards the next task it's sometimes because I'm just overworked and then procrastination sometimes tells me, 'You have to have a break now.' So it's very on the edge, it can be both, yeah? But this is sometimes the case and then I make a deliberate cut and say, 'Okay, I will have this half day now off and do whatever I like but tomorrow morning at that time I will start and I will tell everyone I will start.'"*
>
> *Participant 3, 2nd year PhD student*

Participants described procrastination as sometimes making them feel psychologically healthier, although this was a short-term benefit. Not focusing on stressful PhD work, but procrastinating on irrelevant things, would enrich themselves as a human being:

> *"Well it makes you feel a bit happier, make you relax a bit, get your intrinsic motivation up. I don't know. So yes, make you feel a bit more … just get away, it's a distraction from the actual work you're having to do and the cognitive overload, it's not very demanding if …help you out a bit there and also keeps you in the real world, makes you feel like you're not I'm working all the time. Have a bit of fun."*
>
> *Participant 9, 1st year PhD student*

Another participant described that some PhD students dedicated themselves to their research studies with ignorance of their psychological health and physical health. He described that he placed more concern on psychological well-being rather than completing his PhD tasks. Therefore, he reported that the positive effects of procrastination outweighed the shortcomings:

> "*I'm sure, but I think they're almost more practical logistical things in the real world, whereas I think the benefits can be quite good for your mental health and your physical health as well, so it's difficult. And at the end of the day it's a PhD, it's very important, but it will get done and it's not the end of the world if you run over a bit, nothing's the end of the world and of paramount importance all the time, a priority, is your health at the end of the day. So I think the positives of procrastination definitely outweigh the negatives."*
>
> *Participant 17, 1st year PhD student*

Another participant agreed that procrastination played a positive role as a coping strategy by hindering them from getting frustrated or stressed at work:

> *"I think people probably procrastinate for a reason, probably beneficial I think in a weird way, for ... you'll sort of focus all your mental energy, how much you feel you can get done and usually you're procrastinating because you're getting towards being sort of burnt out and getting frustrated or tired or stressed. I think procrastination might in itself be a coping strategy from getting frustrated and that, but I don't know, maybe not. "*
>
> *Participant 20, 1st year PhD student*

Some participants described that they strategically delayed certain tasks and performed other irrelevant activities when experiencing fatigue, because they needed to rest and recover to maintain energy for future work:

> *"I just let it ride and see through the procrastination. Because sometimes you don't even really have a choice of procrastination, your brain just won't work. If you haven't got the motivation or your brain's just not in it there's no point actually trying to do that work because it's not going to be very good, so you're kind of fighting against… I don't know whether it's your body telling you or your mind telling you to just kind of go and procrastinate so don't worry about it, just ride it out and it will disappear and then the motivation will come for you to get on with the work, I suppose. "*
>
> *Participant 17, 1st year PhD student*

A few participants reported that procrastination may be a performance-enhancing behaviour when one was in a state of energy or motivation depletion, i.e. stepping away from work rather than continually going around

the circle without making any progress. Participants could sometimes procrastinate for months but end up with alternative solutions for a task:

> *"That's why I have taken two more months to write. I think it's November I did my qualitative analysis, and I was ok with it and that's fine and I can start writing, and then I've gone home December, and I start thinking about I was not doing anything, I was procrastinating, I was not touch my PhD, and that one month time, I realized that analysis I have done was very superficial. It had to be done in another way, so I came back in January and started to re-analyse it. In February I started to write it. And I'm still writing it. So the delay has happened."*
>
> *Participant 6, 3rd year PhD student*

5.5.2.2. Negative effects of academic procrastination

5.5.2.2.1. Perceived anxiety and stresses

Some participants reported that their procrastination was always, or nearly always, accompanied with negative emotions, such as constant stress and pressure:

> *"And I think the most important thing that I think is negative, that's constantly stressing. So even if you relax you are stressed, yeah? So, you know, you do a relaxing task which is normally good, like hiking, but you still think about it and it still stresses you, and I think this is one of the reasons that I'm very stressed most of the time and I don't have room for other thoughts and stuff."*
>
> *Participant 3, 2nd year PhD student*

A number of participants reported that procrastination resulted in feeling overwhelmed by the demands of the situation and perceiving a great sense of anxiety:

> *"I think largely you get less done, you get more anxious because you know you are not doing things, it gets more overwhelming, you are just not on top of it and it spirals I think as well."*
>
> *Participant 18, 2nd year PhD student*

Although some procrastinators might justify their procrastination in terms of working better under pressure, other participants said people were more likely to experience negative consequences of procrastination, especially some psychological problems, when working under too much pressure:

> *"Because if you put yourself in the procrastinating position, you will feel stress. But sometime it will motive yourself to do the tasks, and sometimes you will feel too stressful to do the PhD studies, you probably would get some psychological problems."*
>
> *Participant 1, 1st year PhD student*

5.5.2.2.2. Bad quality of performance

Participants discussed that the quality of tasks were sacrificed because of their procrastinatory behaviour. One participant said procrastination often led to negative consequences in terms of bad performance:

> *"Yes, it's based on the experience, because when I start my study, I really face the negative consequence of procrastination, by getting the lower marks."*
>
> *Participant 8, 4th year PhD student*

Another participant viewed procrastination as a habitual activity with regard to low self-control. Unnecessary stresses from procrastination would result in bad quality of work:

> *"If you let this happen, I mean let procrastination as a habit, then you couldn't control. Because it means you don't have self-control, you don't have self-discipline…That's bad. Because you give yourself the stress, although some people told me that I need to give myself pressure to get things accomplished, otherwise I can't. That means, they have gave them a lot of stress, and the quality would be compromised, as you see. Because you have less time to do the proof reading, or polish the quality. I think in terms of individual, under the unnecessary stress, you have to compromise your quality."*
>
> *Participant 11, 3rd year PhD student*

5.5.2.2.3. The sense of guilt

Self-perceived guilt from procrastination not only affected some participants' enjoyment of relaxing activities, but also increased their tendency to procrastinate:

> *"So sometimes it's good to think right okay I'm just going to leave it and go and do something else for a bit, so. In a way that's very good, but in a way you do, you feel bad for having done that, for not having sat and tried to do it. You feel guilty over it. So I think that's probably the worst thing is the guilt. You feel so bad and then obviously then you end up ... other than sort of working at a constant pace you find you're working like this, you're either working really hard or you're doing absolutely nothing. "*
>
> *Participant 16, 2nd year PhD student*

Another participant described that the feeling of guilt about procrastination accompanied with anxiety would in return, increase procrastination by doing irrelevant things to avoid those negative emotions:

> *"Because when I feel guilty, I will fell anxiety, and I will look for other things to makes me happy, such as funny movies to makes me happy, thus I will procrastinate more. If I don't have that kind of guilty, I may just start to do my work now, I don't need to find ways to make me happy first. Happy is very important for my feeling. If I feel guilty I will do other things to lesson my guilty rather than do the work. So I will do other unrelated work. "*
>
> *Participant 5, just completed her PhD*

5.5.2.2.4. Negative self-concept

Participants described that procrastination strongly affected their confidence and led to self-doubt about their ability to complete their PhD:

> *"So when I was at the phase and I procrastinated like a week - I was doing something but not really going forward – I really had doubts that I would ever get a PhD because I thought, 'What the hell, I just have to do this task, I do not start the task so actually I do not... so I'm not valuable enough to get a PhD if I'm not able to deal with my procrastination.' So, yeah, this is what I thought or I still think it."*
>
> *Participant 3, 2nd year PhD student*

> *"I think procrastination does make me question and therefore makes me lose my confidence about my decision about the PhD, and my ability. Not about my ability, I know it's the process and if everyone get awarded and I can also get awarded. But then definitely there is a moment you feel that you can't handle it, this is too much and this is overwhelming. So it does affect my confidence sometimes. "*

Participant 6, 3rd year PhD student

5.5.2.2.5. Harm people within a social context

The negative consequences of procrastination does not just affect the individual as people are embedded in a social context. One participant described that she and her boyfriend were both procrastinators, and that the stress from procrastination would negatively affect their personal life to some extent:

> *"It's not only stress to ourselves. For example, I had a boyfriend who was a procrastinator and I hate that we both would feel that stress all the time. So I would rather he did the stuff. I would push him but still. But it's not just stress to yourself it's the harm it does to people around you."*
>
> *Participant 12, 3rd year PhD student*

Some participants whose research projects incolved teamwork discussed how their procrastinating behaviour would negatively affect the whole team's progress:

> *"And not only to individual, also affect other people. Because if you work with people on the project, other people have to work with you, if you procrastinate you also affect the other people. Because they have to wait until you make up your mind, you finish your work before they can finish. Then it's not only your problem. You affecting the whole team, or even the family, you know."*
>
> *Participant11, 3rd year PhD Student*

5.5.2.2.6. Wasting time

Participants commonly reported that some types of procrastination led to them doing nothing but wasting time:

> *"I think it depends on how you procrastinate. If you procrastinate by sitting in front of a computer watching silly YouTube videos that's negative and pointless. "*
>
> *Participant 7, 3rd year PhD student*

> *"And what's a negative of course, the longer I procrastinate, the longer it takes to complete my work, so it's… That's negative because it costs me time."*
>
> *Participant 3, 2nd year PhD student*

5.5.3. Theme 3: Strategies to cope and reduce procrastination

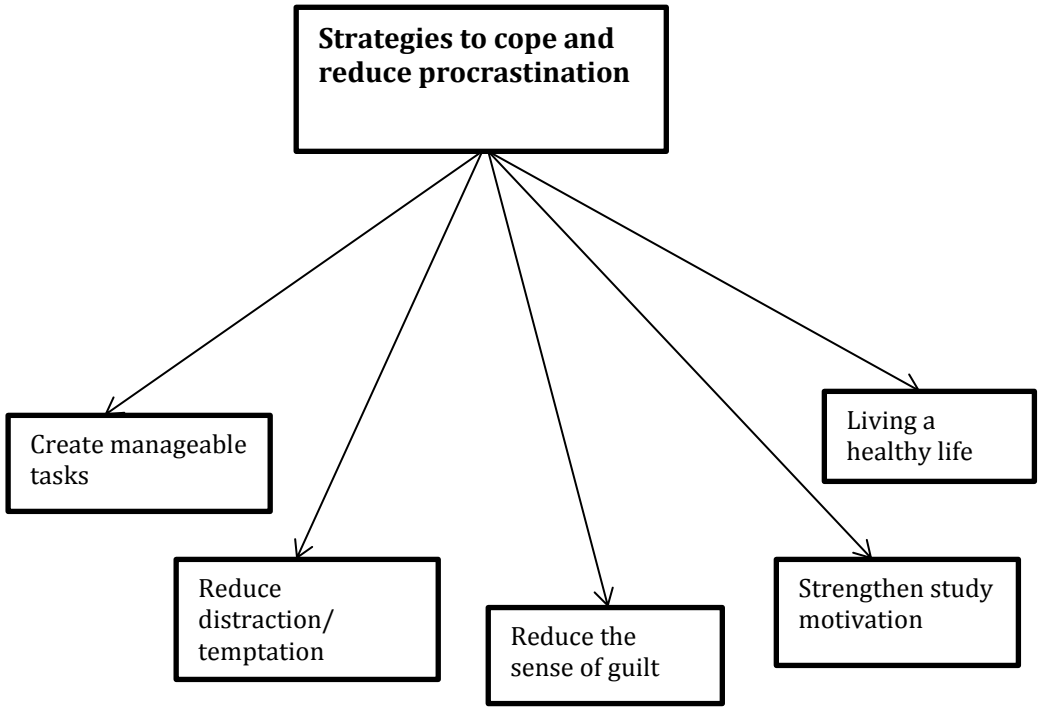


Figure 5.3: A thematic map of 'Strategies to cope and reduce procrastination' theme

This theme consisted of five sub-themes: (a) create manageable tasks, (b) reduce distraction, (c) reduce the sense of guilt, (d) strengthen study motivation, and (e) live a healthy life style. All the nodes within these sub-themes are described in detail below.

5.5.3.1. Create manageable tasks

5.5.3.1.1. Break down big tasks into small chunks

A number of participants reported that their procrastination resulted from poor organisational skills. Therefore, developing a realistic work schedule with manageable tasks consisting of some small tasks would help them cope with procrastination:

> *"I think I would probably give myself a time scale, so I could base on the time scale to finish my tasks on time. For example, I would probably set up 90 days 3 month targets, like to do the literature review, and then if I can't finished it, I will keep remind myself: oh, this's the deadline, I need to finish that. To divide your whole project into one piece and one piece small target, that's really important for myself to cope with procrastination."*
>
> *Participant1, 1st year PhD Student*

The completion of a doctoral thesis appeared to a big challenge to many PhD students. One participant suggested that breaking a big task (e.g. writing up the thesis) into several small manageable chunks would lead to less procrastination:

> *"…If I was finding it manageable rather than overwhelming, then I think I would procrastinate less. So... what I'm going to try and do in my thesis is break it down into chunks so I don't leave it all to the*

end because I think if I had a massive thesis to write then that's when I'd start panicking and I'd start procrastinating, but I think if I do try and sort of break it down and make things more manageable I'll feel less need to do it."

Participant16, 2nd year PhD Student

Another strategy that some participants employed was to set mini deadlines for each task. By having manageable pressures from mini deadlines, participants would have the motivation to finish many tasks:

"I think setting mini deadlines, trying to make the bigger task into smaller tasks so it doesn't look as big as it is and just forcing yourself to follow those deadlines and meet them as much as you can. "

Participant 2, 3rd year PhD student

5.5.3.1.2. Doing other constructive PhD-related tasks

Participants described that some tasks were necessary but were more likely to be ignored as those tasks were perceived as boring, such as doing references for the thesis or administrative jobs. Instead of procrastinating on big tasks by doing nothing, some participants suggested that doing those necessary PhD-related tasks would help them cope with procrastination:

"And if it's procrastination where you're doing the smaller tasks that you know you can do, like flyers, a bit of admin, they're the small tasks but they still need to be done so you are doing something constructive. And the smaller tasks like admin often get ignored so sometimes taking a day off to just do that, there's actually nothing to feel guilty about."

Participant 17, 1st year PhD student

"... if I catch that I am procrastinating a lot on a task I try to have other tasks that are useful that I can kind of do instead of the task that I'm ... so when I'm procrastinating it's because I'm doing ... at least doing something useful. That might be to do with my thesis, it might be ... oh well I need to create a consent form, rather than write this chapter and so I'll start working on the consent form so at least I'm doing something useful."

Participant 20, 1st year PhD student

Another participant described that he would still think about the important task when doing boring and repetitive tasks because such tasks did not consume much cognitive activity. Sometimes, new ideas would suddenly come to mind during these boring and repetitive tasks:

"…what I'd sometimes do is, if I was procrastinating, I would do those menial tasks, those things that needed to be done but are really boring. So, references, for example, when I was putting off doing my discussion I would do references…so I would do a boring, repetitive task and actually my ideas for my discussion came through doing those notes because my brain was still working but it meant that because I was doing something really repetitive, the ideas would actually come and I would just note down ideas while I was still doing the referencing."

Participant 14, 4th year PhD student

5.5.3.1.3. Make a to-do list/checklist

A few participants suggested that making a plan or a to-do list was a helpful tool in coping with procrastination. Participants explained that those checklists served as a reminder to keep participants motivated to do the tasks:

"I tell you, I tend to give myself the way…I write my to-do list very day. Some of the outstanding issues, they have been my to-do list 10 times, you know. They appear in my to-do list all the time, so I feel really bad if I don't finish them."

Participant11, 3rd year PhD Student

"In some cases, even though I set the deadline, like if today I want to write 500 words, and read these papers, sometimes I would still delay the reading or writing, but if you just keep make yourself a plan, it eventually do it. Although you might finish it later, you suppose to read the paper today, you write down that you want to read it today, but actually you don't do it today, then you write down it for tomorrow, you would do it tomorrow or the day after tomorrow. Eventually you would do it. But if I don't make the plan for myself, I would never do it probably."

Participant 10, just passed her viva

Some participants described that they wrote their plans in their calendar in advance to help them reduce their procrastination:

"…for example, today I have a meeting and have these things with you. So I write these in my calendar. But if I have to do something with my research, I write it in advance and then check it. Sometimes at the beginning of the day, what am I going to do today? I'm going to write this part of chapter or to apply for a conference. Ok, I just write them down and try to do it on the day."

Participant 8, 4th year PhD student

Some participants suggested that people could organise their to-do list or arrange tasks in order of priority to avoid procrastination:

"I think what my supervisor's done recently is very helpful, is ranking the tasks that you have for that week in an order of priority, which I've found really helpful. So now every week we rank them together on which ones I need to do first or which ones are more important and that's really helpful because each day I can then go, "Right, well okay well I did number one yesterday so now it's number two or number three or whichever," and I've found that really helpful. I think that the supervisors do need to sort of help a little bit with the more difficult tasks or tasks that are sort of outside your boundary slightly."

Participant 15, 2nd year PhD student

With regard to prioritising to-do lists, another participant suggested that a lack of prioritisation was the reason most to-do lists were ineffective. By setting up the priority, one could set up an important task that you would never get done in order to push you to finish the more urgent tasks in the lists of number 2 or 3:

"Somebody once told me a good piece of advice which is, to have ... on your to do list, have number one as a task you really should do but you know you probably won't get done and then everything else things that actually you know you need to do more importantly, so you always try and do number one but you never get it done and you spend the other time doing the other ones on the list."

Participant 20, 1st year PhD student

5.5.3.1.4. Develop realistic goals

Setting unrealistic goals, which related to procrastination, was frequently described in the interviews. To cope with such delaying activities, participants

suggested that it was important to set reasonable and attainable goals within the timeframe of their studies:

> *"…I try to be a little bit more realistic about what I have to do this month or this week, and what can I actually get completed, like trying to being honest with myself that it might be probably take me a whole week if I really want to read a whole book. I just try to be more honest with myself that how slow I am."*
>
> *Participant 4, 3rd year PhD Student*

> *"…setting yourself goals with other people I think is really important because then you have got those goals and making sure that those goals are manageable means that you do have a point at time in which you're meant to have done something and if you meet that goal then I think that spurs you on and maybe stops you procrastinating again for the next thing."*
>
> *Participant 14, 4th year PhD student*

Another participant described that 'a detailed plan', including academic and non-academic commitments, helped to organise his time more effectively:

> *"I used to do it on a weekly basis, I used to make a plan on Sunday evening, this is what I'm going to achieve this week. I'm going to do this, this and this and this is my experimental plan. In the beginning of my PhD, in the first and second year of my PhD, I used to make a big experimental plan and put it on paper and send it to my boss and say, "Boss, this is my plan, this is what I'm going to do this week," and it used to be a very detailed plan, what exactly I'm doing and what I'm using and all this kin d of thing."*
>
> *Participant 21, just passed his Viva*

5.5.3.2. Reduce distraction/temptation

5.5.3.2.1. Commit a deadline to a third party

Individuals often used weekly plans or to-do lists with deadlines to commit themselves to doing a particular task or achieving a particular goal. However, these self-imposed deadlines were easily broken by procrastinators who were distracted by other activities or temptations. Some participants described that the strategy of committing to a deadline with a third party would reduce the risks of breaking deadline commitments. For example, sharing the deadline with friends added pressure to motivate procrastinators to accomplish the tasks on time:

> *"The other way is I share it with people more, because I think public commitment would make me feel like I broke my commitment…I would tell my good friends: I think I must have to do it within this year, or this month I have to do this. So then when my friends ask me next month: oh, have you done it? Then I would feel really bad if I haven't, you know."*
>
> *Participant 11, 3rd year PhD Student*

A few participants recommended that committing to a deadline set by their supervisors would prevent them from failing to undergo their plan:

> *"I tend to set the deadline earlier. For example, if I have a meeting with my supervisor next Monday, I probably just tell them that I promise I will send the report by Friday. So that would create the pressure on me, even though they don't ask when I should send the report. If you promise to someone else, you will do it automatically, because you make a promise."*
>
> *Participant 10, just passed her Viva*

Another participant explained why committing to a deadline with supervisors not only helped reduce procrastination, but also strengthened the motivation to act upon the intention to do the tasks:

> *"I set the deadline but I communicate this deadline to my supervisors so that I have to do it. Because if you have your own deadline you can put the deadline wherever you like, or you push it a bit back…So I try to figure out a real realistic date I can be finished with it, make an appointment with my supervisors and tell them, "On that day I will show you what I have done and with this and this and this," and I do it. And it's also motivating me because I know, "I have to do it until tomorrow." So that's also a strategy, to communicate my deadlines to my supervisors. Of course they can set me deadlines but sometimes I think I am more into my work in order to tell how long it will take, so rather than they are."*
>
> *Participant 3, 2nd year PhD Student*

5.5.3.2.2. Use computer applications to block distractions

A number of participants discussed that they would check their Facebook or Twitter accounts as a way of distracting themselves when procrastinating. One participant introduced a computer application to block internet distractions when they were at work:

> *"…the other thing I used to use is, and I can't make it work anymore, I used to have the thing called Little turkey which is a programme on the computer which you can just block the internet. I just have to shut things down and I couldn't go and read the things that distract me… it's really might be make me realize that how often that just reflect reaction: oh, this is a bit boring or difficult, I just you know refresh my brain for a bit, you know, do other things that you just*

like, and like you actually doing good things…I need to make it works again, because it's really helpful actually."

Participant 4, 3rd year PhD Student

People can sometimes procrastinate because they want to engage in a pleasant, rewarding activity that holds short-term gains. A few participants used another anti-procrastination strategy, which related to focusing on short-term outcomes. It's called the Pomodoro technique and makes people commit themselves to undertaking a task for a fixed period of time with no interference and intervening short breaks:

"You have your timer, you set the timer for 20 or 25 minutes – this is personal preference, I have 20 minutes – and you will work for 20 minutes, just 20 minutes, but without anything else. So phone is off, everything else is off, no Facebook, just working, and even if you're just reading what you have done or what you have to do. And then you have a 5 minute break and you are not allowed to work in those 5 minutes. And then, again, 20 minutes, 5 minutes' break, 20 minutes. After 3 times 20 minutes you have a longer pause of 30 minutes or get something to eat and stuff."

Participant 3, 2nd year PhD Student

5.5.3.3. Reduce negative feelings about procrastination

5.5.3.3.1. Being rational about procrastination

Participants often mentioned that the self-perceived guilt about procrastinating was likely to reduce motivation and reinforce the desire to delay tasks. One strategy regarding self-forgiveness about procrastinating helped reduce procrastination:

"I just waste the whole day doing nothing, or you waste the whole day just focus on this little one paragraph or something. And you think: yes, I was procrastinating all the day, but I think sometimes it's a way your brain telling you that's you need just take a break. "

Participant 13, 4th year PhD Student

Guilt is one of the few negative emotions that is consistently experienced by procrastinators. One participant provided an idea that avoiding the complex feeling of guilt helped him/her cope with procrastination:

"I almost remove the guilt from procrastinating, I kind of rationalise it with myself. And if, say, I'm thinking about taking a day off to just veg out on the sofa and watch TV and do something that's nothing to do with the PhD I'll obviously almost do like a cost benefit analysis in my head when I'm doing it and if I start to feel guilty then I think, 'Oh well should I go in and actually do this?' and if I decide to take the day off I've almost rationalised it in my head so I'll say to myself, 'Oh it's fine, I can do that tomorrow, it will eventually get done, it's not the end of the world, I've got three years.' "

Participant 17, 1st year PhD Student

5.5.3.3.2. Being understood and accepted rational delaying

Some participants described the importance of understanding the reasons why they procrastinated before finding strategies to overcome it:

"…the important thing is not like how to avoid procrastination, the important thing is to find the –the why. So I do it because I have fear, so if I talk about it and talk to other people it can take some part of my fear because I think, "Oh I have done it before, look, I did it like this and this," or whatever it is, but you have to identify what

it is because if you know it, it doesn't mean you can solve it but if you already know it it's the first step to start solving it."

Participant 3, 2nd year PhD Student

"I think this is a kind of coping strategies that I try to understand myself and my behaviours. I think if I can understand myself, I can solve this problem rootly. Because I want to understand my behaviour; because it wasn't a rational behaviour. My long-term coping is try to understand myself, find the real reason and solve the problem."

Participant 5, just completed her PhD

5.5.3.4. Strengthen study motivation

5.5.3.4.1. Gain positive effects of people's evaluation

Some participants reported that their procrastination was related to evaluation anxiety. However, it was described that the threat of evaluation did have beneficial effects by reducing procrastination. One participant stated that gaining positive effects from her supervisor's evaluation threat motivated her to work more efficiently:

"I think supervision would add pressures to you when you could finish it and how much effort you want to put into the work… If they set high expectation on me, I probably would start straight away after the meeting, after I receive the tasks."

Participant 10, just passed her Viva

A number of participants with teaching responsibilities believed that the threat of the audience's evaluation (students) would affect their behaviour and

performance. One participant said the threat of her students' evaluation would drive her to procrastinate less on her preparation for teaching:

> *"I really don't really procrastinate when I prepare for teaching. Like somehow I find that's really easy to read, even though it's really dry text book, I find that quire straight forward to do it. And I really don't know why, I'm not sure why I find that easy to do, but I don't find I will procrastinate when I'm doing the preparation. Maybe because it's for someone else, not suppose for me, but for the people relying on me to be prepared. You know, I can't go to those tutorials not knowing what I'm going to talk about."*
>
> *Participant 4, 3rd year PhD Student*

5.5.3.4.2. Give incentives to strengthen study motivation

The completion of a task sometimes was a long-term outcome involves in receiving short-term discomfort when doing a task; therefore, individuals tended to procrastinate with activities that they considered more pleasant. Some participants found using self-imposed incentives could strengthen their motivation and encourage people to earn the reward:

> *"I guess if you ask me what other coping strategy. I would say, maybe I give myself some motivation. Because I guess everybody need encouragement. So one of the ways is I give myself motivation when I hit the short term target. So either I take a break or I buy myself something. Yes, give myself a treat if I achieved my target."*
>
> *Participant 11, 3rd year PhD Student*

Procrastinatory behaviour appeared to be less active when there were rewards or incentives for getting an early start. One participant suggested that breaking

their long-term goal into small tasks with small rewards for each small task-completion was a good anti-procrastination strategy:

> *"I'd say to myself, if I finish this chapter or I finish this part of my session, I will look at Facebook for half an hour, or I will watch a YouTube movie. So I used to put a target and if you achieve that, it's like you're getting a carrot."*
>
> *Participant 21, just passed his Viva*

5.5.3.4.3. Gain positive effects of stress / peer-pressure

A number of participants mentioned the strategy of exerting peer pressure. Some participants described that they would be more efficient when working at the office because of the positive influence from peers working around them:

> *"I think for me another coping strategy is you know I tend to compare myself to other people so I'll look round the office at other people working and I'll think ... so other people work you know, you must work, work too…Yeah a peer effect, yeah absolutely, you compare yourself to other people who you can see are sitting doing work and that makes you think oh right okay I'd better."*
>
> *Participant 16, 2nd year PhD Student*

Working at the office built a circle of accountability. Some participants described that one could talk about their problems or procrastination and share an appropriate deadline of a task with other PhD students. Therefore, participants found it helpful getting other people involved to their commitment to deadlines:

> *"…in the whole of office are like 20 people but PhD students like 6 or 7. So we are quite nice…Maybe 8 or something. But we are quite nice together and we talk about our problems, so talk about*

*procrastination, we do that, because they're very important. And actually it helps when you see that other people also do it and it helps that you motivate each other to start the task and then ask, '**, did you start the task?' 'Oh yeah, I did, yeah.' To be proud of each other if you did."*

Participant 3, 2nd year PhD Student

Another participant suggested that one could create healthy competition when working with peers:

"I used to take inspiration from other people. One of my colleagues was writing a thesis at the same time, so I'd look at him and just talk to him, like, "How much do you write? What do you do?" It's like healthy competition, I would say. It motivated both of us. It motivated both of us. "Okay, I'm not getting up until I finish 10,000 words today." So because he wrote 10,000 words, I'm going to sit here and I'm going to write 10,000 words. It can hurt you if you don't have… I mean, it all worked for me…"

Participant 21, just passed his Viva

5.5.3.5. Living a healthy life

A number of PhD students tended to engage in unhealthy and risky lifestyles. Some participants described that there was a connection between their lifestyle and procrastination. One participant mentioned how she felt about her unhealthy life style resulted in the loss of focus and procrastination at work, and suggested a healthy lifestyle could help reduce procrastination:

"I think a lot of my procrastination comes from being tired. I don't always sleep early and then I wake up early, so I tell myself I'm too

tired to work. Like I can't concentrate anyway. So I think if I would be a little bit more discipline with sleep that might be help actually as well. I keep saying that go to bed early, and sometimes I need to strict about that, set my TV an alarm and turn itself at half past nine or something, I don't know. Yes, I need somehow be strict."

Participant 14, 4th year PhD Student

Although there were individual differences regarding working time preferences, one participant suggested that following a regular working routine was a helpful tool in coping with procrastination:

"…Probably change the life style. I know some other PhD students would work regularly or in an ordinary routine. For example, they would start work at 9am and finish at 5pm. After that time, they don't work. But for myself, I work anytime. Include the weekend if I really need to finish some tasks. So if I could change my life style, try to work like them, from 9 to 5 daily, I probably would conquer my procrastination, or reduce the percentage of procrastination."

Participant 1, 1st year PhD Student

5.5.4. Theme 4: Support Strategy Recommendations

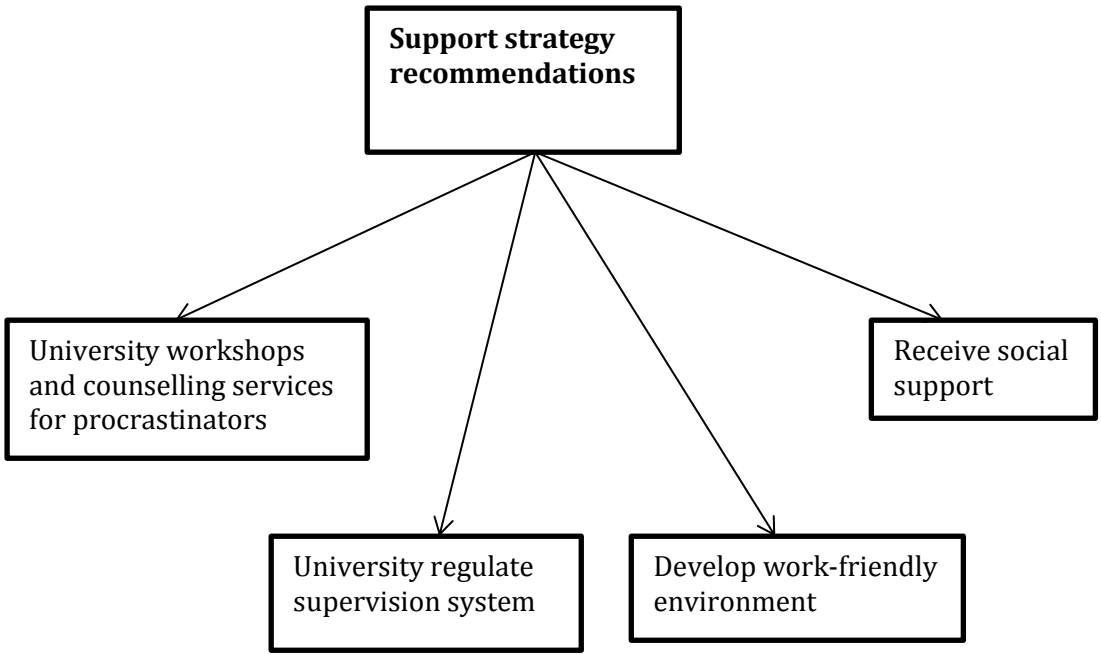


Figure 5.4. A thematic map of the 'recommended support strategies' theme

This theme included four sub-themes: (a) university workshops and counselling services for procrastinators, (b) a university-regulated supervision system, (c) developing a work-friendly environment, (d) received social support. All the nodes within these sub-themes are described in detail below.

5.5.4.1. University workshops and counselling service for procrastinators

Most participants suggested that the university should provide more support for students with procrastination problems. A few participants complained there were relatively few courses aimed at helping student to reduce their procrastinatory behaviour:

> *"…as far as I know, I cannot see any central courses of how to reduce procrastination. I guess if there are more student support training would helpful with people with less experience or less discipline."*
>
> *Participant 11, 3rd year PhD Student*

"The one from the counselling service is a really good one. They arrange a course for procrastination and something else, it's a double title, and this course is not… they are not running it often and the spaces are very limited, and I think that was the best course I have taken about procrastination, it was really, really good…So I think the university could put up more of those counselling services."

Participant 3, 2nd year PhD Student

"I think they university could need to implement some guide lines, they probably do have guide lines for supervision but maybe amend them, so they include something about providing some kind of support for students you know if they feel they are struggling or procrastinating, then they can talk through to someone that will be with them or someone sort of outside their PhD and circle…"

Participant 13, 4th year PhD Student

5.5.4.2. University-regulated supervision system

5.5.4.2.1. Limited PhD numbers for each supervisor

Some participants complained that their supervisors recruited too many PhD students. As a result, students were less likely to receive enough support for their studies:

"…there should be limits to how many students one supervisor can have. That shouldn't have too many. Mine has too many and I feel that it affects in his supervisions."

Participant 2, 3rd year PhD student

Some participants acknowledged the importance of good supervision in terms of supervisors being helpful and supportive. A few participants described that

the university sometimes recruited too many PhD students for profit but this affected the quality of supervision:

> *"It's as much money as the supervisor can dig out somewhere from research councils or European or other funds can take whatever money they want. It's just, yes, but every supervisor should be sensible enough to not completely over burden themselves. "*
>
> *Participant 7, 3rd Year PhD student*

5.5.4.2.2. Submit fixed-term report to monitor PhD progress

PhD students are subjected to annual reviews at the University of Nottingham, which involves the assessment of the students' progress and attendance by an internal assessor. One participant commented on the required minimum number of supervision sessions:

> *"…because you have every year your annual review, that means you have somehow an examination. You have to have a supervisor meeting each month, this is also a good time interval to check from your supervisor what you're actually doing, if you procrastinate or not, you have your deadlines, so I think that's fine. Without them I would be a bit more, "Hmm…" because you can push everything back and that's not good."*
>
> *Participant 3, 2nd year PhD Student*

Some participants perceived the annual reviews as a long-term deadline which allowed many PhD students to procrastinate. A few participants recommended that submitting more frequent progress reports would help students concentrate more on their research progress and reduce their procrastinatory behaviour:

> *"So if you ask me about the university, I would say that can be not annual but can be every six months. Then you don't have to wait for*

one year to finish the review. More regular review would be…I mean, with the system to track the progress more often would help."

Participant 11, 3rd year PhD Student

Some participants mentioned that there were different policies among different departments with regard to how often PhD students submitted a report about their research progress. Some reports were submitted quarterly and some monthly. A few participants suggested that submitting a fixed-term report more frequently would ensure more frequent supervision sessions which would help reduce academic procrastination:

"…we need to fill quarter report, you need to provide reports to your school and update your progress and your supervision meeting with your supervisor. This quarter report also needs to sign by your supervisors. It's really a good way for you to not to procrastinate quite a lot."

Participant 8, 4th year PhD Student

5.5.4.3. Develop work-friendly environment

Many participants mentioned the importance of providing an adequate working space. It was suggested that a good enough working space was not just about the allocation of a working desk with a computer, but also the provision of appropriate facilities for students to concentrate on their work and to relax when under stress from their work. One participant described what she felt was a good working environment:

"I think you need different work environments at different times but actually having a computer space that's yours that you can come

into and work at, having other people around that need them but also having that environment where you can concentrate. But also somewhere you can just pop off and get a coffee and come back, I think that's really useful for the university, for us that the university can do."

Participant 14, 4th year PhD Student

Most participants tended to procrastinate less when they studied at a quiet working environment, as one participant described:

"Yeah, definitely. When I'm sat at my desk in university I've got much more get up and go and much more motivation than when I'm sat at home. I think there's much more distractions at home so you end up putting things off more because, "Oh look, this is on the television," or whatever, whereas at university I think it's much better when you're sat at your desk and you're in a more controlled and more sort of academic environment, I suppose."

Participant 15, 2nd year PhD Student

However, some participants complained that their working space was too crowded with nearly 20 desks in which they were easily distracted by other people. With such a situation, a few participants suggested using noise-cancelling headphones to alert other people to not make noise at work:

"All of us … maybe all of us have noise cancelling headphones. So it's usually if you have your headphones on, even if you listen to music or not, it means I'm working, don't bother me… It's more or less an unwritten rule headphones means I'm … unless it's really urgent or so, then I'm doing my extra work."

Participant 12, 3rd Year PhD student

Some participants suggested it would be better for the department to provide small rooms for some PhD students who required a silent working environment (e.g. Participant 3). Another participant suggested that the working space should be away from corridors which ensures that students are able to to concentrate with fewer distractions:

> *"The working space we have is pretty big, isn't it, and people walk through all the time and often stop and have conversations and things and I find it impossible to write. If I'm writing, I find it impossible to write if other people are having a conversation. So, yeah, I think having a smaller work environment but still open-plan, I still like having a few people round, just in case you want to ask questions and discuss something, but definitely that isn't a walk through area, I think is really important, actually."*
>
> *Participant 14, 4th year PhD Student*

5.5.4.4. Received social support

5.5.4.4.1. Gain support from friends/partners/families

Many participants who experienced procrastination have discussed being under a great amount of pressure. A few participants explained that receiving support from their social networks was very important in helping them cope with such stressful situations. Some participants described that sharing their negative feelings about procrastination with friends was helpful:

> *"…I find it helps me talk through somebody and have their support there…from friends or could be anyone you could talk to, talk through with. Could be family members as well or colleagues whoever you feel comfortable with doing that. And also a chat just...of this you know, coz when we procrastination comes*

frustrations and I think you need to be held to release that frustration."

Participant 13, 4th year PhD Student

Some participants enjoyed joining social activities to receive more opportunities for social support. A few participants said they tended to procrastinate less when having to making extra time for social events. One participant described why it was important for PhD students to keep meeting with friends at the weekend to help deal with negative feelings from procrastination:

"Yes. Right now, I think it's the biggest time, I mean longest time I procrastinate. I decide to go and meet friends; I don't miss any social events you know…but you know I have been procrastinating, I mean when I'm not getting along with work very well, I don't miss that. Because that going out with friends make me less guilty about procrastinating, because then: come one, I deserve this, I need to go out with my friends, so you know, that makes me feel less guilty."

Participant 6, 3rd year PhD Student

A few participants described that it was important to be supported by significant others who could contain their negative feelings and provide empathy when they experienced some difficult moments in their studies. One participant described that she gained valuable support from her partner to deal with her procrastination:

"I also try to speak with people back home. I find that quite helpful. My partner has given me huge huge support, in the sense that, you know, when I had bad days I can be really very bad mood and I can nasty with people. And he is the one take everything without

complaining because he positively understand the whole journey of being alone and doing PhD. So I think that helps to understand…"

Participant 6, 3rd year PhD Student

5.5.4.4.2. Join PhD/procrastination support group

Some participants suggested that joining PhD support groups to meet people with similar problems help cope with stressful situations in doctoral studies. Students from different disciplines could join the group to share their PhD progress and/or help resolve problems with their studies:

"I think that's really important to have as many get-togethers really where people can just kind of discuss what they're doing and what they're up to. And it's always good to get another set of eyes or ears on something and run an idea past people and… You can become so focused on your research and your study and you're looking at the same thing all day every day that sometimes the most blindingly obvious thing you completely miss, and then someone else can look at it or you just run it past them and, because it's the first time they're hearing it, they'll be able to say."

Participant 17, 1st year PhD Student

One participant suggested that developing a community of peers where they could support one another would be beneficial to PhD students:

"I think I suppose one of my strategies is that we don't get that from supervisors so actually peers and I think – yes, that's a really big thing and I've just moved departments and I don't know people where I am, so very much there's no community there and I think that's going to make it a lot harder and I think having a community of peers just to kind of go the PhD life with and understand the difficulties and whatever, that's really helpful and I think all those

things for me is having that support there really helps you to keep working."

Participant 18, 2nd year PhD Student

A procrastination support group could help people with specific needs relating to procrastination. One participant suggested that procrastinators could work together to share experiences and gain support to overcome the procrastination which was preventing them from moving forward with their PhD responsibilities:

"If you work with a group of person, they might help you with that. We should have a help group, let people influent each other. People in the group can inspect each other, they can set aims and objectives together, and they can report to each other that might be helpful.. And if someone can conquer his/her procrastination, it will motivate others in this group… For example, he find him procrastinate less by some reason, you will be motivated a lot. So I think we need to build relationship with others and help each other."

Participant 5, just completed her PhD

5.6. Discussion

The purpose of this study was to explore the academic procrastination phenomenon among PhD students. Participants were interviewed about their own experiences of academic procrastination. The present interview study was exploratory in nature and aimed to obtain a multifaceted description of reasons, consequences, and coping strategies of academic procrastination. The findings provided in this chapter constitute one of the first attempts to investigate in greater detailed an account of PhD students' perspectives of their academic

procrastinatory behaviour. Participants were encouraged to describe cognitive, affective, and behavioural information relating to their tendency to delay tasks. The findings are based on participants' perceptions and attributions with regards to their procratinatory behaviour. One of the key characteristics of qualitative research is its emphasis on participants' perspectives without intentions of generalising to a broader population (Creswell, 2012).

The first theme presented in this chapter was constructed to enable the readers to understand PhD students' academic procrastination (see Section 5.5.1). Participants described two types of academic procrastination and the causes of academic procrastination. Participants commonly reported academic procrastination as the tendency to frequently delay starting and/or completing tasks until close to the deadline. The current interview study identified participants' perceptions of two types of academic procrastination; one was avoidant procrastination and the other was active procrastination. Moreover, participants' procrastination was investigated in a more systematic manner that focused on the broader issues of why and how PhD students procrastinate (see Section 5.5.2). Participants attributed procrastination to five factors of antecedents; four were self-related sources of procrastination and one was related to task characteristics. In line with previous research, irrational beliefs translated into more procrastination and students tended to delay an assignment which evoked feelings of anxiety (e.g. Pychyl & Flett, 2012). Some participants reported that their procrastination became a habitual behaviour reinforced by their childhood experience. Although a few previous studies suggested that parenting style in childhood was correlated with people's

procrastination (Ferrari, 1994), the current findings extended the literature by providing a new look at the relationship between procrastination and childhood experiences.

In line with previous findings relating to lecturers' characteristics (e.g. being disorganised) (Grunschel et al., 2013), PhD participants in the present study emphasised the important role of their supervisor and supervision. Participants were generally in agreement that fewer supervision meeting led to more procrastination. Supervisors who were flexible about deadlines promoted procrastination. Along with supervision characteristics, perfectionism/high self-demand and feelings of incompetence were discussed by many participants and formed a sub-theme of causes of PhD students' procrastination (see Section 5.5.3). The antecedents that some participants revealed regarding the feeling of impotence/low confidence refined previous qualitative findings (Grunschel et al., 2013; Klassen et al., 2008). Some participants, however, argued that high self-efficacy level would lead to overconfidence and underestimate the time one needs, which resulted in more procrastination. This contradicts view of the impact of confidence on procrastination might be the potential explanation regarding that self-efficacy failed to added significant explanatory value to the regression model in the two quantitative studies. Previous studies indicated that people with low levels of self-efficacy and neuroticism would intensify their study efforts and increase task persistence (De Feyter et al., 2012; Judge, Erez, et al., 2002). Therefore, it would be useful to explore the existence of overconfidence and investigate the interaction effects of self-efficacy and neuroticism in explaining academic procrastination.

With the aim of examining the effects of academic procrastination in more detail, the second theme was identified with participants' perceptions of five negative and three positive effects of academic procrastination. Although, most previous studies investigated procrastination in terms of negative consequences, such as anxiety (Ferrari, 1991), health problems (Tice & Baumeister, 1997), and poor academic performance (Kim & Seo, 2015), most participants indicated that negative aspects of academic procrastination had a greater impact on their behaviours than positive influences. Participants reported that procrastination attributed to lower self-esteem and, thus, led to higher levels of self-doubt about their ability to complete the PhD programme. Some other participants indicated that procrastination was inevitable during the process of accomplishing a task. However some participants indicated that they procrastinated until approaching the deadline which enabled them to work more efficiently. It was important to note that participants were given the opportunity to think about academic procrastination in both negative and positive terms. Therefore, they were clearly aware that their procrastinatory behaviour led to some beneficial outcomes despite experiencing some negative effects.

The third theme presented in this chapter detailed the variety of strategies that participants used to cope and reduce their procrastination on the basis of their own experiences. According to participants' reports, some of their procrastination was caused by poor time management skills and planning strategies. Therefore, developing realistic and detailed, but small goals, could

make tasks more manageable and effectively reduce procrastination to some extent. Consistent with previous research, many participants in the present interview study indicated that they experienced guilt and shame when they procrastinated (Ferrari, 1991). An emotion-coping strategy with regard to dealing with negative emotions was reported by some participants, which suggested that individuals could try to reduce those negative feelings from procrastination by building a rational understanding and accepting of their tendency to procrastinate. That might benefit students by helping them better understand how to maximise the efficiency of their study while minimising the increased discomfort associated with procrastination. The strategies of increasing self-regulation mainly characterised by strengthening self-motivation and reducing distractibility, confirmed the predominant view of researchers in recent years of considering academic procrastination as a result of self-regulation failure (e.g. Grunschel et al., 2013; Steel, 2007). In addition, receiving positive effects from stress and gaining incentives when achieving a target could also strengthen students' study motivation and reduce procrastination. Based on participants' experiences, stress was a necessary component in the procrastination cycle and stress sometimes would enable students to perceive peak efficiency.

The final theme concerned how the university and other support systems could help PhD students cope when they procrastinate. Participants uniformly reported high levels of stress from their PhD studies and higher levels of stress were added as deadline approached. Universities could provide some workshops closely related to PhD studies and procrastination to help students

better understand and cope with procrastination. The findings indicated that procrastination is caused by, in some part, supervision and the feeling that supervisors are too busy to pay attention on their research progress. Limiting PhD numbers for each supervisor and increasing the frequency of supervision meetings may be effective in reducing procrastination to some extent. Receiving social support from families, friends, and partners also could help PhD students cope with procrastination. Participants explained that they experienced greater stress and tension when they were procrastinating. Therefore, feelings of being supported by significant individuals would decrease levels of stress and reduce their tendency to procrastinate. In addition, participants gave reasons for the importance of a work-friendly environment in which they could enjoy isolated study/social spaces with low distractibility.

The present findings should be viewed as exploratory for several reasons. One is that a qualitative method was deployed which was intended to develop formative inquiry about academic procrastination in PhD students. Second, data consisted of the opinion of PhD participants from different stages of doctoral studies. Participants at the beginning of their doctoral programmes seemed to consider procrastination as more positive than negative. However, it is unclear whether individuals would report different beliefs and behaviours at different stages of PhD studies. Third, as the present interview study was small in scale, it is not generalisable to the wider PhD student population. All participants were recruited from the University of Nottingham and the extent that findings would be similar in other universities remains unknown. The main strength of the findings reported in this chapter is that reasons,

consequences, and coping strategies of academic procrastination were based on descriptions provided by doctoral students at the University of Nottingham. Therefore, the findings that emerged from the data reduce the possibility that the collection method constrained responses, as can result from closed questionnaires (Samra, 2013). More detailed discussion of the present interview study, as well as its limitations, are discussed in chapter six of this thesis.

5.7. Chapter summary

This chapter presented findings related to reasons, consequences and coping strategies of academic procrastination on the basis of PhD participants' own experiences. Descriptions and examples of each node were provided, followed by a discussion of the main findings reported in this chapter.

Chapter Six: Discussion

6.1.Chapter overview

This chapter begins by briefly summarusing the research findings of both quantitative and qualitative studies (Section 6.2), and then proceeds by discussing the implications of these findings of theory and methodology in the next two sections. The limitations and strengths of the present research are discussed in Section 6.5, followed by the discussion the possibilities for future studies in Section 6.6. The seventh section brings the chapter and the thesis to a close with concluding remarks.

6.2.Summary of research findings

The main objective of the present research was to investigate PhD students' academic procrastination to identify a more in-depth descriptive account of causes, consequences and coping strategies of academic procrastination. To begin to address these objectives, a literature review in Chapter 2 was performed to identify the distinct gaps within the existing body of procrastination research.

- First, there was a lack of recognition and examination to date of UK PhD students' procrastination according to the literature. Thus, it was important that the present work focused on investigating academic procrastination among PhD students in the UK.
- Second, procrastination literature was primarily based on studies using a cross-sectional design. The debate on whether academic

procrastination and the effects of personality, self-efficacy, self-esteem, and psychological well-being on academic procrastination were stable over time was outlined to address the importance of introducing a longitudinal approach into the current research.

- Third, students' own perspectives towards their procrastinatory behaviour have often been neglected. Therefore, adopting a qualitative approach without involving a specific theoretical perspective of procrastination that was in focus was needed.

Identifying and outlining areas for further investigation in academic procrastination research led Chapter 2 to employ the mixed-method approach (cross-sectional, longitudinal and qualitative studies) to achieve the overall objectives of the current investigation.

Chapter 3 presented the first study, a cross-sectional study that was designed to test the research hypotheses relating to the first two research questions of the current work (to what extent do the UK PhD student procrastination and what is the relationship between academic procrastination and a set of psychological constructs, and doctoral satisfaction?). The second study, a longitudinal study was described and detailed in Chapter 4, aimed to test the hypotheses of the third aim of the present thesis (Aim 3: To examine the stability of these relationships over a 12-month time lag and the mediational effects of doctoral satisfaction on the relationship between psychological constructs and academic procrastination).

The results of the hypothesis testing indicated that two relationships were significant in both Study one and Study two. First, participants' doctoral satisfaction could explain variance of academic procrastination both cross-sectionally and longitudinally. Second, depression was found to have predictive capacity in explaining PhD students' procrastination across two time points. Other relationships were distinct to either one or the other, suggesting that their effects on academic procrastination were temporal or episodic. For example, a direct relationship between conscientiousness and academic procrastination was evident in the cross-sectional study only. The stability of such a relationship after a period of 12 months could not be observed longitudinally. In contrast, openness to experience could explain variance in academic procrastination only in the longitudinal analysis but not in the cross-sectional study. With regards to self-efficacy, self-esteem, and anxiety, these factors were not found to have any significant short/long-term effects on academic procrastination at either phase of the current qualitative investigation. Another noteworthy finding relating to the longitudinal results was that the mediational effects of doctoral satisfaction were found on the relationship between conscientiousness, neuroticism, agreeableness, anxiety, self-efficacy, and academic procrastination.

The findings from the cross-sectional and longitudinal studies have provided some unique contributions to the procrastination literature by examining UK PhD students' academic procrastination, and identifying how or whether doctoral satisfaction and a set of psychological constructs impacted on their problematic delaying of tasks.

In order to provide a holistic perspective and shed light on the findings from cross-sectional and longitudinal study, Chapter 5 addressed the necessity and suitability of the employment of an interview approach to answer the research questions of 'what antecedent and consequences do PhD procrastinating students experience?' and 'what coping strategies do procrastinating PhD students apply?' A thematic analysis of 21 interviews represented PhD students' actual voices and subjective theories about academic procrastination was performed in the interview study. In brief, it provided a multifaceted description of definitions, reasons, consequences, and coping strategies of academic procrastination and incorporated affective, behavioural, and cognitive information and were, therefore, developed within a scientific framework of academic procrastination.

Overall, the three studies extended previous procrastination literature and investigated the strength, direction and stability of the relationship between a variety of different domains (e.g., personality, state and context) and academic procrastination. Having summarised the research findings, these results are discussed in relation to their theoretical, methodological and implications in the following sections.

6.3. Theoretical implications

6.3.1. The model of academic procrastination

In light of the findings from the current investigation, the predictive role of doctoral satisfaction, openness trait and depression in academic procrastination

was underpinned by some theoretical propositions in which emphasises individual difference within a personality construct and comprises of cognitive and affective information through the process of procrastinating.

Procrastination is a complex, multifaceted process, and so it can break down in several different ways. Thus, it is unlikely to identify a single cause or causal sequence that will explain all instances of procrastinatory behaviour. Instead, there are several approaches to procrastination. Mischel and Shoda (1995) proposed a cognitive-affective personality system (CAPS) which integrated the trait and process variables of personality. It analyses traits in terms of the cognitive and affective processing dynamics, therefore aiming to identify types of people who differ in types behaviour, in types of situations. Individual differences are interpreted in CAPS in two ways: (a) the chronic accessibility of cognitive-emotional mediating units, which determine the processing of self-relevant information; and (b) the organisation of these units, which conceptulises how they become salient or active in different situations and over time (Van Eerde, 2000). The system suggests that individuals shape their environment, in return, to being shaped by the environment, as Mischel and Shoda (1998) indicated that 'when the relevant situational features are present, characteristic process become activated in a predictable pattern' (p. 240). Findings from the current investigation provided support for the CAPS, and are incorporated into a new conceptual model of academic procrastination, which is presented in Figure 6.1.

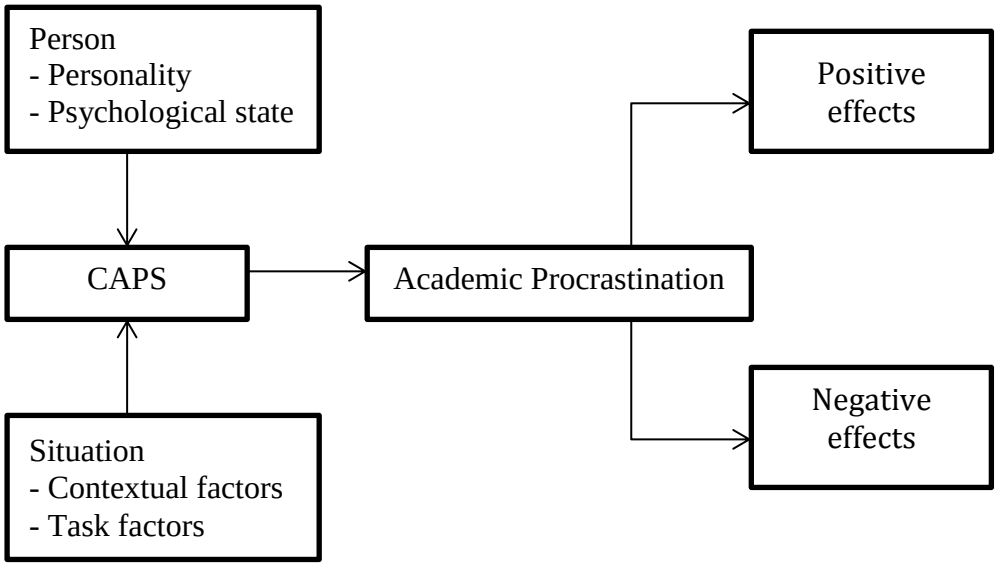


Figure 6.1. A model of academic procrastination

An overview of the causes and effects of academic procrastination is presented in Figure 6.1. It shows that procrastination is a function of a person (personality factors and psychological state) and situation (contextual factors and task factors) processed in the CAPS. In addition, academic procrastination may result in positive and negative effects.

6.3.2. Person: Personality

In the hunt for explanations of procrastination, researchers have investigated the utility of personality variables (Lay & Brokenshire, 1997; Moon & Illingworth, 2005; Watson, 2001). The five-factor model of personality has been used to predict procrastination to a much larger extent with a wide variety

of existing studies focusing exclusively on conscientiousness and neuroticism using cross-sectional designs (Schouwenburg & Lay, 1995; van Eerde, 2004). Studies One and Two have attempted to understand PhD students' academic procrastination using the Big Five personality traits. The findings from these studies provided interesting results, and showed that the predictive value of conscientiousness was supported only in the cross-sectional study, while openness derived from the longitudinal study to become a significant predictor of academic procrastination. In the longitudinal study, the non-significant predictive value of conscientiousness pointed towards previous debates with regard to the trait-based approach of explaining academic procrastination. That is, according to trait-based explanations of procrastination, conscientiousness was expected to predict procrastination in a stable level across time; the current findings suggest that this is not the case. Moreover, the finding that openness on academic procrastination was supported only in the longitudinal phase might be justified through the complex relationship between personality and task characteristic/environment (see Section 4.5.3).

However, conscientiousness was found to have an effect on academic procrastination cross-sectionally but not longitudinally may seem surprising, but may be explained by a closer look at the mediational role of doctoral satisfaction in conscientiousness-procrastination relationship. Previous investigations have suggested that some environments are capable of constraining the expression of personality (Mischel & Shoda, 1998; Moon & Illingworth, 2005; Reynolds & Karraker, 2003). They indicated that there is something of a condition within the academic context that affects the behaviour

of procrastinators, which result in individual differences in academic procrastination in relation to environmental sources to some extent. Thus, although students lower in conscientiousness were more likely to procrastinate at baseline, students who differed significantly in their levels of conscientiousness might procrastinate over the course of 12-month because of some environmental factors. Such factors could include experiencing high levels of dissatisfaction with their PhD content or having emotional barriers towards doctoral studies. Several antecedents, for example, were identified from the qualitative study, suggesting that work/study imbalance and supervision may result in unnecessary delay in their PhD studies. Consequently, results from the mediational analysis supported the hypothesis that doctoral satisfaction mediated the relationship between conscientiousness and academic procrastination. Perhaps most importantly, this relationship was confirmed using a longitudinal design. That is, conscientiousness at Time 1 was related to academic procrastination at Time 2, through the fully mediational influence of doctoral satisfaction at Time 1. These results indicated that conscientiousness is closely related to perceived satisfaction of doctoral studies, and that previous studies which have suggested a direct relationship between conscientiousness and procrastination in the cross-sectional studies (Ferrari et al., 1995) may have underestimated the importance of the mediating role of PhD students' perceived satisfaction of doctoral studies.

6.3.3. Person: Psychological state

Depression was shown to consistently account for relatively large portions of variance in academic procrastination in both studies 1 and 2. Previous studies

indicated that procrastination was correlated with a wide array of psychological disorders (Spada et al., 2006; Steel, 2007). Procrastination has been widely utilised as a strategy for regulating negative cognition and affect (Ellis & Knaus, 1979), or as a source of psychological distress (Ferrari et al., 1995). However, the current results supported previous research that recognised procrastination as the byproduct of depression (e.g. Loder, 2009; Pychyl & Flett, 2012). One case illustration of procrastination as a product of distress was provided by Dr. Bronwen Loder (2009) who described symptoms of depression involving apathy, withdrawal, concentration, and sleep difficulties along with a chronic form of procrastination. In addition, according to cognitive theory (Ferrari et al., 1995), it could be suggested that students with depressive symptom might hold negative beliefs about their cognitive efficiency and doubt their tasks-performance capabilities. As a result, their motivation for task initiation and persistence would also be affected leading to procrastination. Moreover, Steel (2007) indicated that depression's connection to academic procrastination appears due to waning energy levels, as a result, making many tasks more aversive to complete. From a therapeutic perspective, this result could indicate that modification of cognitive beliefs about depression might be helpful in reducing procrastination tendencies (Spada et al., 2006).

Given that participants in the interview study stressed that anxiety was a source of procrastination, regression analysis from both the cross-sectional and longitudinal studies indicated that anxiety's predictive role was not supported. However, the empirical evidence addressing the anxiety-procrastination

relationship is sparse, inconsistent, and sometimes confounded (Lay & Silverman, 1996). There were two anxiety-related issues when interpreting the current findings. First, researchers indicated that affective experiences (e.g. anxiety, worry) would be more likely related to the big-five factor neuroticism (Johnson & Bloom, 1995; Onwuegbuzie, 2004; Schouwenburg & Lay, 1995; Steel, 2007). This was consistent with the current cross-sectional and longitudinal results in which anxiety showed a strong and significantly positive association with neuroticism trait ($r=0.61$ & $r=0.63$, $p<0.001$ respectively). Consequently, anxiety's predictive power for academic procrastination might be limited when the neuroticism was controlled for in the regression model. Therefore, there may be valuable for future researchers to investigate the similarities between neuroticism and anxiety and give their common core consideration. Second, it was argued that anxiety is just as likely to be sources as outcomes of academic procrastination – when anxious, one procrastinates, or procrastination leads to anxiety (van Eerde, 2003a). This highlights the need for future studies to investigate whether anxiety is the outcome of procrastination rather than the source.

Perceived anxiety may be an unavoidable part of a doctoral student's academic life, which can have positive qualities. The student may feel more motivated than agitated and perceive the situation positively as a form of challenge (Newbury-Birch & Kamali, 2001). Moreover, the present results were consistent with previous findings which suggested that one area where evidence was lacking was the connection between anxiety and academic procrastination (Onwuegbuzie & Wilson, 2003; Steel, 2007). The longitudinal

nature of the current research indicated that it is was likely that training PhD students to exert certain strategies in reducing perceived anxiety may make it possible to influence their perceived satisfaction of doctoral studies. This, in turn, may enable students to perceive their doctoral studies as satisfying and meaningful, thus leading to higher levels of involvement on work and lower levels of unnecessary procrastination.

6.3.4. Situation: Contextual factor

Findings from the cross-sectional and longitudinal studies provided new insights into the doctoral satisfaction-related effects associated with PhD students' academic procrastination. One noteworthy finding from both the cross-sectional and longitudinal studies is that PhD students' self-perceived doctoral satisfaction was a key source of their academic procrastination. That is, the relationship between doctoral satisfaction and academic procrastination was shown to be independent of the effects associated with age and gender, and this relationship continued to be observed after 12 months. More specifically, the extent to which PhD students are dissatisfied with characteristics of their doctoral progammes might interfere with their intentions to perform a given course of action. Thus, if satisfaction is low, the motivation to initiate doctoral studies or to fulfill a commitment should also be low, resulting in high levels of the tendency to delay research work.

According to Herzberg's two-factor theory (Herzberg, Mausner, & Snyderman, 1959), there are two sets of factors for job satisfaction and job performance in organisations. One is labeled as *'satisfiers'* or *'motivators'*, results in

satisfaction when adequately fulfilled. The other is labeled as *'dissatisfiers'* or *'hygiene factors'*, causes dissatisfaction when deficient. The satisfiers are characterised as intrinsic factors which are part of job content and are mainly delivered by the employee or (in this case) the PhD students. The dissatisfiers factors are extrinsic components, such as supervision, working conditions, institutional policies. Findings from the interview study in terms of students' experience regarding PhD responsibilities, supervision and work environment was consistent with Herzberg's two-factor theory. The implications of this are that future studies may refer to the current findings to investigate this area further. For example, along with doctoral content, students' satisfaction with their doctoral progress was also noteworthy in explaining procrastination. Although students registered on research degrees at the University of Nottingham must submit an annual review of their progress, it is important for supervisors to recognise and uncover any potential sources that may result in explicit or implicit attempts to derail a student's progress during regular supervision meetings. Given that supervision is also a key element of doctoral study, a number of previous studies indicated the value of the supervision relationship in providing a supportive environment with which students can make progress and complete their doctoral theses on time. Research has reported the role of supervisors on building students' self-esteem (Ahern & Manathunga, 2004), and integrating with the department's research culture (Lovitts, 2001). A personality clash between the supervisor and the student with regard to unclear or unnegotiated expectations, and different conceptions of learning and research, were also found to affect doctoral students' progression (Aspland, Edwards, O'Leary, & Ryan, 1999; Brew, 2001).

However, this study was one of the first attempts to examine the effects of doctoral satisfaction with PhD content and progress in explaining PhD students' academic procrastination. Therefore, it would be important for future research to provide additional evidence of the dissatisfaction-procrastination relationship and investigate how doctoral-student-related factors might influence the motivation of students' to initiate or complete their research work.

6.3.5. Situation: Task factors

Attempts to explore whether the occurrence of academic procrastination tends to be situation-specific have been abundant. Many researchers have focused their work on the association between the nature of the task itself and the tendency to delay academic tasks (Blunt & Pychyl, 2000; Ferrari et al., 1995; Potts, 1987; Steel, 2007). Task factors described by participants in the qualitative study mainly refer to task aversiveness. Participants seem to avoid or delay aversive stimuli, and consequently, the more unpleasant the situation, the more likely one tends to delay the initiation/completion it.

However, the extend to which people dislike a task may be affected by a variety of individual characteristics (Steel, 2007). For example, results relating to Time 1 openness had a significant effect on Time 2 academic procrastination also suggested that individual difference may prevail in different situations of procrastination (for example, exams, papers, reading, meeting attendance, etc.). Previous research examining the trait associated with openness suggested that these findings may not be so surprising. Individuals who are low on openness tended to be conventional, narrow-minded, inflexible, traditional, creatures of

habit who are more partial to the status quo and dislike change, or challenge (Goldberg, 1999; Mount et al., 2006).When these individuals experience unconventional situations at doctoral studies, such as changes in research design or school policy, it is likely that their intolerance for change may result in them delaying their research work. Furthermore, due to the insufficient information of participants' year of PhD study in the sample, it may be that during the investigation period participants encountered changes of doctoral responsibilities and job contents (e.g., doing literature review, conducting research projects, attending conference, etc.) in different years of studies. Therefore, another possible explanation for the predictive role of openness could relate to the changes participants might be having at that time. It is important that future research replicates the current findings and attempts to assess the relationship between these potential factors and procrastination.

6.3.6. Effects of academic procrastination

Most of the affective information described in the qualitative study related to the negative and positive consequences of academic procrastination presented in the second theme. Participants generally felt that procrastination led to high levels of negative emotions (i.e. stress, anxiety, guilty), low self-esteem, and poor performance, although some participants viewed procrastination in a positive light (i.e. psychological detachment for negative emotions and burnouts, process of developing new ideas).

Although some researchers argued that 'academic procrastination cannot, by definition, be associated with success' (Grunschel et al., 2013, p. 842) and

those findings apply to purposeful forms of delay (Corkin et al., 2011), findings from the current interview study indicate that investigating academic procrastination without considering the potential positive effects may not capture all components of procrastination. Participants during the interview spoke at length, and in great detail, about how procrastination did help their studies to some extent. More specifically, participants reported some positive consequences of procrastination with regard to psychological detachment and doing other necessary tasks, which have not been considered as relevant to procrastination until now. Furthermore, students at later stages of their PhD studies were significantly older and had been studying for a longer time; they might indeed have experienced more serious reasons and consequences during their early PhD, which perhaps made them fully consider different aspects of procrastination (e.g. positive and negative) and also fully understand the dynamic of procrastination. Moreover, these subjective consequences of procrastination were on the basis of one's personal aspects which determined, to a great extent, how a situation is perceived (Klingsieck, 2013). That is, early-stage PhD students were perhaps in the middle of a procrastinatory situation, leading them to consider procrastination as mostly negative compared with late-stage PhD students who had experienced procrastination at an earlier stage in their own studies. This was in line with previous findings indicating that individuals usually responded to their behaviours more situationally than person-centered because they tended to focus on the situation when acting (Grunschel et al., 2013; Jones & Nisbett, 1971; Klingsieck, 2013). Nevertheless, future research has to examine the validity of the self-attributed

reasons and subjective consequences of academic procrastination in more detail.

6.4. Methodological implications

At a methodological level, the current work in terms of the integration of quantitative and qualitative approaches to explore and understand academic procrastination among PhD students. It should be addressed however, that despite attempts to capture a broad picture and deep understanding of the research topic, several methodological implications arose from the data collection and research findings. First, the mode of administration of self-reported scales and in-person interviews may have affected results of its generalisability. Self-reported measures provided valuable information in terms of people's theories of themselves that are coherent and reliable. However, it should be noted that this thesis was based on the individual experiences of PhD students mainly from the University of Nottingham. Importantly, future studies can move this research topic forward to a large sample within the UK universities.

Second, findings of the current work point toward the emphases on the predictive role of doctoral satisfaction, openness and depression in academic procrastination and the mediational effects of doctoral satisfaction on the relationship between personality, self-efficacy, anxiety and procrastination. However, researchers could examine possible interaction relationship between the studied variables and procrastination. More specifically, academic procrastination is a function of a person and situation processed in the model of

procrastination, the extent to which the interaction effects of personality (e.g. conscientiousness), psychological state (e.g. depression), contextual factors (e.g. doctoral satisfaction) are differentially associated with academic procrastination is unknown. Furthermore, to respond Barrick and Mount's (2005) call for that 'Systematically and carefully studying mediating and moderating effects are precisely where we need to go in personality research' (p. 369), this point offers implications for examining an integrated moderated mediation model of procrastination that advances previous understanding of personality effects on academic procrastination.

Third, combining the doctoral-related coping strategies suggested in the interview study and Herzberg's two-factor theory, future studies could seek the powder of experiments and intervention that would better establish the direction of relationships posited in the model of academic procrastination. For example, participants suggested the university to regulate supervision system which is consistent with the role of a hygiene factor of satisfaction, future study could manipulate the supervision system in an experimental context to identify the situational and behavioural processes through which that dissatisfaction-procrastination relationship occurs.

At last, positive effects of academic procrastination that participants reported were observed mostly from students who had finished or nearly finished their PhD studies. These were in line with Schraw et al.'s (2007) study which identified some positive consequences of procrastination on the basis of reports of "successful procrastinators" (p. 24). Although some researchers argued that

'academic procrastination cannot, by definition, be associated with success' (Grunschel et al., 2013, p. 842) and those findings apply to purposeful forms of delay (Corkin et al., 2011), findings from the current interview study indicate that investigating academic procrastination without considering its potential positive effects may not capture all components of the phenomenon. Moreover, although the present findings suggested that PhD students' procrastination was stable over time, the positive effects of procrastination might take longer to be recognised as such by students at later stages of their studies. In any event one of the implications is that it calls for empirical evidence to support the existence of adaptive procrastination and the relationship between stages of PhD studies and procrastination.

6.5. Main strengths and limitations

The current thesis employed a longitudinal design and interview approach which has made a number of important contributions to the procrastination literature by extending it to the PhD student population. Overall, findings from the longitudinal study strengthened the long-term relationship between doctoral satisfaction, depression, and academic procrastination. In addition, the 12-month follow-up is also a noteworthy characteristic of the investigation in which the mediational role of doctoral satisfaction influenced the relationship between conscientiousness, anxiety, and procrastination. The second important contribution of the current thesis was with regard to the qualitative study which encompassed the first attempt to investigate the antecedence, consequences, and coping strategies of academic procrastination based on the UK PhD participants' own experiences and perspectives.

Another strength of the current investigation was the much-needed evidence of the sources and causes of academic procrastination. By conducting a mixed-method investigation, it was possible to identify which sources may influence PhD students' procrastinatory behaviour. Much of the procrastination literature has overlooked academic procrastination among doctoral students. Evidently, the predictive value of doctoral satisfaction in explaining academic procrastination has provided fresh evidence for future studies to investigate sources of doctoral satisfaction that may be particularly prominent in procrastination among PhD students. Moreover, the interview findings referred to the incompetence-related reasons with regard to the lack of research skills which can be important reasons when combined with the longitudinal results. That is, future study should explore whether students procrastinate because their lack of necessary research training led to low doctoral satisfaction, as reported in the longitudinal study, or whether they lack the confidence to utilise these skills (e.g. Klassen et al., 2008).

It should be noted, however, that there are some common criticisms with using self-report questionnaires in studies typically regarding participants' misunderstanding of question comprehension, terminology, or item meaning (Schwarz, 1996). To address this, a qualitative design using interviews was selected in the present thesis. In doing so, those limitations of questionnaire measures were avoided as participants could clarify the meaning of questions with the interviewer, and the interviewer could also ask participants to clarify their responses in cases of misunderstanding of questions and answers

(Schober, 1999; Schwarz, 1999). More importantly, interviewers were able to explore some questions further if needed during the interview. Furthermore, in the present study, efforts were made to ensure that participants from different stages of their PhD studies were included, in order to ensure a range of procrastinatory experiences were captured. Therefore, the use of a qualitative design was considered as a strength of the present thesis.

Another common criticism of using self-reported data concerns the findings that might be affected by socially-desirable responses and response bias with regard to participants' tendencies for impression management (Schober, 1999; Schwarz, 1999). In order to reduce the potential bias, participants were informed that all data was treated with confidentiality in all three studies. In the longitudinal study, it was stated that data collected at Time 1 and Time 2 was identified and matched through their provided email address and that no other identifiable information would be collected. In the interview study, participants were informed that the research focused on participants' subjective experiences of procrastination and all recorded data would be destroyed after the current investigation was completed. Therefore, it might be cautiously concluded that participants were generally honest in responding the questionnaires and interview questions.

Finally, the findings offered useful information to the academic procrastination literature and higher educational groups in developing effective coping strategies and interventions to reduce students' tendencies to procrastinate. A wealth of information has been drawn from the current findings focusing on

risk factors for academic procrastination regarding the dissatisfaction-procrastination relationship and the relationship between depression and procrastination. These results might be tremendously significant for educational leaders to recognise that doctoral programme-related satisfaction hampers PhD students from being actively engaged in their research studies. Thereby, different strategies might need to be applied within departments. Furthermore, the current findings could illustrate to university counsellors how psychological constructs (e.g. anxiety, depression, irrational beliefs) can provoke academic procrastination accompanied with previous findings of how procrastination can be addressed through Rational Emotive Behaviour Therapy (REBT) (Dryden, 2012) to develop effective interventions to reduce dysfunctional levels of procrastination.

It is important to note that some of the common criticisms of the use of self-report questionnaire concern the common method variance (CMV) (Campbell & Fiske, 1959). CMV refers to measurement error which is likely to challenge the validity of the relationships identified in empirical research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, the confounding influence of CMV may be minimised when correlations are found at a modest size (Podsakoff et al., 2003). Therefore, it might not be of critical concern in the current investigation as correlation effect sizes were moderate. Moreover, the use of a longitudinal research design can also reduce the potential problems of CMV by developing temporal separation between collecting data for the predict and outcome variables (Podsakoff et al., 2003). Further, non-significant

relationships found the study indicate that the respondent bias about the observed relationship was minimised (Bell, Wiechmann, & Ryan, 2006).

The moderate response rate and small sample size in the quantitative studies were identified as limitations. The response rate was 77 per cent in the cross-sectional study and 28 per cent in the longitudinal study at a 12-month follow-up. Nevertheless, the moderate response rate of the longitudinal study may be considered satisfactory, especially considering the use of a self-report survey for PhD student samples that did not have fixed-time class schedules compared with undergraduate student samples. Nonresponse bias was systematically examined and the results suggested no difference between non-participants and participants with regard to demographic variables. Moreover, methodological and design issues also need to be taken into consideration when explaining the limited support for the hypotheses of associations between the independent variables and academic procrastination. Given the number of valid responses in longitudinal data, the final dataset was relatively small (N=79). It is possible that different findings would have been detected with shorter or longer time intervals and a large sample size (Ford et al., 2014; Nielsen & Knardahl, 2015). Although, small samples sizes are difficult to avoid because of the challenges of longitudinal research designs, including difficulties in securing access to the same participants on two-wave data collection, a sample of less than 100 may raise a question of over-straining the regression model (Tabachnick & Fidell, 2012). To address this, a MANOVA was employed to validate the integrity of the decline from N = 280 at Time 1 to N= 79 at Time 2. The results indicated no systematic relationships regarding the absence of any variables in the two

studies. Further, respondent biases between cross-sectional and longitudinal samples were examined using chi-square analyses on demographic variables. The results showed no significant difference in the proportion of these demographic variables. Nevertheless, future research has to examine the validity of the current findings on a larger and wider range of samples.

Given that the cross-sectional designs limit the capacity of developing stable results over time and making causal inferences, a two-wave longitudinal design was, therefore, conducted to collect data over a 12-month period. However, a number of limitations regarding the current longitudinal study were identified. First, using two waves of datasets in understanding the dynamic of procrastinatory behaviour is valuable, but the current longitudinal approach was unable to collect data from more than two waves. Thus, results and conclusions drawn from one 12-month follow-up offered limited knowledge of how these temporal relationships may change over multiple time points. Second, lagged effects within the longitudinal results are often weak or insignificant (Taris & Kompier, 2006). To address this, mediational analyses was proposed to test some non-significant relationships that were hypothesised to be mediated through additional variables. However, as is often the case, multiple-phase longitudinal designs are more powerful than simpler (two-phase) designs in examining mediational processes (Cole & Maxwell, 2003; Taris & Kompier, 2006). Taken together, more ambitious examinations of causality and mediational effects between the studied variables and procrastination over multiple phases would add much knowledge to procrastination research.

The last limitation regarding the current longitudinal approach is that the design was unable to detect reverse causation (i.e. Time 1 outcome influencing Time 2 predictors) or assess reciprocal relationships in which the predictors and outcomes may influence each other (De Lange, Taris, Kompier, Houtman, & Bongers, 2003). Future studies could not only examine the validity of the possible relationships, but also go beyond a single direction regarding the reverse causation and reciprocal effects to better understand those underdeveloped perspectives of procrastination.

There are some limitations of the current qualitative study that require consideration when interpreting the results. First, the current interview study endeavoured to be exploratory and descriptive at the cost of its generalisability, as it was based on the individual experiences of a small number of UK PhD students. It is, therefore, important that the generalisability of findings require further development in the present research area, using data derived from quantitative measures with a larger sample. Second, interpretation of the present interview results should be aware of the possibility of defensive self-reports. That is, the reasons and consequences that participants reported could have been biased by students' tendencies for impression management or due to protecting self-esteem (Grunschel et al., 2013). In addition, interviews were in-depth and lasted an average of approximately 45 minutes. Therefore, accessing participants' academic lives with more detailed insights was challenging. Moreover, the time available to interview students required some weighing of the depth to which some constructs were explored (Martin, Marsh, Williamson, & Debus, 2003). Taken together, future studies that immerse in students'

academic lives over a longer period of time would provide more detail about all relevant constructs. For example, university counsellors can gain data when talking with students just before or after an assessment period in order to obtain important information on reasons, consequences, and strategies of procrastination.

6.6. Reflections for future research

The findings of the current thesis have important implications for researchers and practitioners alike. First, although a number of studies have investigated the causal power of Big Five personality traits on procrastination, procrastination research may need to consider the causal mechanisms underlying some situational constraints. For example, the mechanisms by which openness affects academic procrastination requires further investigation because these findings have not been consistently reported in previous literature. These point towards a close investigation between academic procrastination and openness-related context, and suggest future investigations of procrastination research must reflect the possibility of the complex interaction between personality and the environmental/situational factors (Moon & Illingworth, 2005). Second, future studies would benefit from considering the current results in conjunction with findings of the mediational effects of doctoral satisfaction to obtain a better theoretical understanding of the processes linking neuroticism, conscientiousness, agreeableness, and procrastination. Third, combining the findings of the current longitudinal and interview studies, procrastination research could develop therapeutic strategies

to tackle negative effects and cognition to meet the multifaceted phenomenon of academic procrastination.

The findings supporting the long-term effect of doctoral satisfaction that PhD students experienced also have important implications from a practical perspective. Given that the characteristics of the doctoral programme and studying conditions can be modified, and the increased doctoral satisfaction can benefit both institutes and students, paying attention to doctoral-related factors may inform valuable opportunities for developing effective and sustainable procrastination reduction strategies. The current study revealed that 47.5% of the UK PhD students experienced frequent academic procrastination. Therefore, having more information about institutional and/or environmental-related factors, especially in terms of their influence on students' initiation or completion of research work, can be an important starting point for universities in becoming more proactive about preventing/reducing students' procrastinatory behaviour. In addition, academic procrastination is an expensively self-defeating strategy for doctoral students, and the sooner it can be identified and addressed, the better the outcomes for the students (Ahern & Manathunga, 2004). To assist in identifying procrastinatory behviours, institutions/universities can use some evaluation tools to measure academic procrastination among students within different stages to alert both doctoral students and individuals within institutions, who are responsible for their education welfare (e.g. supervisors, curriculum developers).

6.7. Conclusion

The present work used a two-wave longitudinal research design and an interview approach to explore and understand academic procrastination among PhD student samples. The present thesis offered support for cross-temporal and situational stability in academic procrastination on the basis of findings from the longitudinal studies. The multifaceted antecedents and consequences of academic procrastination with recommended coping strategies were outlined with descriptions and examples provided according to the qualitative study.

Causes and effects of academic procrastination among PhD students were discussed on the basis of findings from the quantitative and qualitative studies, by proposing a model of academic procrastination that considering individual differences, psychological wellbing, and contextual factors in the process. In addition, this thesis provided a rare examination of a mediation model of doctoral satisfaction in explaining the relationship between psychological constructs and procrastination. It encourage future research toward a more integrative approach of theorising mediating and moderating effects, so as to offer a more in-depth understanding of academic procrastination among PhD students. It is hoped that the research presented here has served to entice and inform readers and has laid a solid basis for further research in this important area, as the findings have implications for both research and practice.

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Appendix 1: Study 1 participant information sheet



Information Sheet

Project title: A survey study of academic procrastination in PhD students

This research is being undertaken as part of a PhD at the Institute of Work, Health & Organisations, University of Nottingham. Its aims are to explore:

• To what extend do PhD students procrastinate?

• Which psychological dimensions might be associated with procrastination among PhD students?

I would very much appreciate if you would tell me about your own experiences, in complete confidence. Please be honest; there are no right or wrong answers.

The results of this research will provide an in-depth account of procrastination in PhD students. A summary report will be available on request.

The questionnaire should take about 20 minutes to complete. Please don't take long to think about each question – just answer each quickly with the answer that first occurs to you.

The anonymous nature of this questionnaire prevents the identification of individual's responses. Therefore, once you have completed the questionnaire it is not possible to request the withdrawal of your responses from the study.

No identifying information will be collected. All data will remain completely confidential and only be available to the researchers.

I hope you find this survey interesting. If you would like to know more about this study, or would like to request a summary of the results when available, please contact Yan Yang (lwxyy1@nottingham.ac.uk).

Appendix 2: Study 1 participant consent sheet



Consent Sheet

In completing the survey you acknowledge:

• I understand the purpose of the research project and my involvement in it.

• I understand that I may withdraw from the research project at any stage before I complete the survey, and that this will not affect my status now or in the future.

• I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

• I understand that only the researcher is able to access to the data.

• I understand that I may contact the researcher if I require further information about the research.

Appendix 3: Study 2 participant information sheet

Information Sheet

This research is being undertaken as part of a PhD in the Division of Psychiatry and Applied Psychology, University of Nottingham.

The purpose of this follow-up questionnaire is to explore the extent to which certain characteristics predict procrastination at a later date.

I would very much appreciate if you would tell me about your own experiences, in complete confidence. Please be honest; there are no right or wrong answers.

The results of this research will provide an in-depth account of procrastination in PhD students. A summary report will be available on request.

The questionnaire should take about 10-15 minutes to complete. Please don't take long to think about each question – just answer each quickly with the answer that first occurs to you.

Questionnaire responses are anonymous. No identifying information will be collected. All data will remain completely confidential and available only to the researcher.

I hope you find this survey interesting. If you would like to know more about this study, or would like to request a summary of the results when available, please contact Yan Yang at lwxyy1@nottingham.ac.uk.

Appendix 4: Study 2 participant consent sheet



Consent Sheet

In completing the survey you acknowledge:

• I understand the purpose of the research project and my involvement in it.

• I understand that I may withdraw from the research project at any stage before I complete the survey, and that this will not affect my status now or in the future.

• I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

• I understand that only the researcher is able to access to the data.

• I understand that I may contact the researcher if I require further information about the research.

Appendix 5: Questionnaires

Section one

For each for the items below, please indicate the strength of your statement.

1. I delay starting things until the last minute.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

2. I'm careful to return library books on time.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

3. Even when I know a job needs to be done, I never want to start it right away.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

4. I keep my action stroke tasks up to date by doing my work regularly from day to day.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

5. If there was a workshop that would help me learn not to put off starting my work, I would go.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

6. I am often late for my appointments and meetings.
☐ Strongly Disagree

☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

7. I use the time between formal meetings effectively to get on my action stroke tasks.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

8. I delay starting things so long that I don't get them done by the deadline.
9. I am often frantically rushing to meet deadlines.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

10. It often takes me a long time to get started on something.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

11. I don't delay when I know I really need to get the job done.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

12. If I had an important project to do, I'd get started on it as quickly as possible.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

13. When I have a supervision meeting soon, I often find myself working on other jobs when the deadline is near.

☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

14. I often finish my work before it is due.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

15. I get to work immediately on jobs that need to be done.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

16. If I have an important appointment, I make sure the clothes I want to wear are ready the day before
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

17. I arrive at university appointments with plenty of time to spare.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

18. I generally arrive on time to lectures/training sections.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

19. I overestimate the amount of work that I can do in a given amount of time.
☐ Strongly Disagree
☐ Disagree

☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

Section two

Think specifically about your PhD…

20. How satisfied are you with the progress of your PhD studies? Please score it from 1 to 5.

	1	2	3	4	5	
Not Satisfied	○	○	○	○	○	Satisfied

21. How satisfied are you with your content of your PhD so far?

	1	2	3	4	5	
Not Satisfied	○	○	○	○	○	Satisfied

Section three

For each of the following statements, please circle the choice that is closest to how true you think it is for you. The questions ask about your opinion. There are no right or wrong answers.

22. I can always manage to solve difficult problems if I try hard enough.
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

23. If someone opposes or is against me, I can find a way to get what I want.
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

24. It is easy for me to stick to my plans and accomplish my goals.
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

25. I am confident that I could deal efficiently with unexpected events
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

26. Thanks to my resourcefulness and ability to figure things out, I know how to handle unexpected or unforeseen situations.

☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

27. I can solve most problems if I invest the necessary effort.
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

28. I can get what I want from people if I make them feel sorry for me.
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

29. I can remain calm when facing difficulties because I can rely on my coping abilities.
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

30. When I am confronted with a problem, I can usually find several solutions
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

31. If I am in trouble, I can usually think of a solution.
☐ Not at all true
☐ Hardly true
☐ Moderately true
☐ Exactly true

Section four

How well do the following statements describe your personality?

32. I see my self as someone who is reserved.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

33. I see myself as someone who is generally trusting.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree

☐ Strongly Agree

33. I see myself as someone who tends to be lazy.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

34. I see myself as someone who is relaxed, handles stress well.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

35. I see myself as someone who has few artistic interests.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

36. I see myself as someone who is outgoing, sociable.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

37. I see myself as someone who tends to find fault with others.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

38. I see myself as someone who does a thorough job.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

39. I see myself as someone who gets nervous easily.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

40. I see myself as someone who has an active imagination.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

Section five

This section is designed to help us know how you feel. Read each item and tick in the box opposite the reply which comes closest to how you have been feeling in the past week.

41. I feel tense or wound up.
☐ Most of the time
☐ A lot of the time
☐ Time to time, occasionally
☐ Not at all

42. I still enjoy the things I used to enjoy:
☐ Definitely as much
☐ Not quite so much
☐ Only a little
☐ Hardly at all

43.I get a sort of frightened feeling as if something awful is about to happen:
☐ Very definitely and quite badly
☐ Yes, but not too badly
☐ A little, but it doesn't worry me
☐ Not at all

44. Worrying thoughts go through my mind:
☐ A great deal of the time
☐ A lot of the time
☐ From time to time but not too often
☐ Only occasionally

45. I feel cheerful:
☐ Not at all
☐ Not often
☐ Sometimes
☐ Most of the time

46. I can sit at ease and feel relaxed:
☐ Definitely
☐ Usually
☐ Not often
☐ Not at all

47.I feel as if I am slowed down:

☐ Nearly all the time
☐ Very often
☐ Sometimes
☐ Not at all

48. I get a sort of frightened feeling like “butterflies” in the stomach:
☐ Not at all
☐ Occasionally
☐ Quite often
☐ Very often

49. I have lost interest in my appearance:
☐ Definitely
☐ I don’t take so much care as I should
☐ I may not take quite as much care
☐ I take just as much care as ever

50. I feel restless as if I have to be on the move:
☐ Very much indeed
☐ Quite a lot
☐ Not very much
☐ Not at all

51. I look forward with enjoyment to things:
☐ As much as I ever did
☐ Rather less than I used to
☐ Definitely less than I used to
☐ Hardly at all

52. I get sudden feelings of panic:
☐ Very often indeed
☐ Quite often
☐ Not very often
☐ Not at all

53. Ican enjoy a good book or radio or TV programme:
☐ Often
☐ Sometimes
☐ Not often
☐ Very seldom

Section six

For each for the items below, please indicate the extent to which you.
54. One the whole, I am satisfied with myself.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

55. At times, I think I am no good at all.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

56. I feel that I have a number of good qualities.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

57. I am able to do things as well as most other people.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

58. I feel I do not have much to be proud of.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

59. I certainly feel useless at times.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

60. I feel that I'm a person of worth, at least on an equal plane with others.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

61. I wish I could have more respect for myself.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

62. All in all, I am inclined to feel that I am a failure.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

63. I take a positive attitude toward myself.
☐ Strongly Disagree
☐ Disagree
☐ Neither Disagree nor Agree
☐ Agree
☐ Strongly Agree

Section seven

Please complete the following questions. Your responses are anonymous. This information will help me to ensure that I have sampled from across the university.

64. Age: _____

65. Sex: Male / Female

66. Are you registered on a: Full-time / Part-time PhD

67. What is your ethnic group:_____

68. If you are interested in taking part in future studies looking at procrastination in PhD students, please provide your email address.

Appendix 6: Interview study participant information sheet

Information Sheet

Project title: A qualitative study of academic procrastination in PhD students

This research is being undertaken by Yan Yang, a PhD student in the Division of Psychiatry & Applied Psychology at the University of Nottingham. Its aims are to:

- Identify the factors that contribute to procrastination in PhD students.
- Identify the implications of academic procrastination.
- Identify coping strategies that PhD students successfully use in order to reduce procrastination.

I would like you to tell me about your own experiences, in complete confidence. Please be honest and frank; There are no right or wrong answers.

The interview will take 30-45minutes. With your permission, I will record our discussion; no identifying information will be recorded. The digital record and transcript will be securely stored and only the researcher will have access to it.
If this interview raises any issues for you, the graduate school provides individual support for PhD students, and your graduate centre is there to respond your needs. Find your local graduate centre: http://www.nottingham.ac.uk/graduateschool/graduatecentres/index.aspx

What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you should then contact the FMHS Research Ethics Committee Adminstrator, Mrs Louise Sabir, Division of Respiratory Medicine, D Floor, South Block, Queen's Medical Centre Campus, Nottingham University Hospitals, NG7 2UH. E-mail louise.sabir@nottingham.ac.uk."

I hope you find it interesting. If you would like to know more about this study, or would like to request a summary of the results when available, please contact the researcher at lwxyy1@nottingham.ac.uk.

Appendix 7: Interview study participant consent form

Consent Form

Title of Study: A qualitative study of academic procrastination in PhD students

REC ref: S12122013 SoM PAPsych

Name of Researchers: Yan Yang, Jonathan Houdmont, Amanda Griffiths

Name of Participant: **Please initial**

1. I confirm that I have read and understand the information sheet version number 1.0 dated 29/11/2013 for the above study and have had the opportunity to ask questions. ☐

2. I understand that I will not have to answer any questions that I find upsetting. ☐

3. I understand that I may withdraw from the study before or after the interview starts without giving any reason and this will not affect my status now or in the future. ☐

4. I understand that the interview will be digitally recorded and that anonymous direct quotes from the interview may be used in the study reports. I may switch off the digital recorder at any time during the interview. ☐

5. I understand that the digital record files and transcript files will be stored on a password protected computer in a locked location and only the researcher is able to access the data. If the data is transferred is will be made anonymous. Data will be kept for 7 years after the study has ended and the record file will then be destroyed securely. ☐

6. I agree to take part in the above study. ☐

_____	_____	_____
Name of Participant	**Date**	**Signature**
_____	_____	_____
Name of Person taking consent	**Date**	**Signature**

2 copies: 1 for participant, 1 for the project notes

Appendix 8: Interview schedule



1. How would you describe academic procrastination?

2. Could you give examples of situations where you are most likely to procrastinate in relation to your PhD?

3. What causes you to procrastinate? (Self/Supervision/Task characteristics)

4. How does your confidence in completing the PhD thesis affect your procrastination?

5. What coping strategies do you employ when you procrastinate?

6. What do you think are the consequences of procrastination? (Positive & Negative)

7. What would help you to procrastinate less?

8. What could the university do to help you to procrastinate less?