Graduate Outcomes for Psychology:
A Nationwide Exploration of Expectancy-Value Theory and the Scientist-Practitioner Model of Training

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March, 2017
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I would like to extend my thanks to everyone who helped distribute the research questionnaire and encouraged students to participate. The Heads of School who gave their approval and support for the project have my deepest gratitude for their assistance creating a representative sample of psychology students in Australia. I would also like to thank the academic staff, including course and program convenors, who provided ongoing assistance in distributing the survey and encouraging participation. I acknowledge the time and participation of the students who took part in the studies, with special thanks to those in the longitudinal component.

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Finally, I would like to acknowledge my examiners. Thank you for the time and effort you have dedicated to reading this collection of research and for providing me with feedback to continue to improve as a researcher.
The discipline and practice of psychological science has never faced greater challenges than in the current environment. Funding for psychology education and training is inadequate, the psychology workforce is in shortage, psychology does not perform well in the publication of research on international comparisons, and the psychological literacy of the community continues to be poorly developed. Clearly we cannot address these challenges by pulling the blanket up over our heads and hoping that they will go away!

Professor Simon Crowe, Australian Psychological Society (2012, p. 3)
ABSTRACT

Objective: In higher education, student engagement is critical to producing high quality graduates with the knowledge, skills, and attributes of their degree. Psychology education in Australia is based on the scientist-practitioner model of training, whereby students are typically taught the science of psychology in the undergraduate years and commence practitioner training in the postgraduate years (Australian Psychology Accreditation Council [APAC], 2010; Australian Psychological Society [APS], 2012). In recent years, psychology education in Australia has been under review in an attempt to maximise the graduate outcomes of undergraduate and postgraduate training. However, research suggests that students’ expectations of psychology education are often poorly aligned with their actual experience of psychology training, resulting in poor motivation, engagement, and retention (Holmes, 2014). To ensure psychology students acquire the intended graduate outcomes, it is important to understand student motivation towards the three core learning domains of psychology: theoretical knowledge, research skills, and practice (communication and interpersonal skills). This thesis is comprised of a series of published and unpublished papers, which take an expectancy-value approach (Eccles & Wigfield, 2002) to investigating psychology students’ motivation towards these three core learning domains. This research will contribute to psychology training in Australia by enhancing educators’ awareness of the motivations students hold towards theory, research, and practice. This will provide research-informed recommendations for low-cost strategies to improve student engagement in psychology courses.

Method: Three studies were conducted that applied the expectancy-value model to assess the motivation of psychology students from universities across Australia towards the core learning areas of psychology. The key variables used to assess expectancy-value theory were: the social influences (personal and academic), subjective task values (intrinsic, utility,
attainment, and cost), and self-efficacy beliefs. Study 1 explored these motivational factors across the four years of the undergraduate program, using a cross-sectional sample of 319 students enrolled in accredited three- or four-year psychology degrees. This included 103 first year students, 69 second year students, 45 third year students, and 102 fourth year students. Study 2 surveyed 105 first year students with little formal psychology education (Time 1), and assessed these students again after one year (Time 2). Study 2 investigated the impact of the initial year of education on first year students’ social influences, task values, and self-efficacy beliefs for theory, research, and practice. Study 3 explored the social influences, task values, and self-efficacy beliefs of students across a variety of postgraduate psychology programs. These included the Master of Psychology (n = 90), the Doctor of Philosophy (research-only, n = 72), and Doctor of Psychology or combined Masters/PhD programs (n = 75).

**Results and Conclusions:** This series of studies adds to the literature with respect to understanding student motivation, self-efficacy for the various components of a psychology degree, and the perceived value of psychology education in Australia. The findings from Study 1 indicated that undergraduate students have significantly lower task values and self-efficacy for research than for theory or practice. The Study 1 and Study 2 findings demonstrate that motivational factors may differ considerably at various stages in a students’ psychology education. The results show that the first year of training might be a key time to communicate the value of proficient research skills for their future careers and emphasise the importance of research to psychology. As personal and academic influences significantly predicted students’ self-efficacy in their first year, it was recommended that interventions targeting students’ sense of identity in psychology could have the greatest impact on self-efficacy beliefs. After one year of training, the impact of social influences was largely subsumed by students’ subjective task values. Fourth year students’ research values and self-
efficacy beliefs did not differ from those of the second and third year group. This suggests that students at this level could require more integrated learning experiences to develop their confidence in applying research knowledge to a range of problems.

Postgraduate students in all programs (including the research-only PhD) reported significantly greater self-efficacy for practice than theory or research. The findings from the postgraduate study indicated that these students are not confident in applying their research skills to real world problems. It was recommended that postgraduate psychology students collaborate on practice-based research problems to enhance this skill. It was also recommended that problem-based learning (Hmelo-Silver, 2004) be incorporated at both the undergraduate and postgraduate levels. This would foster the integration of content related to theory, research, and practice when engaging in psychological problem-solving. The future of quality education and training in psychology depends on psychology educators’ commitment to scholarly teaching practices and taking an innovative approach to their role as scientist-educators.
STATEMENT OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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Rebecca A. Green

March, 2017
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STATEMENT OF ETHICAL PROTOCOL

I confirm that ethical clearance was granted by the Griffith University Human Research Ethics Committee (GU Ref No: PSY/F7/14/HREC). I confirm that the research was conducted in accordance with the approved protocols.

Rebecca A. Green

March, 2017
ACKNOWLEDGEMENT OF PAPERS INCLUDED IN THIS THESIS

Included in this thesis are papers in Chapters 2, 3 and 4 which are co-authored with other researchers. These publications are in accordance with Section 9.1 of the Griffith University Code for the Responsible Conduct of Research ("Criteria for Authorship"), Section 5 of the Australian Code for the Responsible Conduct of Research, and Section 9.3 of the Griffith University Code ("Responsibilities of Researchers"). An acknowledgement of my contribution to each co-authored paper is outlined at the front of the relevant chapter with the publication status and bibliographic details (where relevant). Appropriate acknowledgements of those who contributed to the research but did not qualify as authors are included in each paper.

Rebecca A. Green, PhD Candidate

Elizabeth G. Conlon, Principal Supervisor

Shirley A. Morrissey, Associate Supervisor
CHAPTER 1: INTRODUCTION

In psychology education, student engagement is critical to producing high quality graduates who have attained the graduate attributes, knowledge, and skills of their degree. The scientist-practitioner model of training is at the core of psychology education in Australia and around the world (Australian Psychology Accreditation Council [APAC], 2010; Raimy, 1950). Based on this model there should be a high level of integration between psychological science (including theoretical and research knowledge and skills) and practice (applied knowledge and interpersonal and communication skills; Belar & Perry, 1992). However, in Australia, the scientist-practitioner model is applied in an asynchronous fashion, with the undergraduate years used to prepare students in the science of psychology, and the postgraduate years prepare students for professional practice (Provost et al., 2010).

Additionally, the current state of the Australian higher education system (high student enrolments, with low ‘per student’ funding) has driven reductions in applied skills training in the undergraduate years (Cranney, Morrissey, & Katsikitis, 2016; Kemp & Norton, 2014).

The current state of psychology education influences the expectations of both undergraduate and postgraduate students. Undergraduate students often have difficulty engaging with the learning domains in their field, as their degree contains a significantly greater proportion of scientific and theoretical concepts than students expect (Goedeke & Gibson, 2005; Holmes, 2014). Postgraduate students have also been reported to place less value on theoretical and research topics (Scott, Pachana, & Sofronoff, 2011), with students in professional programs expecting to engage primarily in practitioner training, as typified by the ‘science-first’ application of the scientist-practitioner model. This has implications for their motivation for engaging with and completing their postgraduate research projects and the ongoing application of research to inform their practice (Gelso, Baumann, Chui, & Savela, 2013; Spring, 2007). While there has been a great deal of research into the
expectations, motivations, and experiences of first year psychology students (Goedeke & Gibson, 2011; Rowley, Hartley, & Larkin, 2008), up until now there has not been a systematic investigation of the effect of training on students’ motivations across the course of their undergraduate studies and how students’ motivations change after entry into a postgraduate sequence. Further, few studies have compared students’ motivations towards the core psychology learning domains: theory, research and practice.

Therefore, the current thesis aims to explore the motivational beliefs of psychology students (and how they change over the course of their psychology education) towards the three core domains, theory, research and practice. To do this, the current thesis applies an expectancy-value framework (Eccles et al., 1983) which posits that students’ choice of academic tasks and engagement can be predicted by students’ perceptions of important others (social influences), their subjective task values, and their self-efficacy beliefs. This series of studies is the first to apply a single motivational framework to each level of psychology education and training, enabling trends across training to be observed. This introductory chapter will describe psychology education within the context of the Australian higher education setting and model of training that underpins psychology education and training in Australia. This will be followed by a description of expectancy-value theory of motivation and the role of self-efficacy.

**Psychology Education and Training in Context**

The scientist-practitioner model of training has had widespread influence on psychology education since its inception at the Boulder conference in 1949 (Raimy, 1950). In the 1950s, the intention of the scientist-practitioner model of training was to develop

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1 Learning domains are based on the APAC (2010) graduate attributes. Practice specifically refers to communication and interpersonal skills.
psychologists who had distinct skills from the medical profession of psychiatry and to avert the popular view at the time that research did not inform practice and vice versa (Long & Hollin, 1997). The goal of the scientist-practitioner model was to encourage the integration of theoretical knowledge, the best available research, and knowledge gained from professional practice. In addition, the scientist-practitioner model aimed to bridge the void between academic/research psychologists and professionally practicing psychologists (Long & Hollin, 1997), a rift which has largely been resolved (Carter, 2002; Australian Psychological Society [APS], 2012). However, while the original aim has been achieved, the current focus of this model in psychological training today includes an orientation to lifelong learning, a respect for empirical evidence, commitment to the scientific method, and the critical, systematic evaluation of one’s own practice, programs, interventions and research methodologies (APS, 2012; Jones & Mehr, 2007; Provost et al., 2010). A scientist-practitioner should also show awareness of, and reduction in, intuitive thought and subjective biases, and a preference for standardised measures when they are available (APS, 2012).

In Australia, the scientist-practitioner model is applied differently at the undergraduate and postgraduate levels. Prior to the widening participation of students in higher education in the late 1980s, the undergraduate psychology degree originated as a rigorous program of study, which largely took place in laboratory settings, while at the same time also enabled the development of applied skills in students (Bazar, 2015; Jackson, 2003). However, from the year 2000, the Australian Government has implemented a series of quality assurance processes into the higher education sector, which focus on equity for diverse applicants and accountability for student outcomes (Bradley, Noonan, Nugent, & Scales, 2008; Shah, Lewis, & Fitzgerald, 2011). The introduction of these measures resulted in an increase in the size of the higher education student population from around 700,000 enrolled in 2000 to over 1.1 million in 2009 (Shah et al., 2011). This was further exacerbated by the demand-driven
system, which was introduced gradually from 2009 to its full implementation in 2012, and removed previously imposed limits on student enrolments for Commonwealth-supported places (Kemp & Norton, 2014). The uncapping of places resulted in a further increase of over 100,000 students across all higher education providers from 2009 to 2013 (Kemp & Norton, 2014). Further, the capacity of higher education providers has been stretched by the decline of government funding (Shah et al., 2011), resulting in the widespread uptake of mass-information teaching formats in psychology, such as lectures and tutorials, in place of laboratory and practical skills training (Cranney et al., 2016; Lipp et al., 2007).

The limited funding and staffing of psychology departments resulted in much of the practical or applied content being shifted to professional postgraduate coursework programs, where student to staff ratios are much smaller (APAC, 2010; Baillie et al., 2011; Lipp et al., 2007). Under a demand-driven system, the return of more practical or laboratory-based experiences in psychology is unlikely, as the support required for providing this training is greater, placing additional strain on available teaching resources (Kemp & Norton, 2014). The demand-driven system therefore perpetuates the current division of science and practice, as the greater resources required to deliver applied and practical training constrain this content to the postgraduate years. This is not favourable for producing high quality graduates from undergraduate psychology programs, or for offering a coherent and focussed postgraduate program (Baillie et al., 2011).

The lack of clear employment outcomes from the three-year psychology degree has also led to debate about its value (Cranney et al., 2012; Lipp et al., 2007), and to reports of dissatisfaction with the level of skills training and application in the undergraduate degree (Goedeke & Gibson, 2011; Provost, 1998; Rowley et al., 2008). Further, the emphasis on the practitioner side of training at the postgraduate level can lead students to feel they have ‘completed’ the scientist component of their training, rather than viewing their research skills
as a complementary and important part of their professional identity. Postgraduate students also report experiencing a great deal of stress and anxiety from the postgraduate workload (Nedeljkovic, Chaffey, Murray, & Brennan, 2014) and report less motivation and engagement for advanced theoretical and research requirements of these courses (Scott et al., 2011).

However, despite this somewhat gloomy outlook, the education and training models in psychology are currently under review. For the first time in many years the three main stakeholders (the APS, the Heads of Departments and Schools of Psychology [HODSPA], and the regulatory authority, the Psychology Board of Australia [PsyBA]) have come together to create the APAC and to revise the Accreditation Standards for Psychology education and training. As part of this review, there has been extensive consultation with each of these and other stakeholders in psychology education, the workforce, and the profession. However, since the various stakeholders hold different perspectives on the issues in psychology education and the best direction for the future of training and the profession, the review is ongoing.

During the review period, there have been changes to regulatory standards in the higher education sector, including the release of the updated Australian Qualifications Framework (AQF) in 2013. At this time, the AQF learning outcomes described do not currently align to those required by the APAC Standards (2010). This has contributed to tension in the discipline, as programs must be realigned to the AQF to continue to be recognised (Baillie et al., 2011; Voudouris & Hunter, 2011). The view that a scientist-practitioner approach should be visible at undergraduate and postgraduate levels (Cranney et al., 2009) is consistent with the AQF. One way to improve consistency might be for the new standards to focus on how well each level describes the three key domains (VanderVeen, Reddy, Veilleux, January, & DiLillio, 2012): theory (disciplinary knowledge), research (research methods and statistics), and practice (communication and interpersonal skills). To better understand the current
system in Australia as it relates to these learning domains, the following section will provide an overview of the AQF, the models of education and training for psychology higher education, and the intersection of this with the regulations for practising as a psychologist.

**The Impact of the Higher Education Context on Psychology**

Psychology education today is largely shaped by the requirements of the AQF, and its programs are accredited by APAC, which operates independently to maintain the quality and standards of the profession. The AQF is relevant to all disciplines and ensures Australian qualifications with a given title are assured consistent outcomes and offers clear pathways between education and training sectors and the workforce (AQFC, 2013). The AQF regulates the appearance and quality of Australian degrees by categorising them based on their complexity (from AQF level 1 through to 10), with specific criteria and learning outcomes indicated for each level (AQFC, 2013). However, the pathways to registration as a psychologist are less clear (AQFC, 2013; Hunt & Hyde, 2013; Pachana, Sofronoff, Scott, & Helmes, 2011), with accredited psychology programs available from the AQF levels 7 through to 10 (see Table 1.1). Students can exit at several points in their studies (see Figure 1.1), with different emphasis on the skills training available from each pathway, and different levels of professional recognition (Hunt & Hyde, 2013). Each of these pathways will be examined in terms of their AQF learning outcomes, APAC (2010) graduate attributes, and employment entry points.
Table 1.1. AQF Levels (7 to 10) Summaries and Learning Outcomes Criteria.

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<td><strong>Summary</strong></td>
<td>Graduates at this level will have broad and coherent knowledge and skills for professional work and/or further learning.</td>
<td>Graduates at this level will have advanced knowledge and skills for professional/highly skilled work and/or further learning.</td>
<td>Graduates at this level will have specialised knowledge and skills for research, and/or professional practice and/or further learning.</td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td>Graduates at this level will have broad and coherent theoretical and technical knowledge with depth in one or more disciplines or areas of practice.</td>
<td>Graduates at this level will have advanced theoretical and technical knowledge in one or more disciplines or areas of practice.</td>
<td>Graduates at this level will have advanced and integrated understanding of a complex body of knowledge in one or more disciplines or areas of practice.</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td>Graduates at this level will have well-developed cognitive, technical and communication skills to select and apply methods and technologies to analyse and evaluate information to complete a range of activities, analyse, generate and transmit solutions to unpredictable and sometimes complex problems, and transmit knowledge, skills and ideas to others.</td>
<td>Graduates at this level will have advanced cognitive, technical and communication skills to select and apply methods and technologies to analyse critically, evaluate and transform information to complete a range of activities, analyse, generate and transmit solutions to complex problems, transmit knowledge, skills and ideas to others.</td>
<td>Graduates at this level will have expert, specialised cognitive and technical skills in a body of knowledge or practice to independently analyse critically, reflect on and synthesise complex information, problems, concepts and theories, research and apply established theories to a body of knowledge or practice, and interpret and transmit knowledge, skills and ideas to specialist and non-specialist audiences.</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>Graduates at this level will apply knowledge and skills to demonstrate autonomy, well-developed judgement and responsibility in contexts that require self-directed work and learning, and within broad parameters to provide specialist advice and functions.</td>
<td>Graduates at this level will apply knowledge and skills to demonstrate autonomy, well-developed judgement, adaptability and responsibility as a practitioner or learner</td>
<td>Graduates at this level will apply knowledge and skills to demonstrate autonomy, expert judgement, adaptability and responsibility as a practitioner or learner</td>
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Undergraduate Psychology Education (AQF 7 and AQF 8)

The foundation of each psychology education pathway is the Bachelor degree. Currently psychology educators in Australia do not share a consensus with respect to what the main purpose of an undergraduate psychology education should be. Some see it as a broad liberal arts education, whereas others see the large number of psychology graduates as potential ambassadors for psychology who could and should be able to influence the community and society by applying their psychological knowledge more broadly (Cranney et al., 2012; Cranney & Dunn, 2011). According to the AQF 7, the 3-year degree is intended to equip students with broad and coherent knowledge in one or more discipline for entry into the workforce or further study. However, unlike many degrees in health, the three-year psychology degree primarily develops transferable skills, and does not specifically prepare graduates for entry into a specific profession (Roberts & Forman, 2015). This leads students in psychology to make unfavourable comparisons between their own career directions and employability outcomes, and the outcomes for students in other health disciplines (Haskell et al., 2012; Roberts & Forman, 2015). This also heightens the competition for 4th year studies, which marks the minimum education requirements for registration as a psychologist (with a two-year professional internship).

In psychology, 4th year programs are represented at the AQF level 8. This narrows the focus of training, with graduates expected to attain an advanced level of knowledge and skills and apply this to a specific context in a professional work setting or further learning (AQFC, 2013). Fourth year studies in psychology can refer to pass programs, an Honours year, which comprises a substantive research project, or a Graduate Diploma, which offers a smaller research component (APAC, 2010). Graduates at this level have little experience of psychological workplaces, due to the high cost of providing work-integrated learning experiences (McLennan & Keating, 2008; Provost et al., 2010; Roberts & Forman, 2015).
**Figure 1.1.** Training pathways in psychology. Adapted from *Pathway to Becoming a Registered Psychologist*, by APAC, February 10, 2017, retrieved from www.psychologycouncil.org.au/student-information.
This is despite graduates being eligible for provisional registration as a psychologist, and to commence the 2-year internship, at the completion of their degree (APS, 2012). This continued emphasis on the science of psychology at this level, and the lack of applied practice or work experience is at odds with both the graduate attributes and AQF level 8 outcomes.

**Graduate Attributes for Undergraduate Psychology**

While there has been an increased emphasis on the use of objective measures of student outcomes in higher education to ensure program quality, this shift has not yet been realised in psychology education and training (Cranney et al., 2016). The pending revisions to the APAC Standards will herald a shift from the *intentions* of an education (i.e., teaching focus) to the *results* of that education (i.e., learning focus) that can be seen in the wider higher education context (Caspersen & Frølich, 2017; Coates, 2007; Coates & Mahat, 2014). However, the outcomes of the three- and four-year undergraduate psychology degree continues to be defined by six broad graduate attributes (GAs) that are intended to be developed, but are not objectively assessed (Barrie, 2006; Cranney, 2008; Hughes & Barrie, 2010; Mason, 2015).

These GAs provide a framework for developing psychology curricula (the knowledge, skills, and attitudes that ought to be developed) and guide the focus of undergraduate psychology education. According to the APAC (2010) standards, these are: core knowledge and understanding, research methods in psychology, critical thinking skills, values and ethics (both research and professional), communication skills, and learning and the application of psychology (see Table 1.2). These GAs are based on the scientist-practitioner model (Cranney et al., 2009) and align with the domains of theory (GA1), research (GA2), and practice (GA5). These three GAs can be considered the primary drivers of course content in psychology, while critical thinking skills (GA3) and values and ethics (GA4) can be
considered generic attributes that all higher education providers seek to develop (Coates, 2007; Norton, 2013). The latter are often developed more broadly during, higher education, (Bennett, Richardson, & Mackinnon, 2015), rather than through explicit instruction and are expected to affect students’ ability to use theory, research, and practice effectively and appropriately (Hughes & Barrie, 2010; Karantzas et al., 2013).

The integration of the five graduate attributes discussed above are incorporated into GA6, the learning and application of psychology. Recently, it has been argued that this GA be expanded to emphasise psychological literacy (Cranney et al., 2012; Morris, Cranney, Jeong, & Mellish, 2013; Roberts & Gasson, 2016). Early conceptualisations of psychological literacy used this term to refer to the requisite knowledge required to be considered part of the psychological community (Boneau, 1990). However, now psychological literacy is defined as the capacity to effectively and intentionally apply psychological knowledge to problems in an individuals’ personal and professional life, and in their social environment at a local and global scale (Cranney & Dunn, 2011; Cranney, Morris, & Botwood, 2015; McGovern, Furumoto, Halpern, Kimble, & McKeachie, 2010). It is expected that this capacity stem from students’ ability to effectively integrate their knowledge from the three content domains and apply this knowledge using critical thought and appropriate values and ethics (McGovern et al., 2010; VanderVeen et al., 2012).
Table 1.2.

Graduate Attributes of the Undergraduate Psychology Program (APAC, 2010).

**Graduate Attribute 1: Core knowledge and understanding**
- Acquire an understanding of core topics in the discipline, including abnormal psychology, biological bases of behaviour, cognition, information processing and language, individual differences in capacity and behaviour, testing and assessment, and personality, learning, lifespan developmental psychology, motivation and emotion, perception, social psychology, history and philosophy of psychology, intercultural diversity and indigenous psychology.

**Graduate Attribute 2: Research methods in psychology**
- describe the basic characteristics of the science of psychology
- describe, apply and evaluate the different research methods used by psychologists
- demonstrate practical skills in laboratory-based and other psychological research
- design and conduct basic studies to address psychological questions: frame research questions; undertake literature searches; critically analyse theoretical and empirical studies; formulate testable hypotheses; operationalise variables; choose an appropriate methodology; make valid and reliable measurements; analyse data and interpret results; and write research reports

**Graduate Attribute 3: Critical thinking skills**
- apply knowledge of the scientific method in thinking about problems related to behaviour and mental processes
- question claims that arise from myth, stereotype, pseudoscience or untested assumptions
- recognise and defend against the major fallacies of human thinking

**Graduate Attribute 4: Values, research and professional ethics**
- evaluate psychologists’ behaviour in psychological research and other professional contexts in relation to the Australian Psychological Society “Code of Ethics” and the complementary “Ethical Guidelines”, as well as the Australian “National Practice Standards for the Mental Health Workforce”
- use information in an ethical manner (e.g., acknowledge and respect work and intellectual property rights of others through appropriate citations in oral and written communication)

**Graduate Attribute 5: Communication skills**
- write a standard research report using American Psychological Association (APA) structure and formatting conventions
- demonstrate effective oral communication skills in various formats (e.g., debate, group discussion, presentation) and for various purposes

**Graduate Attribute 6: Learning and the application of psychology**
- apply knowledge of legislative frameworks (including privacy, human rights)
- apply knowledge of consumer and carer participation in psychological care
- apply knowledge of psychology, society and the workplace/influencing systems
- describe major areas of applied psychology (e.g., clinical, organizational)
- demonstrate a capacity for independent learning to sustain personal and professional development in the changing world of the science and practice of psychology
There is no objective, cumulative assessment of the GAs to indicate how well a student has developed the knowledge, skills, and attitudes of the field (Coates, 2007), meaning there will be wide variability in graduates entering the workforce. This variability lowers employers’ confidence in hiring psychology graduates with generic graduate skills (Haskell et al., 2012; Norton, 2013). Thus, with the emphasis on accountability and employability in higher education (Bennett et al., 2015), an appropriate measure of psychological literacy is urgently needed (Roberts, Heritage, & Gasson, 2015). Early attempts to measure students’ psychological literacy used single-item assessments (Chester, Burton, Xenos, & Elgar, 2013; Morris et al., 2013). However, further research indicated that psychological literacy is multi-dimensional, or representative of a ‘meta-literacy,’ which creates issues for its definition and measurement (Murdoch, 2016; Roberts et al., 2015). Currently, researchers are working towards a suitable measure of psychological literacy, which can be used to track student learning outcomes, and ensure graduates have attained skills that enhance their employability (Heritage, Roberts, & Gasson, 2016; Roberts & Gasson, 2016).

Despite the lack of an appropriate assessment measure, resources to improve students’ awareness of the GAs and psychological literacy have been developed for both students themselves and educators (Bernstein et al., 2013; Mair, Taylor, & Hulme, 2013; Taylor & Hulme, 2015). So, while third- or fourth-year graduates experience a program that is weighted disproportionately towards the scientist and not the practitioner component of training (APAC, 2010; Provost et al., 2010), these students should be capable of applying the knowledge and skills the undergraduate program aims to problems of a psychological nature (Cranney & Dunn, 2011; Cranney et al., 2015; McGovern et al., 2010).

At the postgraduate level, the scientist-practitioner model continues to be emphasised, but is more frequently expressed through a philosophy of evidence-based practice (EBP; APS, 2012). The postgraduate training system in psychology is represented by five
pathways, with each one consistent with the AQF at a level 9 or 10 (see Figure 1.1).

**Postgraduate Psychology Pathways (AQF 9 and AQF 10)**

According to the AQF, level 9 graduates will demonstrate autonomy and adaptability in applying a complex body of knowledge and skills to research or professional practice (AQFC, 2013). This applies to both the 1-year and 2-year Masters by coursework programs. Professional expertise in psychology is developed through a range of postgraduate options although entry into these programs is constrained by the limited number of professional psychology places (APS, 2012; Voudouris & Mrowinski, 2010). The first of these pathways provides students with 1-year of professional psychology training at the Masters level. This program includes coursework and practical professional skills training, with a minimum of 300 hours of supervised practice (APAC, 2010). Graduates who have taken this pathway are required to complete a further year (+1 internship) of supervised professional practice in the workforce to be eligible for general registration.

The subsequent three pathways (2-year Masters, Doctor of Psychology, and Masters with PhD) qualify graduates for general registration as a psychologist, but require further supervision to attain an Area of Practice Endorsement (AoPE) in the same area studied in their degree (e.g., clinical, organisational, forensic psychology, APS, 2013). Also at the AQF level 9, students can complete the 2-year Master’s degree, which includes coursework and extensive supervised professional practice (1000 hours), as well as a research project. In the Masters pathway, the research project is equivalent in size to an Honours thesis (APAC, 2010).

The professional psychology doctorate is offered at the AQF 10 level, and therefore requires greater depth and breadth of postgraduate coursework than the Master’s degree (AQFC, 2013). This includes 1500 hours of supervised practice, and a research thesis that makes a substantial contribution to research (APAC, 2010). The availability of the
professional doctorate has been limited since earlier revisions to the AQF in 2008 (AQFC, 2011), resulted in the minimum duration of the required research thesis increasing from one year full-time to two years (Voudouris & Hunter, 2011).

However, some higher education providers now offer a combined Masters with PhD (pathway 4 of Figure 1.1), which contains the same coursework and practica as the 2-year Masters, but with a research component equivalent to the research PhD, so substantially larger than the research requirement for Master’s program or the professional doctorate (AQFC, 2013). These combined MPsych/PhD programs are classified as higher degrees by research and attract higher degree research scholarships; these programs are very popular among students who wish to practice professionally, but are also interested in conducting practice-based research. Although, despite the popularity of the combined program (Patrick, 2009), slow completion times for the thesis component of the combined MPsych/PhD (specifically, in clinical psychology) have been identified as a major concern for postgraduate program directors (Pachana, O'Donovan, & Helmes, 2006).

The final pathway, the Doctor of Philosophy (PhD), is a higher research degree and described in the AQF as a level 10 qualification (AQFC, 2013). In Australia, higher research degrees do not generally include formal coursework and do not contain professional psychology training or lead to professional registration (APAC, 2010; AQFC, 2013; McGagh et al., 2016). For this reason, research-only PhD students do not attract attention in debates about the quality of psychology education, despite being prepared for their higher research degree by the undergraduate and fourth year psychology programs. Further, graduates with a PhD in psychology can obtain academic positions with teaching and research commitments within the higher education sector (Pitt, 2012). This places research-only PhD graduates in a critical role for guiding psychological research and the emphasis of the undergraduate program (Lodge, 2015). Therefore, to remain active participants in the psychological
community, Lodge (2015) has stressed that psychology graduates from exclusively research degrees should be developed as psychological scientists, and, if they pursue academic teaching, as a scientist-educator capable of applying evidence-based teaching strategies and modelling psychological literacy (Bernstein, 2011; Cranney, 2013).

Therefore, psychology students at the postgraduate level include those pursuing professional and research-only pathways. This makes it difficult to assess the outcomes of a postgraduate psychology degree. Previously, studies (Baillie et al., 2011; Pachana et al., 2006, 2011; Scott et al., 2011) have focussed on one population of postgraduate students (i.e., those enrolled in a clinical psychology pathway, at either the Masters or Doctoral level). However, both professional and research pathways aim to develop the domains of theory, research, and practice. These three domains are common to undergraduate, postgraduate, and higher research degree populations, which allow students’ motivation and engagement with each domain to be contrasted across the range of postgraduate pathways.

**Core Capabilities and Attributes of Postgraduate Psychology**

The basis of postgraduate professional programs is the scientist-practitioner model, which currently is represented by six core capabilities and attributes (CCA) in the 2010 APAC Standards (see Table 1.3). These are consistent with the Psychology Board of Australia’s requirements for full registration as a psychologist. Although, as with the undergraduate programs, there has been discussion regarding the further specification of the learning outcomes for the postgraduate sequences, with efforts being made to identify competencies for training and assessment (Baillie et al., 2011; Pachana et al., 2011; Stevens et al., 2015). The APS (2013) course approval guidelines for postgraduate programs already require competency-based assessments; which are consistent with the AQF and the new focus on learning outcomes for higher education (Coates, 2007; Caspersen & Frølich, 2017), with competency-based approaches expected to be required as part of the new APAC Standards.
Table 1.3.

Core Capabilities and Attributes of the Postgraduate Psychology Program (APAC, 2010).

**Core Capabilities and Attribute 1: Knowledge of the discipline**
- Strong knowledge of at least:
  - the relevant psychological theories and models; published empirical findings supporting theories (especially those which underpin the major forms of psychological intervention) and the methods employed to establish them;
  - the major methods of psychological investigation and techniques of measurement, and their application and interpretation; and design and implementation of psychological interventions.

**Core Capabilities and Attribute 2: Ethical, Legal and Professional Matters**
- Familiarity with legal and professional matters
- Conduct or behaviour consistent with the legal requirements and codes of conduct relevant to psychologists
- Self-evaluation or self-assessment skills
- Ability to apply ethical principles to ethical dilemmas.

**Core Capabilities and Attribute 3: Psychological Assessment & Measurement**
- The ongoing, interactive, and inclusive process that serves to describe, conceptualise, and predict relevant aspects of a client (be that client an organization, group or individual). A strong level of skills and knowledge in conducting systematic psychological assessment using a wide range of assessment techniques.

**Core Capabilities and Attribute 4: Intervention Strategies**
- Activities that promote, restore, sustain or enhance cognitive functioning and a sense of wellbeing in individuals or groups of clients through preventive, developmental or remedial services and/or in the case of groups or organizations, restoring or enhancing group or organizational functioning.

**Core Capabilities and Attribute 5: Research and Evaluation**
- Systematic inquiry involving problem identification and the acquisition, organisation, and interpretation of information allowing critical analysis and disciplined, rigorous, careful and scientific inquiry into psychological phenomena.

**Core Capabilities and Attribute 6: Communication and Interpersonal Relationships**
- The capacity to convey, appraise and interpret information in both oral and written formats and to interact on a professional level with a wide range of client groups and other professionals.

Students enrolled in professional programs are expected to continue to develop the knowledge, skills, and attitudes necessary to function effectively as a scientist-practitioner in changing contexts and as new roles become available to them (APS, 2012). In professional programs, this is represented by a model of evidence-based practice (EBP; APS, 2012, 2013). EBP posits that professional decision making should be based firmly on the best available research evidence, client preferences, and professional expertise (Bauer, 2007; Briner &
Rosseau, 2011; Spring, 2007). This model has received international support from postgraduate psychology educators (Bauer, 2007; Bearman et al., 2015; Beck et al., 2014; Briner & Rosseau, 2011; Spring, 2007), and is a cornerstone of all professional coursework specialisations for psychology in Australia (APS, 2013). However, effective use of EBP requires the ability to adaptively use one’s knowledge and skills in theory, research, and practice (APS, 2012; Bauer, 2007). Therefore, a strong foundation of psychological literacy is expected to improve students’ capacity to apply the tripartite model of EBP to professional practice.

Unlike the professional programs, higher research degrees are not accredited and therefore are not governed by the APAC Standards (2010). The Australian Qualifications Framework requires doctoral degrees to develop specific areas of knowledge and skills (AQFC, 2013). These include developing a substantial body of disciplinary knowledge, extensive knowledge of research principles and methods relevant to their field of study, advanced communication skills for discussing and disseminating results to peers and stakeholders in the community, and the ability to generate new knowledge independently and with full accountability (AQFC, 2013; Platow, 2012). These attributes guide the minimum knowledge, skills, and abilities that postgraduate students from professional or research degrees must be able to develop and demonstrate (Barrie, 2006). In addition, as all postgraduate psychology students (including those in a research-only PhD) have a four-year foundational knowledge of psychology, postgraduate students should possess a high level of psychological literacy, although no studies to date have addressed postgraduate students’ development of psychological literacy (Heritage et al., 2016).

The Expectations of Psychology Students

While the graduate attributes and capabilities represent the areas in which students will have the greatest emphasis in their education and training, the expectations that students hold
towards their degree can differ vastly from what is provided (Gaither & Butler, 2005; Goedeke & Gibson, 2011). In a focus group by Goedeke and Gibson (2011), first year students reported that psychology training would be primarily experiential and aim to enhance pre-existing qualities, such as altruism and empathy, which they considered necessary to be a good psychologist (Goedeke & Gibson, 2011). These students also reported contradictory views of psychology as a scientific discipline; for example, the group reported at one point that psychology was recognised and valued by society and certain fields, while also calling psychological theory and research into question, whereby the discipline was described as ‘imprecise’ and ‘likely fabricated’ (Goedeke & Gibson, 2011). While an education in psychology should divest students of such views, these expectations may result in students transferring away from the field, or persisting in a program of psychological study with false views of what psychology is. So, despite psychology remaining one of the most popular choices for undergraduates, many students enter their studies without a clear idea of what psychology involves (Goedeke & Gibson, 2011; Green, Hood, & Neumann, 2015).

According to Rowley et al. (2008, p. 399), a “mismatch between [student] expectations and actual experiences can lead to disengagement with the academic process.” For students under the age of 21, the wrong choice of program was the most frequently cited reason for withdrawing from higher education (Davies & Elias, 2003). Further Charlton, Barrow, and Hornsby-Atkinson (2006) added that lower intrinsic motivation predicted withdrawal from psychology and business programs. This was supported by Holmes’ (2014) research, which found that significantly more students who scored in the highest quartile of a practitioner interest subscale transferred out of psychology by the end of their first year than those who scored low on this measure.

Holmes (2014) also compared student and instructor values towards psychology. This study showed instructors viewed psychology as more scientific than students did, and showed
a stronger preference for scientist activities than practitioner activities, with students reporting the reverse. Further, students who entered psychology with a better understanding of the scientific nature of psychology were found to be more academically successful than those who did not (Provost & Martin, 2014). However, while U.S. psychology students’ beliefs about psychology became more scientific over the four undergraduate years, the value they placed on these scientific aspects did not increase concurrently (Amsel et al., 2011; Holmes & Bein, 2009). Holmes suggested, in an echo of Rowley and colleagues (2008), that a mismatch between student and instructor expectations and values will affect students’ persistence and performance within psychology. Finally, Amsel (2009) concluded that, over the course of their studies, students’ do not adopt the core beliefs and values of the scientific discipline of psychology and it is therefore necessary for instructors to actively shape students’ identity in psychology.

There is evidence to suggest that psychology students also need to have more realistic expectations for the practice domain to develop effectively in this area. Psychology students often expect their studies to focus on advanced clinical topics and related applications of psychological knowledge than they experience (Gaither & Butler, 2005; Goedeke & Gibson, 2011). However, while specific communication, interpersonal, and other micro-skills classes are common in their first year and sporadically represented in later year courses, most universities focus on developing the practice domain through class activities or assignments that directly involve theory or research topics. This is expected to better reflect the ways that students will use information and interact in the workplace (Livingstone & Lynch, 2000). However, while group work or other collaborative methods are popular for developing students’ communication skills (Garratt-Reed, Roberts, & Heritage, 2016; Karantzas et al., 2013), these approaches are often met with strong resistance from students (Felder & Brent, 1996; Livingstone & Lynch, 2000) or divisive strategies for allocating work that negate the
benefits of the approach (Karantzas et al., 2013). This suggests that students do not understand the relevance of these teaching methods for developing their communication and interpersonal skills (practice domain). Further, students’ resistance towards these methods may be disadvantaging them in the workplace, with Norton (2013) reporting that the capacity to communicate effectively and work well with others were skills that were lacking in university graduates.

In contrast to undergraduate students, postgraduate students are aware of the heavy focus on theory and research skills in the undergraduate program. However, this can lead students to view the psychology education system as segmented and sequential (science-first, then professional practice). Thus, as students are aware that professional psychology skills are not explicitly developed until their postgraduate studies, they might expect that there will be a heavy focus on these skills, perhaps to the exclusion of theory and research training. While there is limited empirical investigations of what students expect from their postgraduate degrees, when asked what could improve the quality of the clinical program, postgraduate students suggested that program directors could “reduce the theoretical content or [...] remove the thesis component entirely,” and include “more experiential forms of learning, such as role plays, case examples, case reviews and interactive workshops,” (Scott et al., 2011, p. 81). This indicates that students at the postgraduate level expect more simulation and applied learning experiences, despite postgraduate training offering a relatively equal emphasis on theory, research, and communication domains, with the addition of explicit professional training in APAC-accredited psychology programs.

As with graduates from the 3-year degree, employers who hire PhD graduates report that applicants have strong disciplinary knowledge and research skills, but lack the communication and interpersonal skills that are necessary for functioning effectively in the workplace (Cumming, 2010; McGagh et al., 2016). While research-only PhD programs aim
to develop theory, research, and communication skills, these programs do not provide any formal skills training in these domains. This lack of skills training has led to employers who report that PhD graduates as unprepared for the workforce (Cumming, 2010; McGagh et al., 2016). A troubling finding by Pitt (2012) suggests that university employers of PhD graduates also perceive PhD graduates to be unprepared for work in academia, despite viewing the PhD as the minimum entry requirement. Findings such as these sparked a recent review of the research training system by the Australian Council of Learned Academies (ACOLA). The findings of this review had a strong emphasis on the provision of transferable skills and broader research skills (McGagh et al., 2016). Therefore, the motivations of PhD students in psychology towards theory, research, and communication are relevant to the provision of future training, and for understanding their attitudes towards skills that are currently perceived to be lacking (i.e., communication).

However, the findings for research-only PhD students are not specific to students in psychology. As research-only programs are not accredited by APAC, there has yet to be research into the relative value placed on theory, research, and communication for students in a research-only PhD compared to those in professional postgraduate programs. Although, as research-only PhD students, across a range of disciplines, report intrinsic motivation as the key reason for pursuing a PhD (Pitt, 2012), these students can be expected to differ from those in professional programs.

To summarise, undergraduate and professional postgraduate students appear to underestimate the extent that their education and training will focus on theory and research, and do not appear to develop sufficient communication skills. Conversely, research-only PhD students are expected to have much more positive values towards research, but may have less motivation for developing their human relation and communication skills (Cumming, 2010). While psychology education is not tasked with providing students with
what they expect to learn, least of all at the expense of what the science and profession of psychology needs them to learn, it is important that students find what they are learning to be interesting and meaningful for their development and future employment outcomes. Whilst some research describes the imbalance among students’ attitudes and expectations, there are few empirical studies investigating the effects of this imbalance on students’ engagement and motivation with specific domains. This gap in the research will be addressed in the current series of studies.

**Achievement Motivation and Expectancy-Value Theory**

Motivation is considered one of the most important constructs for excellence in academic performance (Clark, Middleton, Nguyen, & Zwick, 2014). Achievement motivation is considered the driving force for an individual to initiate formal learning and to guide and maintain goal-directed behaviour, such as studying, completing assignments, and working towards the final degree (Amrai, Motlagh, Zalani, & Parhon, 2011; Clark et al., 2014). A study by Vecchione, Alessandri, and Marsicano (2014) examined students in primary school, secondary school, and tertiary education. Achievement motivation was assessed early in the academic year and was used as a predictor of scholastic achievement (including school grades, absenteeism, and classroom conduct). Greater achievement motivation predicted higher grades in both secondary and tertiary students (Vecchione et al., 2014). Conversely, lack of achievement motivation has been related to poor academic outcomes in tertiary students, such as disengagement, discontinuing their studies, or poor grades (Clark et al., 2014; Rowell & Hong, 2013).

Investigating the predictors of achievement motivation and identifying ways to increase motivation are important goals for learning and teaching professionals (Rowell & Hong, 2013). To increase achievement motivation, Rowell and Hong (2013) suggested targeting students’ values towards specific tasks, as well as their beliefs about their abilities and goals.
Identifying collective motivational ‘weaknesses’ is one way to assess the suitability of current training practices and can be used to find interventions or alternate teaching strategies to enhance student outcomes at the cohort, rather than individual, level. Therefore, to investigate these factors, the current thesis used an existing framework, expectancy-value theory (Eccles & Wigfield, 2002), which is a model of achievement motivation.

**Expectancy-Value Theory of Achievement Motivation**

Expectancy-value theory (EVT; Eccles et al., 1983) has received much attention from those in learning and teaching fields. The model was developed to explain students’ performance or achievement-related choices, defined as the decision to allocate time, effort and other resources to the completion of a task (Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). EVT has been studied extensively in primary and secondary schooling to explain students’ choice of activities and motivation towards academic disciplines, such as English, mathematics, and sports (Conley, 2012; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Xiang, McBride, Guan, & Solmon, 2003). EVT posits that these choices are influenced by the perceived value of a task and their expectations for succeeding on that task (Wigfield & Cambria, 2010). However, each of these variables is a product of the wider socio-cultural environment, the students’ social environment, their own personal attributes (e.g., aptitudes, past performance, locus of control, and self-concept; Wigfield & Eccles, 2000; Wigfield & Cambria, 2010). Studies of EVT in higher education have examined students’ task values and expectations for success, but each highlight different contextual or personal influences.

For example, EVT has been used to encourage the choice of course and program enrolments in science, technology, engineering, and mathematics (STEM; Bøe, Henriksen, Lyons, & Schreiner, 2011; Wang & Degol, 2013). This is especially relevant for decreasing the gender gap by discovering ways to keep young women motivated and engaged in STEM courses (Bøe et al., 2011; Wang & Degol, 2013; Watt et al., 2012). Emerging research in this
area suggests that parents and instructors can each have a significant influence on students’ STEM enrolment and career choices (Harackiewicz, Rozek, Hulleman, & Hyde, 2012; Rozek, Hyde, Svoboda, Hulleman, & Harackiewicz, 2015). However, these findings are largely restricted to studies of secondary students.

Within higher education, EVT has been applied to students’ performance in statistics. This is largely due to the congruence between EVT and the Survey of Attitudes Towards Statistics (SATS; Ramirez, Emmioglu, & Schau, 2010; Ramirez, Schau & Emmioglu, 2012; Schau & Emmioglu, 2012). The utility of the EVT framework in predicting students’ achievement (grades) with statistics was demonstrated first in engineering students (Sorge & Schau, 2002) and later in second year psychology students (Hood, Creed, & Neumann, 2012). In both disciplines, students’ previous performance was the strongest predictor of their grades (Hood et al., 2012; Sorge & Schau, 2002), with values and expectancies also contributing significantly to the explanation of students’ grades. A substantial body of research has investigated students’ attitudes towards specific research methods (Povee & Roberts, 2014, 2015; Roberts, & Povee, 2014), and statistics (Lawless & Kulikowich, 2006; Wiberg, 2015). However, there has been little exploration of how this compares to their attitudes towards theory or practice. While the statistics literature aims to predict students’ grades, the research conducted in the current thesis sought to investigate factors most relevant to students’ achievement-related choices, or the relative motivation towards engaging with the broad domains of theory, research, and practice.

The diversity and flexibility of EVT to specific motivational concerns is one of the advantages of the model (Ball, Huang, Cotton, Rikard, & Coleman, 2016). This allows different issues, such as the gender gap in STEM or the negative attitudes towards statistics, to be addressed via a range of distal or proximal variables (Hood et al., 2012; Wigfield & Cambria, 2010). Distal variables in EVT involve the socio-cultural elements of student
motivations, which include gender role stereotypes, cultural stereotypes of the topic, and occupational characteristics (Wigfield & Cambria, 2010). These contextual influences receive more attention in the STEM field (Wang & Degol, 2013) than in statistics performance (Hood et al., 2012; Sorge & Schau, 2002). In contrast, the prediction of statistics performance incorporates person-based characteristics (e.g., affect, previous performance, and cognitive competence; Hood et al., 2012). As the current study sought to address issues in psychology education and curriculum design, contextual and person-based characteristics were de-emphasised in the current adaptation of EVT. Instead, a simplified model, which excludes distal variables (e.g., cultural milieu, gender roles, general self-schemas) was used.

The current thesis adapted the Eccles et al. (1983) model of achievement motivation for use with tertiary psychology students (see Figure 1.2). The core elements of EVT were retained to assess students’ subjective task values and self-efficacy beliefs towards the three domains (theory, research, and practice). In addition, students’ perceptions of their social environment were considered an important influence on the values and self-efficacy beliefs students held towards these domains. These three components of EVT will be reviewed.

According to EVT, achievement-related choices are explained by students’ subjective task values, or the combination of positive and negative attributions made towards a specific task or topic (Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). Students’ subjective task values are thought to have a direct effect on students’ choice to engage with a specific task or topic (Wigfield & Eccles, 2000). Eccles and Wigfield (2002) defined four broad categories of subjective task values, which are presented in Figure 1.2. Intrinsic value relates to how much enjoyment or interest an individual derives from a task. This can refer to students’ individual interest or their triggered, or situational, interest, which can be manipulated through students’ utility values (Harackiewicz, Smith, & Priniski, 2016).
Figure 1.2. An adapted model of expectancy-value theory, based on the Eccles et al. (1983) model.
According to EVT, achievement-related choices are explained by students’ subjective task values, or the combination of positive and negative attributions made towards a specific task or topic (Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). Students’ subjective task values are thought to have a direct effect on students’ choice to engage with a specific task or topic (Wigfield & Eccles, 2000). Eccles and Wigfield (2002) defined four broad categories of subjective task values, which are presented in Figure 1.2. *Intrinsic value* relates to how much enjoyment or interest an individual derives from a task. This can refer to students’ individual interest or their triggered, or situational, interest, which can be manipulated through students’ utility values (Harackiewicz, Smith, & Priniski, 2016).

*Utility value* refers to how useful an individual perceives doing well at the task will be to their future. Students’ utility values are important for their engagement with a task, guiding task-oriented behaviour and deep learning strategies (Murtonen, Olkinuora, Tynjälä, & Lehtinen, 2008). Further, both utility and attainment value were found to be significant predictors of students’ intentions when entering graduate school (Battle & Wigfield, 2003). In the Battle and Wigfield study, attainment value was defined as the personal significance of pursuing graduate school. In the current thesis, *attainment value* was defined as the perceived importance of performing well on a task (Wigfield & Eccles, 2000).

Battle and Wigfield (2003) also found that perception of cost was a significant, negative predictor of intentions to enter graduate school. *Cost value* is defined as an individual’s perception of how difficult or demanding a task will be (Eccles & Wigfield, 2002; Wigfield, 1994). Further, while Hood et al. (2012) measured effort directly using tutorial class attendance, Bøe et al. (2011) stressed that it is students’ beliefs about the effort required that predicts their choices, rather than objective qualities of the course or student behaviour. Students must resolve incongruities between the positive and negative attributions they assign to a task or domain to make achievement-related decisions (Wigfield & Cambria, 2010).
Research with utility interventions has demonstrated that students’ values and subsequent achievement-related decisions are influenced by their social environment (Harackiewicz et al., 2012; Rozek et al., 2015). Thus, students’ subjective task values about a specific domain are formed through a combination of their own personal experiences and goals, and the influence of their social environment. In a higher education setting, the social environment of psychology students includes their peers, tutors and lecturers, but also extends to family and friends outside the psychology training environment. Eccles et al. (1983) hypothesised two major pathways by which the social environment influences students’ task values. The first involves students’ exposure to a topic, while the second relates to how a domain is framed by important others. In the current thesis, personal and academic influences were operationalised as the perceived value that psychology students considered friends and family (personal) and tutors and lecturers (academic) to place on theory, research, and practice. In psychology, there should be little variation in students’ exposure to the three domains, as accredited programs must meet the standards mandated by APAC (2010). However, these standards are not prescriptive so psychology training can vary in the extent to which they emphasise theory, research and practice.

Academics’ attitudes and values are more commonly discussed when considering the adequacy of postgraduate rather than that of undergraduate psychology programs (Dunn, McCarthy, Baker, Halonen, & Hill, 2007; O’Donovan & Dyck, 2001). Academic values should be regarded as important at all levels of training, as the attitudes psychology students are exposed to early in their training will impact students’ task values (Bembenutty, 2012), shape how they perceive newly presented information, and influence their willingness to develop in the different learning domains (Berndt & Miller, 1990). For example, a student’s first impression of how valuable the research domain is may depend on whether research tasks are introduced positively (high utility value) or negatively (high cost value) by
academic staff (Jacobs & Eccles, 2000). While the social environment can impact students’
task values directly, the relationship between students’ task values and achievement-related
choices is moderated by students’ confidence (self-efficacy) in their ability to perform well on
a task (Wigfield, 1994).

Research by Eccles, Wigfield, Harold, and Blumenfeld (1993) indicated that children
can discern tasks they valued from tasks they perceived themselves to be competent with.
Students’ perceptions of competency with an upcoming task (e.g. performance on next
week’s maths test) were defined as their expectancies for success (Eccles & Wigfield, 2002).
However, expectancies for success cannot be distinguished empirically from more general
performance expectations (e.g., confidence in maths class; Bembenutty, 2012; Eccles &
Wigfield, 1995, 2002; Eccles et al., 1993). In the current thesis, students’ self-efficacy beliefs
were used to assess their perceptions of competency (Bandura, 1989; Bembenutty, 2012).
Self-efficacy is defined as the extent to which an individual believes they have the skills
necessary to complete tasks and accomplish goals. These beliefs have consistently been
found to be a strong predictor of academic achievement (Bong, 2004; Nicholson et al., 2013;
Pajares, 2003; Usher & Pajares, 2008) and have also been used to predict behavioural
measures of competency (Clark, Owen, & Tholcken, 2004; Hemmings & Kay, 2010; Robb,
2012).

Trainee clinical psychologists’ self-efficacy for research was a strong predictor of
behavioural intentions for engaging in research (Wright & Holttum, 2012). Here, self-
efficacy accounted for 48% of the variance in research intention, with the intention to
perform research linked to increased publication output in clinical psychologists (Holttum &
Goble, 2006; Wright & Holttum, 2012). This relationship between self-efficacy, behavioural
intentions, and actual performance demonstrates the utility of self-efficacy for making
inferences for students’ future performance in workplace settings. Further, research self-
efficacy has also been found to partially mediate the relationship between research skills and the pursuit of research careers (Adedokun, Bessenbacher, Parker, Kirkham, & Burgess, 2013), which is critical to ensuring the future supply of researchers and academics in psychology (Hemmings & Kay, 2010). For these reasons, enhancing self-efficacy has been proposed as a remedy to the ‘theory-practice gap’ found within health disciplines (Gloudemans, Schalk, Reynaert, & Braeken, 2013; Robb, 2012).

While research self-efficacy has received a lot of attention, psychology students’ self-efficacy for using theory and practice has not been addressed. Although research with nursing students has shown that self-efficacy can be useful in predicting workplace competence (including clinical skills and clinical judgement; Clark et al., 2004). Nursing students with lower self-efficacy required additional emotional and educational support before achieving competence with their clinical skills (Robb, 2012; Salonen et al., 2009). This relationship between self-efficacy and competence demonstrates the utility of self-efficacy for making inferences about students’ future workplace performance. For these reasons, enhancing self-efficacy has been proposed as a remedy to the ‘theory-practice gap’ found within health disciplines, as is the case in psychology (Gloudemans, Schalk, Reynaert, Braeken, 2013; Robb, 2012).

Students’ self-efficacy can be increased by the experience of mastery, or the interpretation of one’s performance with a task as successful (Bandura, 1989; Pajares, 2003). Findings with Spanish psychology students suggest that students’ mastery experiences and self-efficacy beliefs directly predicted students’ interest in statistics (Blanco, 2010). The relationship between task values and self-efficacy is thought to be reciprocal, with more positive task values leading students to engage (and have greater opportunity for mastery) with a domain, and the perception of competence leading students to ascribe more positive attributions (i.e., interest, importance) to the domain. Based on associations between task
values, self-efficacy, and grades (mid-semester and final), task values appear to be most important for students’ initial willingness to develop their knowledge of a domain, while positive self-efficacy beliefs are important for maintaining goal-directed behaviours for developing competence (Bong, 2004).

**Thesis Structure and Research Questions**

The separation of science and practice in psychology education in Australia has resulted in students entering psychology with expectations that rarely align to their experiences (Goedeke & Gibson, 2011). Further, the current application of the scientist-practitioner model may lead postgraduate students to expect less emphasis on the science of psychology and more on the practice. This thesis examines the perception of students across all years of psychology education, and applies an adapted expectancy-value theory model to understand the motivation and self-efficacy for theory, research and practice. As with previous research (Hood et al., 2012), many of the distal components of expectancy-value theory were excluded, such as cultural milieu, previous experiences, students’ aptitudes, and their self-schemata (i.e., goals, ideal self, and self-concept), and locus of control. Drawing from the core capabilities and attributes of psychology graduates, the three domains of theory, research and practice are considered the primary areas that students must engage in to develop the required graduate outcomes, regardless of their level of study (Rowley et al., 2008; Manathunga et al., 2009; Scott et al., 2011). While the literature paints a poor image of students’ motivations towards the research domain, there is a relative lack of information about students’ attitudes, motivation, and engagement with theory (knowledge of the discipline) or with practice (communication and interpersonal skills). Few studies have compared students’ motivations towards specific learning domains. Thus, the current study sought to compare students’ motivation and engagement with these three learning areas; these are operationalised, based on the APAC Standards (2010), and presented in Table 1.4.
Table 1.4.

Comparison of the Three Domains with APAC (2010) Graduate Attribute.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
<th>Graduate Attributes&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>Theoretical knowledge refers to theories of human behaviour and thinking, including subjects you study that give biological explanations of behaviour, explain cognitive processes for learning, memory, or other tasks, explain or describe personality, and define mental illness.</td>
<td>UG GA1, PG CCA1, CCA3, CCA4</td>
</tr>
<tr>
<td>Research</td>
<td>Research methods and statistics in psychology refers to the basic characteristics of the science of psychology, different research methods used by psychologists, undertaking literature searches and critically analyse studies, measurement and assessment of variables and the ability to analyse data and interpret results.</td>
<td>UG GA2, PG CCA3, CCA5</td>
</tr>
<tr>
<td>Practice</td>
<td>Communication and interpersonal skills in psychology refer to effective written and oral skills, and developing the ability to listen and speak effectively.</td>
<td>UG GA5, PG CCA3, CCA4, CCA5</td>
</tr>
</tbody>
</table>

<sup>a</sup>Graduate attributes from APAC (2010, p.41–42) and core capabilities and attributes (p. 49).

Figure 1.3 shows the design and research questions for the three studies, which used an expectancy-value framework (Eccles et al., 1983), to explore the motivations and barriers to engagement that emerged across the spectrum of Australian psychology students across three learning domains (theory, research, and practice).
### Graduate Outcomes for Psychology:

A Nationwide Exploration of Expectancy-Value Theory within the Domains of the Scientist-Practitioner Model of Training

*Framework (all studies):* Expectancy-value theory of achievement motivation  
*Motivational Factors:* Social influences, subjective task values, and self-efficacy beliefs.

<table>
<thead>
<tr>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong> To explore how students’ motivational factors differ for theory, research, and practice across the undergraduate years.</td>
<td><strong>Purpose:</strong> To examine the impact of the first year of training on students’ motivational factors towards theory, research, and practice.</td>
<td><strong>Purpose:</strong> To determine whether students’ motivational factors, for the theory, research, and practice (communication) domains, diverge with the postgraduate training they receive.</td>
</tr>
<tr>
<td><strong>Sample:</strong> First, middle (second and third) and fourth year psychology students.</td>
<td><strong>Sample:</strong> First year psychology students with longitudinal follow-up.</td>
<td><strong>Sample:</strong> Postgraduate students enrolled in a Master of Psychology, Psychology Doctorate or research-only PhD.</td>
</tr>
<tr>
<td><strong>Measure validation:</strong> Exploratory factor analysis and reliabilities.</td>
<td><strong>Measure validation:</strong> Reliabilities.</td>
<td><strong>Measure validation:</strong> Confirmatory factor analysis and reliabilities.</td>
</tr>
<tr>
<td><strong>Analysis:</strong> 3 (Year) (\times) 3 (Domain) Mixed Factorial ANOVA</td>
<td><strong>Analysis:</strong> Multiple Regression Analysis; 2 (Time) (\times) 2 (Experience) (\times) 3 (Domain) Mixed Factorial ANOVA</td>
<td><strong>Analysis:</strong> 3 (Program) (\times) 3 (Domain) Mixed Factorial ANOVA</td>
</tr>
</tbody>
</table>

**Research Question 1:** Do students’ perceptions of subjective task values align with their perceptions of what friends and family value in their first year? Does this change so that students’ values reflect what they perceive academic staff to value by their middle and fourth years?  
**Research Question 2:** Do students’ subjective task values improve with each undergraduate year, so that by their fourth year, students’ values reflect the philosophy of the scientist-practitioner model (i.e. equal task values towards theory, research, and practice)?  
**Research Question 3:** By the fourth year of study, do students attain an equal level of self-efficacy for using theory, research, and practice to solve psychological problems that emerge in their personal and professional lives, and when considering societal issues?

**Research Question 1:** Do students in professional psychology programs and higher research degrees consider academic staff to value theory, research, and practice as equally important to their academic development?  
**Research Question 2:** Do students in professional psychology programs at the Masters level differ in their values towards theory, research, and practice compared to those with greater research requirements (i.e. doctoral candidates)?  
**Research Question 3:** Do students in professional psychology programs report the same level of self-efficacy for using theory, research, and communication skills as higher degree research students?

*Figure 1.3. Overview of the three studies and research questions for the current thesis.*
Study 1 & 2: Undergraduate Psychology Students

Studies have shown that students enter psychology education with the expectation that they will develop psychological helping skills (Gaither & Butler, 2005; Goedeke & Gibson, 2011). Further, undergraduate students often do not understand the relevance of research skills to their psychology studies, or their future careers (Earley, 2014; Murtonen et al., 2008), and are generally less interested in developing these skills (Sizemore & Lewandowski, 2009, 2011). For this reason, Study 1 and Study 2 aimed to elucidate the specific barriers to motivation (i.e. negative social influences, task values, or poor self-efficacy beliefs) that students’ face at various levels in their undergraduate degrees. Study 1 examined first, middle, and fourth year students enrolled in the three- or four-year Bachelor of Psychology programs, with Study 2 investigating how these motivations change during the first year of Psychology education.

The primary purpose of Study 1 was to capture the differences in students’ motivation between each of the year levels. Study 1 also sought to determine whether fourth year students reported greater self-efficacy for using theory, research, and practice ways than first or middle year students. As a longitudinal follow-up across all four years was not within the scope of this research project, Study 2 involved a longitudinal follow-up with first year psychology students only. This allowed the predictors of self-efficacy to be examined at two time-points and the change in social influences, task values, and self-efficacy beliefs to be examined.

Study 3: Postgraduate Psychology Students

The literature suggests that clinical psychology students at Masters and Doctoral levels place less value on theory and research than on practical aspects of their program (Scott et al., 2011). However, these findings have been based on qualitative responses from an exclusively clinical psychology sample. In contrast to professional psychology students, investigations of
research-only PhD students suggest that this group have poorer communication and interpersonal skills (Cumming, 2010; Manathunga, Pitt, & Critchley, 2009), although, it is not known whether this is due to a lack of motivation for developing these skills. Study 3 sought to systematically compare postgraduate students enrolled in Masters and Psychology Doctorates on theory, research, and practice on a range of motivational factors. Postgraduate psychology students were surveyed on their personal and academic social influences, their subjective task values, and self-efficacy beliefs for the theory, research, and practice domains. In addition to professional psychology students, research-only PhD students were also assessed on their motivation towards the three domains.

**General Methodological Approach**

The current series of studies aimed to obtain a nationally representative sample of Australian undergraduate and postgraduate psychology students. To meet this objective, the Heads of Psychology Schools at each Australian higher education provider offering at least one sequence in psychology accredited by APAC were contacted. Of the 40 providers contacted, twenty-four (60%) approved the distribution of the survey invitations to their student body. Course and program coordinators were provided with the email invitation to participate, which was distributed through existing mass student email channels and university learning websites. The invitation linked students to the online survey (undergraduate or postgraduate version), which was available over an 18-month period.

The total undergraduate sample included 478 first year students, 69 students in their second and third year, and 102 fourth year students. The total postgraduate sample included 90 Masters students, 72 research-only PhD students, and 75 students in a professional doctorate or combined Masters with PhD program. Chapter 2 explored a cross-section of undergraduate psychology students, which took a random subset of the first-year sample, in addition to the second, third, and fourth year students. Chapter 3 used the total first year
sample after an extended period of data collection and included a subset of students who volunteered for a one-year follow up, to which 105 first years responded with complete responses. Chapter 4 analysed the postgraduate sample, comparing students in different programs on their motivational factors.

To maintain the confidentiality of the providers, students’ higher education provider was recoded automatically into university groupings. In the undergraduate sample, 18% of students were from Group of Eight universities, 35% from Innovative Research Universities, 11% from the Australian Technology Network, and 36% from universities and private colleges with no other affiliation. The postgraduate sample had a larger representation of Group of Eight students (37%), but the Innovative Research Universities (26%), Australian Technology Network (11%), and unaffiliated universities and private colleges (26%) were also represented. Thus, the collected sample of psychology students were deemed to be representative of the Australian psychology student population.

**Organisation of Thesis**

This thesis is organised into five chapters; the current chapter (Chapter 1) presents a review of the Australian psychology education setting and describes the model of achievement motivation, expectancy-value theory (Eccles et al., 1983) that was used as the framework for the three studies. This is followed by an overview of the thesis and design of the three studies. Chapters 2, 3 and 4 detail the three empirical studies described in Figure 1.3, which are presented as a series of published and unpublished papers. The final chapter, Chapter 5, integrates the findings from the three studies into a general discussion, which also discusses the implications of these findings for psychology education and training, and provides recommendations for psychology educators. Limitations of the studies and future research directions are discussed.
This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to the paper included:

- Conducted data analysis to produce the article,
- Review and interpretation of literature,
- Writing of the paper, and
- Identifying implications for future research.

We agree to the inclusion of the paper in this doctoral research submitted for examination. The journal in which this paper has been submitted for publication is peer-reviewed. Permission has been provided by the publisher, John Wiley & Sons, to reproduce this paper as part of this doctoral thesis.

Elizabeth G. Conlon
10 March, 2017

Shirley A. Morrissey
10 March, 2017
Abstract

Objective: Psychological literacy has been proposed as an outcome for psychology graduates, which requires an understanding of and integration between theory, research, and practice. Using expectancy-value theory, the current study aimed to examine psychology students’ values and self-efficacy towards these domains. Method: 319 psychology students ($M_{age} = 26.25, SD = 10.26$) reported on their social influences, task values, and self-efficacy beliefs for theory, research, and practice. Results: Using 3 (Year) $\times$ 3 (Domain) Mixed Factorial ANOVAs, it was shown that students have poorer task values and lower self-efficacy towards research than theory or practice. A consistent effect of year was not found for task values, but students’ self-efficacy beliefs showed an effect of training, with 1st years reporting poorer self-efficacy than middle and 4th year students. Results indicated that students hold contrasting views of what they perceive friends and family to value compared to their perception of what academic staff value. Conclusions: It was recommended that the undergraduate curriculum promote equal values across theory, research, and practice by integrating education in the three domains. Utility interventions are discussed as a cost-effective way to improve task values and performance in learning domains that are not well-valued by students.
CHAPTER 2:
TASK VALUES AND SELF-EFFICACY BELIEFS OF UNDERGRADUATE PSYCHOLOGY STUDENTS

The current model of education and training in psychology has been hotly debated since the scientist-practitioner (S-P) model of training was introduced in the Boulder Summit of 1949 (Raimy, 1950). This model aimed to integrate science and practice in psychology education and training and despite its criticisms has become integral to psychology education (Belar & Perry, 1992; Stoltenberg & Pace, 2007). In Australia, while the S-P model forms the basis of programs accredited by the Australian Psychology Accreditation Council (APAC, 2010), elements of the S-P model are not equally weighted in undergraduate and postgraduate degrees (Provost et al., 2010, Australian Psychological Society [APS], 2012). Instead, the initial four years of undergraduate psychology education strongly emphasise the science of psychology, providing “broad foundational knowledge, […] strong skills in research methods, data analysis and report writing” (Cranney et al., 2009, p. 253).

Traditionally, psychology programs in Australia have favoured a ‘science first, train later’ interpretation of the S-P model and one that does not typically provide an integrative approach. A major problem with this is the limited number of fourth year places, which allows less than half of third year psychology graduates to progress into fourth year studies (Cranney et al., 2012). As fourth year is required for supervised practice or postgraduate training, this means a significant proportion of undergraduates will not be exposed to the applied component of psychology education (APS, 2012). To resolve this issue, Cranney and colleagues (2009, 2012) have argued that psychology graduates need to develop psychological literacy and that the place to do so is in the first three years of psychology education (Cranney et al., 2012).

Psychological literacy is defined as the capacity to effectively and intentionally apply
the science of psychology to problems of a psychological nature, spanning an individuals’
personal and professional life, and to problems affecting their social environment at local and
global levels (Cranney & Dunn, 2011). Cranney et al. (2009) established a set of six graduate
attributes (GA’s) for undergraduate psychology which were incorporated into the APAC
(2010) Standards. Psychological literacy is intended to align with the sixth GA, learning and
its application (Morris et al., 2013). However, as the ability to apply psychological
knowledge to a range of problems stems from students’ ability to effectively integrate
psychological knowledge; students must attain a high level of competence with each GA to
develop psychological literacy (Cranney et al., 2009). The three main components of
psychological knowledge are described in Table 2.1, mapped against the relevant GA.

**Expectations of Psychology Education and Student Values**

Students rarely enter psychology programs with equal values towards theory, research
and practice. Prior research suggests first year students are often unaware of the extent of
research training in psychology, which is an area of concern for educators (Rowley et al.,
2008). Research has also suggested that students expect a significant proportion of
psychology training to address advanced clinical or helping skills; skills that are largely
absent from the undergraduate program (Gaither & Butler, 2005; Goedeke & Gibson, 2011).
Therefore, students entering undergraduate studies, especially those who are most passionate
about professional practice in psychology, may become dissatisfied or disengage early due to
the mismatch between their expectations and experiences (Holmes, 2014). A consideration
of students’ values and expectancies is important if the overall value of psychology education
is to be improved.
Table 2.1.

A Comparison of the Three Content Domains with their Source Graduate Attributes.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
<th>Graduate Attributes(^a)</th>
</tr>
</thead>
</table>
| Theory           | Theoretical knowledge refers to theories of human behaviour and thinking, including subjects you study that give biological explanations of behaviour, explain cognitive processes for learning, memory, or other tasks, explain or describe personality, and define mental illness. | GA 1: Core Knowledge and Understanding  
This GA involves obtaining discipline knowledge in a range of areas (e.g. abnormal psychology, biological bases of behaviour, perception). |
| Research         | Research methods and statistics in psychology refers to the basic characteristics of the science of psychology, different research methods used by psychologists, undertaking literature searches and critically analyse studies, measurement and assessment of variables and the ability to analyse data and interpret results. | GA2: Research Methods in Psychology  
This GA involves being able to describe, apply and evaluate research methods and demonstrate practical skills in psychological research and follow the scientific method. |
| Practice         | Communication and interpersonal skills in psychology refer to effective written and oral skills, and developing the ability to listen and speak effectively).                                                   | GA5: Communication Skills  
This GA involves demonstrating effective communication skills in a range of settings, but was expanded to include interpersonal skills in the Cranney et al. (2009) revisions. |
| Psychological Literacy | The ability to effectively and intentionally apply the science of psychology to problems of a psychological nature.                                                                                              | GA6: Learning and the Application of Psychology                                               |

Note. GA3: Critical Thinking Skills and GA4: Values, Research and Professional Ethics are associated with all three domains and psychological literacy, and so were not directly evaluated in the current study.

\(^a\)Graduate attributes adapted from APAC (2010, p.41–42).
Expectancy-value theory of Achievement Motivation (EVT; Eccles et al., 1983) aims to explain students’ choice to invest time and effort into learning a specific topic. According to EVT, these choices are influenced by task attributions made by students, composed of subjective task values and self-efficacy beliefs (Wigfield & Eccles, 1992). Task values refer to four attributions made towards a topic (Wigfield & Eccles, 1992, 2000), including: how interesting students’ find learning about a topic (intrinsic value), how important they perceive performing well in a topic (attainment value); how useful the topic is to their future (utility value); and how difficult and time-consuming they perceive learning a topic to be (cost value). Some researchers have suggested intrinsic and utility task values are most important for a range of outcomes, including course decisions and performance (Hulleman et al., 2008). EVT has been used to predict psychology students’ performance in a second-year statistics course, accounting for 40% of the variance in students’ achievement (Hood et al., 2012).

According to EVT, students’ values are formed, in part, through their socialisation towards a domain by important people in their lives and those with authority or expertise in the area (Eccles & Wigfield, 2002). This socialisation involves the attitudes, expectations, beliefs, values and behaviours of these influential others. Thus, how each domain is introduced will influence the extent to which a student values that domain (Jacobs & Eccles, 2000). For a student, those who teach and support them would be considered part of their social environment (i.e. family, friends, tutors, and lecturers). The attitudes that family and friends communicate can influence both the values and self-efficacy beliefs students’ hold towards the domains (Jacobs & Eccles, 2000; Osborne & Jones, 2011). However, the values of academic staff may contradict those of family and friends, as research suggests that undergraduate instructors hold stronger preferences for scientist over practitioner interests (Holmes, 2014).
Self-efficacy (Bandura, 1997) defined as a student’s confidence in their ability to possess and employ the necessary skills to succeed in a given task has been shown to be important in predicting academic performance (Eccles & Wigfield, 1995). Interestingly, students’ task values assessed mid-semester were found to be better predictors of course performance and enrolment intentions than self-efficacy beliefs (Bong, 2004). However, at the end-of-semester, self-efficacy best predicted students’ final exam performance (Bong, 2004); suggesting that positive task values are most important for willingness to develop knowledge, while self-efficacy is important for maintaining efforts towards developing competence.

This paper investigates students’ task values and self-efficacy beliefs towards theory, research, and practice in psychology education. In line with the literature it was expected that 1st year students’ family and friends would value practice over theory and research. In contrast, it was expected that academic staff would be perceived by 1st years to value research and theory over practice (Holmes, 2014). Further, students’ friends and family were hypothesised to have the greatest influence on intrinsic and utility values in 1st year. Thus, 1st year students would report greater interest in practice than theory and research, and would also report practice to be more useful.

Consistent with prior research, it was expected that students’ intrinsic and utility values would become more similar to those of academic staff in their later years of study. Hence, students in 2nd and 3rd year would report greater interest and perceived utility for theory and research than practice. As research suggests that students report more difficulty with research topics, it was expected that cost value would remain high for the research domain throughout 1st, 2nd, and 3rd year. In 4th year, given that students have completed an undergraduate sequence in psychology, it was hypothesised that these students would report equal intrinsic, utility, and cost value towards each of the three domains. For attainment value, it was
expected that theory, research, and practice would be valued equally in all year levels, as the importance of obtaining a good grade should not vary by year.

In developing self-efficacy for using theory, research, and practice in psychologically literate ways, it was expected that there would be an effect of year level, with 1st year students reporting the lowest self-efficacy for all three domains. Students in their middle years should have developed self-efficacy for using theory and research, but were not expected to have developed self-efficacy for using practice, as the three-year degree does not provide students with sufficient experience with this domain. As 4th year students have reached the end of their undergraduate degree, it was expected that their self-efficacy for using theory, research, and practice in psychologically literate ways would be equal for the three domains.

**Method**

**Participants and Procedure**

The sample consisted of 319 psychology students aged between 17 and 68 years ($M = 26.38, SD = 10.29, 245$ females). There were 103 students in their first year, 69 students in second year, 45 students in third year, and 102 students in fourth year. The current sample was obtained through 22 universities and private colleges offering accredited undergraduate sequences in psychology. There was a comparable sample from different level institutions and preliminary analyses detected no difference in target measures. Students were recruited online via the provider’s learning website or mass email with approval from the relevant Head of School. The study was also advertised on social media using psychology interest groups. The study was approved by the University Human Research Ethics Committee and endorsed by HREC committees in participating universities where required. A prize draw incentive was provided for all students and first year students in eligible courses were offered research participation credit.
Measures

The measures used for the current study were pilot tested on a sample of 78 undergraduate psychology students from three universities, demonstrating good reliabilities and small to large effect sizes (Cohen’s $d = 0.26$ to $1.33$). All measures were presented on a 6-point Likert response scale with no neutral midpoint, for example from 1 “Strongly Disagree” to 6 “Strongly Agree” with “Somewhat Disagree” and “Somewhat Agree” as midpoints. Scale anchors were matched to the question text, for example, “Not at all” to “A great deal”. Definitions (see Table 2.1) were provided to participants for each of the three domains during the survey.

Social Influences. Two social influences (personal and academic) scales were generated. The personal social influences scale assessed the extent that students perceived friends, and family valued their learning of theory, research and practice in psychology. The academic social influences scale assessed the extent that students perceived tutors and lecturers to value learning in theory, research and practice within psychology. Cronbach’s alpha for the 2-item personal social influence scale was .62 for theory, .74 for research, and .79 for practice. Cronbach’s alpha for the 2-item academic social influences scale was .92 for theory, .94 for research, and .96 for practice.

Subjective Task Values. The four task values were measured with 5-item subscales. These items were generated using item stems from the Self-and-Task Perception Questionnaire (STPQ; Parsons et al., 1980, as cited in Eccles & Wigfield, 1995) and the Motivated Strategies for Learning Questionnaire (MSLQ) by Pintrich et al. (1991). For each domain students rated their agreement with items from the four subscales. Internal consistency of the task value scales ranged from acceptable to excellent; these are provided with example items for each domain in Table 2.2.
Table 2.2.

**Means (M), Standard Deviations (SD), and Scale Reliabilities of Task Values with Example Items (N =319).**

<table>
<thead>
<tr>
<th>Scale</th>
<th>M</th>
<th>SD</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intrinsic Value (e.g., <em>I enjoy learning about this topic</em>)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>4.72</td>
<td>0.82</td>
<td>.93</td>
</tr>
<tr>
<td>Research</td>
<td>3.66</td>
<td>1.19</td>
<td>.96</td>
</tr>
<tr>
<td>Practice</td>
<td>4.72</td>
<td>0.93</td>
<td>.96</td>
</tr>
<tr>
<td><strong>Attainment Value (e.g., <em>It is very important to me to get a good grade in this area</em>)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>5.01</td>
<td>0.71</td>
<td>.89</td>
</tr>
<tr>
<td>Research</td>
<td>4.85</td>
<td>0.85</td>
<td>.90</td>
</tr>
<tr>
<td>Practice</td>
<td>5.06</td>
<td>0.83</td>
<td>.94</td>
</tr>
<tr>
<td><strong>Utility Value (e.g., <em>I think I will use what I learn in this area in my future career</em>)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>4.71</td>
<td>0.74</td>
<td>.87</td>
</tr>
<tr>
<td>Research</td>
<td>4.30</td>
<td>0.91</td>
<td>.88</td>
</tr>
<tr>
<td>Practice</td>
<td>5.07</td>
<td>0.81</td>
<td>.90</td>
</tr>
<tr>
<td><strong>Cost Value (e.g., <em>This topic is really difficult to learn</em>)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>3.69</td>
<td>0.75</td>
<td>.76</td>
</tr>
<tr>
<td>Research</td>
<td>4.24</td>
<td>0.93</td>
<td>.84</td>
</tr>
<tr>
<td>Practice</td>
<td>3.37</td>
<td>0.85</td>
<td>.77</td>
</tr>
</tbody>
</table>

**Self-Efficacy Beliefs.** A 7-item measure of self-efficacy for using theory, research, and practice in psychological literate ways was developed. Each item had the question stem, “To what extent do you feel confident expressing/ applying your knowledge of...” adapted from the Self-efficacy scale of the MSLQ (Pintrich et al., 1991). This measure assessed students’ confidence in their knowledge of each domain and their confidence in their ability to apply each domain to personal, professional, and societal problems. As this scale was developed for the current study, the factor structure of the self-efficacy scale was examined for each domain using Principal Components Analysis (PCA) with a varimax rotation. A simple factor structure emerged for research (Cronbach’s α = .92) and practice (α = .94).
Theory items loaded on two factors, representing students’ confidence in *expressing* and *applying* theoretical knowledge. However, due to high crossloadings and a reliable factor structure (α = .83), a simple factor structure was retained for theory.

**Results**

Initial analysis of 2nd and 3rd year student responses on the dependent variables indicated that these groups did not differ significantly; as such these groups were combined to form a middle year group (n = 114). A series of 3 (Year: 1st, Middle, 4th) × 3 (Domain: theory, research, practice) mixed factorial ANOVAs were conducted using each of the *personal social influences*, *academic social influences*, *task values*, and *self-efficacy* measures as dependent variables. In all analyses, a violation to the assumption of sphericity was detected using Mauchly’s Test (all ps < .001), to which the Huyhn-Feldt correction was applied (Keppel, 1991). Other assumptions of the analysis were acceptable.

**Social Influences**

**Personal Social Influences.** There was a significant main effect of Domain, $F(2, 572) = 243.48, p < .001, \eta^2_p = .44$, which was modified by a significant Domain-Year interaction, $F(4, 572) = 4.41, p = .001, \eta^2_p = .03$. There was no significant main effect of Year, $F(2, 316) = 0.88, p = .418$. As predicted, students in all year levels perceived family and friends to value practice significantly more than research (all ps < .001; see Figure 2.1). Contrary to expectations, the 1st year group perceived family and friends to value research significantly more than students in middle ($p = .039$) and 4th year groups ($p = .027$). Further, 1st year students reported no difference in the values of family and friends for theory and practice, while both middle years ($p = .010$) and 4th years ($p < .001$) thought family and friends would value practice more than theory.
Figure 2.1. Mean scores for personal and academic social influences for theory, research, and practice, by year level (error bars represent ± 1 standard error of the mean).

Academic Social Influences. There was a significant main effect of Domain, $F(2, 527) = 30.26, p < .001, \eta^2_p = .09$, with no effect of Year, $F(2, 316) = 2.47, p = .087$. There was a significant interaction, $F(3, 527) = 4.34, p = .004, \eta^2_p = .03$, which was explained by differences between the 1st year group and later year students. In 1st year, students perceived academic staff to value all three domains equally (all $p$s > .05). Students in later years perceived academic staff to value theory and research significantly more than practice (all $p$s < .001).

Subjective Task Values

Previous research has found a positive association between intrinsic, attainment, and utility value (Eccles & Wigfield, 1995). However, due to a violation of homogeneity of regression, intrinsic value could not be used as a covariate in analyses of attainment and utility values. The correlations between these values are reported in Table 2.3. Significant
positive associations were found between the task values for all domains, except for intrinsic value for research, which was not associated with intrinsic, attainment, or utility value for practice. This indicates research interest was not associated with students’ values towards practice. The mean intrinsic, utility, attainment and cost value for theory, research, and practice are presented in Figure 2.2.

Table 2.3.

Correlations between Intrinsic, Attainment, and Utility Task Values (N = 319).

<table>
<thead>
<tr>
<th></th>
<th>Intrinsic</th>
<th>Utility</th>
<th>Attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1 Theory</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Research</td>
<td>.37**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3 Practice</td>
<td>.29**</td>
<td>.00</td>
<td>-</td>
</tr>
<tr>
<td>Utility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Theory</td>
<td>.77**</td>
<td>.23**</td>
<td>.35**</td>
</tr>
<tr>
<td>5 Research</td>
<td>.41**</td>
<td>.66**</td>
<td>.12*</td>
</tr>
<tr>
<td>6 Practice</td>
<td>.37**</td>
<td>-.03</td>
<td>.76**</td>
</tr>
<tr>
<td>Attainment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Theory</td>
<td>.74**</td>
<td>.21**</td>
<td>.38**</td>
</tr>
<tr>
<td>8 Research</td>
<td>.42**</td>
<td>.50**</td>
<td>.25**</td>
</tr>
<tr>
<td>Practice</td>
<td>.38**</td>
<td>.03</td>
<td>.81**</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .001.

**Intrinsic Value.** There was a significant main effect of Domain, $F(2, 535) = 151.16$, $p < .001$, $\eta_p^2 = .32$, with no significant main effect of Year, $F(2, 316) = 2.38$, $p = .094$. The Domain-Year interaction was significant, $F(3, 535) = 3.59$, $p = .010$, $\eta_p^2 = .02$. It was expected that students’ intrinsic values would reflect personal social influences in 1st year and
academic social influences in later years. However, students in all years reported research to be significantly less interesting than both theory and practice (all $ps < .001$), with 4th year students reporting significantly less interest in research than even 1st year students ($p = .023$).

**Utility Value.** There was a significant main effect of Domain, $F(2, 577) = 107.35$, $p < .001$, $\eta^2_p = .25$, with no significant main effect of Year, $F(2, 316) = 1.51$, $p = .222$. The Domain-Year interaction was significant, $F(4, 577) = 2.65$, $p = .037$, $\eta^2_p = .02$. It was expected that students’ perception of usefulness would also reflect their social influences across the year levels. However, students in all years reported practice to be significantly more useful than theory, and theory to be more useful than research (all $ps \leq .002$). Students in their middle years perceived theory to be significantly more useful than both 1st ($p = .046$) and 4th year ($p = .007$) groups, which may be an impact of the strong theoretical focus of coursework in the middle years.

**Attainment Value.** There was a significant main effect of Domain, $F(2, 605) = 11.45$, $p < .001$, $\eta^2_p = .04$, with no significant main effect of Year, $F(2, 316) = 2.26$, $p = .106$, and a significant Domain-Year interaction, $F(4, 605) = 2.65$, $p = .034$, $\eta^2_p = .02$. It was expected that attainment value would not be significantly different across the three domains or year levels. This was supported only in the 4th year group (all $ps > .05$). In 1st and middle years, students reported significantly greater attainment value for theory ($p = .001$) and practice ($p = .011$) than research.
Figure 2.2. Mean score on task values for theory, research, and practice, by year level (error bars represent ± 1 standard error of the mean).
Cost Value. There was a significant main effect of Domain, $F(2, 531) = 119.85, p < .001, \eta_p^2 = .28,$ and Year, $F(2, 316) = 7.07, p = .001, \eta_p^2 = .04,$ which were modified by a significant interaction, $F(3, 531) = 12.42, p < .001, \eta_p^2 = .07.$ Students’ cost value showed an effect of year: 1st year students reported significantly higher cost value for theory than middle year students ($p = .004$), who in turn reported significantly higher cost than 4th year students ($p = .012$). Conversely, 4th year students reported higher cost value for research ($p = .040$) when compared to 1st years, although middle year students were not significantly different from 1st or 4th years ($ps \geq .126$). Finally, 1st year students considered practice to be more costly than middle and 4th year students ($ps < .001$), with no difference between the latter groups ($p = .283$).

It was expected that 1st and middle years would consider research more costly than theory and practice, while 4th year students would rate all domains equally. This was supported only in the middle year group; 1st year students considered both theory ($p = .013$) and research ($p = .002$) to be significantly more costly than practice, with no significant difference between theory and research ($p = .063$). Both middle and 4th year students reported significantly higher cost value for research than theory, and theory to be significantly more costly than practice (all $ps < .001$).

Self-Efficacy Beliefs

There was a significant main effect of Domain, $F(2, 471) = 59.06, p < .001, \eta_p^2 = .16,$ and Year, $F(2, 316) = 6.78, p = .001, \eta_p^2 = .04,$ with no significant interaction, $F(3, 471) = 2.62, p = .051$ (see Figure 2.3). Students in all years reported significantly greater self-efficacy for using theory over practice ($p = .032$), and for practice over research ($p < .001$). Consistent with the predicted effect of training, 1st years reported significantly less self-efficacy when compared to later years ($ps \leq .005$), but middle and 4th year groups did not differ ($p = .999$).
Students’ expectations of psychology are often unrealistic. The current study sought to investigate what impact inaccurate expectations have on the values and self-efficacy beliefs of students across the undergraduate years. The perceived values of friends and family and tutors and lecturers were also investigated to examine whether these aligned with the values held by students.

**Social Influences and Subjective Task Values**

In all year levels, students perceived family and friends to value practice over theory and research. Surprisingly, 1st year students reported that they perceived family and friends to hold more positive values towards research than 4th years. This could reflect the added pressure on 4th year students to develop work-ready skills as they approach the end of their degree. Middle and 4th year students reported that they perceived academic staff to value
theory and research over practice, while 1st year students reported academic staff to value theory, research, and practice equally. This is consistent with 1st year students’ expectation of psychology having a strong focus on helping skills (Goedeke & Gibson, 2011).

Students’ interest in theory, research, and practice were consistent with previous findings on students’ expectations (Holmes, 2014; Rowley et al., 2008). While it was expected that later year students would value the domains equally, in all years, research was reported to be less interesting than theory and practice. In fact, 1st years rated research as more interesting than 4th year students. For utility value, students in all year levels rated practice as the most useful domain, followed by theory, which was followed by research. This supports the idea that the place and purpose of research training is not well understood by undergraduate students (Goedeke & Gibson, 2011; Holmes, 2014). These values may be related to task difficulty; 1st year students reported equally high cost value towards theory and research when compared to the practice domain, however, in later years, students considered research to have a higher cost value than both theory and practice.

Despite the perceived cost, students need to perform well in all domains for entry into fourth year programs; therefore, students’ attainment value was expected to be equal across domains and year levels. This was not supported; 1st and middle year students reported research was not as important to develop as theory or practice. While this may be related to the greater perceived cost of research, those in 4th year reported equal attainment value for all domains, despite reporting a high cost value for research. This may reflect the importance of doing well in the fourth-year research requirements.

Psychology educators have recognised undergraduates’ lack of interest with research and have attempted to improve this through applied examples. However, according to Sizemore and Lewandowski (2011) these strategies have limited success in improving interest and did not improve utility value or performance. However, there is growing support
for interventions targeting students’ utility value to enhance interest and performance in tasks involving maths and psychology (Canning & Harackiewicz, 2015; Harackiewicz & Hulleman, 2010). This has been examined through laboratory- and classroom-based interventions, where students were asked to write a short essay on the utility of a task or technique (Harackiewicz & Hulleman, 2010; Hulleman et al., 2010). This has been shown to be effective for motivating poor performing students and shows the greatest gains when using self-generated utility information (Canning & Harackiewicz, 2015; Hulleman et al., 2010). Thus, utility interventions are an ideal place to start when attempting to improve students’ values towards a domain, as they require little additional resources and are easily incorporated into regular assessment activities.

In sum, the hypothesis that students would equally value theory, research and practice by 4th year, in accordance with the S-P model was not supported for intrinsic, utility, or cost values. Despite students having very little of their program devoted to practice, they reported greater interest in this domain and find the knowledge and skills associated with this domain to be more useful across a range of settings. To improve students’ achievement motivation in theory and research domains, educators should focus on developing an integrative curriculum through the inclusion of graded simulation tasks that require students to draw from theory, research, and practice (Provost et al., 2010). Further, students in 1st year reported a greater interest in research than those in later years. It is important that educators capitalise on this by providing hands-on opportunities to engage with research design and analysis early in the program and link this material to professional applications, across a range of areas.

Self-Efficacy Beliefs

Despite undergraduate psychology’s strong focus on the science of psychology, students reported greater self-efficacy in using theory and practice in psychological literate ways than research. While surprising in an Australian context, where programs have a strong
research focus and little development of students’ self-efficacy for practice, these findings are consistent with previous research which shows low research self-efficacy among psychology students (Love, Bahner, Jones, & Nilsson, 2007). One concern has been raised that the inclusion of greater practical skills in the undergraduate curriculum could lead students to practice beyond their competence (APS, 2012; Provost et al., 2010). The current results suggest students’ self-efficacy for practice may be inflated; and so it may be beneficial to provide more experiential learning to enable students to have a more realistic assessment of their own competencies.

This study aimed to provide a snapshot of students’ values and self-efficacy beliefs towards theory, research, and practice. Currently, students do not appear to be developing psychological literacy incrementally throughout their undergraduate degree, as middle and 4th year groups did not differ in self-efficacy for the three domains. However, psychological literacy as an explicit outcome of the undergraduate psychology degree is still in its infancy and may not be emphasised by all higher education providers. The results do suggest that to help develop psychological literacy, the undergraduate curriculum needs to improve the integration of the requisite domains and provide more self-relevant, pre-professional skills in research and practice. In addition, programs should include more practically-oriented research training at an undergraduate level. The latter would contribute to the development of self-efficacy with research that students are currently lacking and help to reduce students’ cost value towards research.

Limitations and Future Research

There are three methodological issues that should be addressed. First, the theory domain had consistently lower reliability than the research and practice scales. This may be linked to the diversity of the study of psychological theories. While students reported no difference in interest and importance of theory and practice, theory was thought to be less
useful. This is concerning, as theoretical knowledge is the primary focus of the undergraduate degree and underpins the S-P model and psychological practice (Stoltenberg & Pace, 2007). Further exploration of students’ values towards the different theoretical areas in psychology would be beneficial to identify areas for intervention. Second, the current study used a narrow measure of psychological literacy; a more extensive measure is being developed, which may yield different results (Roberts et al., 2015). Third, the interpretation of cross-sectional data can be fraught, especially as the current study examined 1st year students recruited throughout the academic year and thus had different levels of experience with psychology education. It is unclear whether these students form a homogenous sample or if the values students enter with are significantly altered within their first year. Thus, a longitudinal study to examine whether students’ values and self-efficacy beliefs are influenced by training in the first year of study is currently under investigation (Study 2).

In summary, the present study suggests that the undergraduate curriculum may not be effective at providing students with a well-rounded psychology education. The integration of theory, research, and practice domains in undergraduate education is recommended to encourage the development of psychological literacy. In addition, utility-focussed assignments that are self-relevant and require students to generate an argument for the real-world utility of a topic may have the greatest influence on student values. Such utility interventions may improve students’ cost value, though currently research has not addressed this. Further research is needed on implementing utility interventions that are effective for different year levels and topics in psychology.

**Summary of Chapter 2**

In Chapter 2, the social influences, values and self-efficacy beliefs of undergraduate students were examined in relation to each of the three learning domains, theory, research, and practice. Study 1 established that undergraduate students do not report equal intrinsic,
utility, or cost value towards the three domains. Consistent with studies with first year students (Goedeke & Gibson, 2011; Holmes, 2014), Study 1 demonstrated that undergraduate psychology students hold strong preferences for the practice domain across all year levels. In addition, first year students report more positive values towards research than students in their later years. This suggests that the first year is a critical time for developing positive values and self-efficacy beliefs towards the three domains. Due to the cross-sectional nature of Study 1, the way that students’ values and self-efficacy beliefs change over their first year of psychology education could not be explored. For this reason, a longitudinal investigation of students’ task values and self-efficacy beliefs was required.

This next chapter, Chapter 3, focussed on first year psychology students and examined their social influences, task values, and self-efficacy beliefs. Both cross-sectional and longitudinal data was used to draw conclusions about the influence that psychology training has on the values and beliefs of first year psychology students. Here, the question of how students’ values and self-efficacy beliefs change over one year of training in psychology was addressed. Further, the relative contribution of students’ social influences and subjective task values, to predicting self-efficacy for theory, research, and practice, was examined.
STUDY 2

STATEMENT OF CONTRIBUTION TO CO-AUTHORED UNPUBLISHED PAPER

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to the paper included:

- Conducted data analysis to produce the article,
- Review and interpretation of literature,
- Writing of the paper, and
- Identifying implications for future research.

We agree to the inclusion of the paper in this doctoral research submitted for examination.

The journal in which this paper has been submitted for publication is peer-reviewed.

Elizabeth G. Conlon

10 March, 2017

Shirley A. Morrissey

10 March, 2017
Abstract

**Objective:** The current study aimed to explore how first year psychology students’ attitudes towards theory, research, and practice change over their first year of education. This study took an expectancy-value approach to explore students’ motivation towards these three learning domains. **Method:** Psychology students ($N = 475, M_{age} = 21.78$ years, $SD = 7.17$) in their first year responded to a survey of their social influences, task values, and self-efficacy beliefs for theory, research, and practice domains. After one year, 105 students participated in a longitudinal follow up. **Results:** Multiple regression analysis was used to explain self-efficacy scores for each domain. At Time 1, personal and academic social influences, intrinsic value and cost value significantly predicted self-efficacy in all domains, while utility value predicted research self-efficacy alone. At Time 2, the impact of students’ social influences was reduced. Mixed factorial ANOVAs were conducted on students’ social influences, task values, and self-efficacy beliefs to assess change over time. Students reported more positive task values for theory and practice than for research at both Time 1 and 2. However, as expected, students’ self-efficacy for research and practice increased over the first year, while unexpectedly, their self-efficacy in applying theory did not. **Conclusions:** The findings suggest that the first year of psychology education has little effect on psychology students’ task values, although students’ self-efficacy for using research and practice increased over this period. It is recommended that the first year of psychology emphasises the development of students’ sense of identity with psychology, which could assist in fostering positive values towards the three domains.
CHAPTER 3:
HOW DO STUDENTS’ VALUES AND SELF-EFFICACY BELIEFS CHANGE AFTER ONE YEAR OF PSYCHOLOGY EDUCATION?

To remain motivated and committed to their studies, students must believe that the topics that comprise their degree are valuable to learn about and develop in (Green, Conlon, & Morrissey, 2017). In the field of psychology, educators have struggled to impress the importance of research skills on students who, for the most part, choose to study psychology because they want to gain personal insight or to learn how to help those around them (Goedeke & Gibson, 2011; Murdoch, 2016; Sizemore & Lewandowski, 2011). In Australia, the scientist-practitioner (S-P) model of training forms the basis of psychology education and training (Australian Psychology Accreditation Council [APAC], 2010). So, in contrast to what students generally expect from a psychology degree, undergraduate psychology education provides students with a foundation in the science of psychology (APAC, 2010), with little if any, emphasis on developing skills to help others.

Therefore, students enter psychology with misconceptions about both what, and how, psychology will be taught (Goedeke & Gibson, 2011; Lacot, Blondelle, & Hainselin, 2016). Goedeke and Gibson (2011) found that commencing students who participated in a focus group expected psychology education to be experiential and enhance pre-existing qualities believed to be necessary to be a good psychologist. Further, students questioned the rigor and validity of psychological theories and research methods (Goedeke & Gibson, 2011) and have been shown to hold significantly less interest in scientist activities than their instructors (Green et al., 2017; Holmes, 2014). While an education in psychology should divest students of such views, this may not improve their motivation towards learning in these areas.
An earlier study took an expectancy-value approach to examining students’ perceptions of their psychology education (Green et al., 2017). That study examined three content domains: theory, research, and practice (see Table 3.1), which were based on the graduate attributes for undergraduate psychology (APAC, 2010). Prior research had suggested that students report the most concern and negative attitudes towards the research domain (Murtonen et al., 2008; Rowley et al., 2008) and this was confirmed in the Green et al. study, where students rated research consistently lower than theory or practice on a number of motivational factors. There is also evidence to suggest that students have difficulty with theoretical content, especially the more scientific or biological components (Rowley et al., 2008). Students do not seem to report the same difficulty with the practice domain; in the Green et al. study, undergraduate students reported that the practice domain was the one they had the least difficulty learning and greatest confidence in applying. However, due to the cross-sectional nature of the study, it is unclear whether students enter psychology with these views of theory, research, and practice, and if so, do students’ motivational beliefs change over one year of psychology education. The current study used an expectancy-value approach to examine how students’ values towards theory, research, and practice changed over one year of psychology education.
Table 3.1.

*Definitions of Theory, Research, and Practice Domains.*

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>Theoretical knowledge refers to theories of human behaviour and thinking, including subjects you study that give biological explanations of behaviour, explain cognitive processes for learning, memory, or other tasks, explain or describe personality, and define mental illness.</td>
</tr>
<tr>
<td>Research</td>
<td>Research methods and statistics in psychology refers to the basic characteristics of the science of psychology, different research methods used by psychologists, undertaking literature searches and critically analyse studies, measurement and assessment of variables and the ability to analyse data and interpret results.</td>
</tr>
<tr>
<td>Practice</td>
<td>Communication and interpersonal skills in psychology refer to effective written and oral skills, and developing the ability to listen and speak effectively.</td>
</tr>
</tbody>
</table>


**Expectancy-Value Theory of Achievement Motivation**

Expectancy-value theory (EVT) is a model of achievement motivation used to explain students’ engagement with a task and their decision to invest resources (such as time and effort) towards performing well at that task (Eccles et al., 1983; Eccles & Wigfield, 2002). This is influenced by the social environment of the student (or the value placed on a topic by important others), the value placed on a topic by the student, and the students’ confidence with that topic (Wigfield & Eccles, 1992, 2000). Students’ social environment includes important others within the university, such as their tutors and lecturers, and those external to the university environment, including students’ friends and family. The social influences that friends and family communicate, including their attitudes and stereotypes towards psychology, can have an impact on students’ willingness to put effort into the different learning domains in their psychology education (Brinthaupt, Hurst, & Johnson, 2016; Jacobs & Eccles, 2000).
The impact of academic staff is expected to be greater than that of students’ friends and family, due to the position of authority and expertise they hold. Holmes (2014) suggested that a mismatch in staff and student values can be detrimental to first year retention. This research indicated that academic staff hold significantly more positive values towards scientific and research activities in psychology, while students showed a preference for practitioner activities. Green et al. (2017) also found that students enter psychology with the belief that academic staff value theory, research, and practice equally, but as students experience more psychology courses, they report that academic staff value theory and research significantly more than that of practice. This suggests that academic staff may not effectively convey their positive values towards the practice domain, which can lead to issues with students’ engagement or retention.

Similar results were found with the value students placed on research in their first, compared to fourth, year of study (Green et al., 2017). In EVT, the value of a topic is determined through students’ positive and negative attributions, termed their *subjective task values*, which have been shown to be related to students’ achievement-related choices, enrolment intentions, and performance (Bong, 2004; Hood et al., 2012; Simpkins, Davis-Kean, & Eccles, 2006). Subjective task values include the student’s interest (intrinsic value), perception of usefulness to their future (utility value), importance placed on performing well in a topic (attainment value), and their assessment of the time and effort that is required to do well at a task (cost value). Utility has been discussed as one of the most important task values, as interventions that manipulate students’ utility value have been shown to increase interest and performance in a domain (Hulleman et al., 2010).

Further, students who believe they will use research skills in their future work have been found to be more task-oriented, engage in deeper learning strategies, and report fewer difficulties with their research skills (Murtonen et al., 2008). However,
only 40% of psychology students in the Murtonen et al. (2008) study were sure that they would use research skills in their future work life at the end of a quantitative research course. While the study by Green et al. (2017) found that research was consistently rated lower than theory and practice, it was also found that interest in research was higher among the first-year sample than the fourth-year sample. Thus, it seems that undergraduate psychology programs may not sufficiently promote interest in research activities sufficiently early in training, which could reduce students’ research-related interests as they progress their studies.

While positive task values are crucial for students to engage with a topic, students are unlikely to maintain their efforts towards a task if they believe they lack the relevant skills and knowledge to succeed with that task (Bong, 2004; Eccles & Wigfield, 2002). This is referred to as students’ self-efficacy beliefs (Bandura, 1997; Bembenutty, 2012). Self-efficacy has been positively related to students’ performance with a task and has been used to predict the development of competency with a domain or skill (Bong, 2004; Clark et al., 2004). However, students’ self-efficacy beliefs can vary in specificity (task-, domain-, or general-level) with research suggesting that the domain-level may be a more appropriate measure for complex tasks (Miles & Maurer, 2012).

According to Green et al. (2017), in contrast to the strong focus on both theoretical and research topics in undergraduate psychology courses, students in all years of the undergraduate program have greater self-efficacy for the theory and practice domains than for the research domain (Green et al., 2017). This is problematic, since based on the S-P model, research training has traditionally been considered a cornerstone of psychology degrees (APAC, 2010; Jones & Mehr, 2007). Further, it is important to understand whether enter their degree with an inflated sense of self-efficacy or if this confidence in applying the practice domain to psychological problems is developed over the first year of education. Ideally, students should develop an
accurate assessment of their skills and abilities, as over-confidence can result in students going beyond their level of competency, or can have a detrimental effect on their future skill development (e.g., through their willingness to engage with constructive feedback and devoting the necessary effort to develop skills; Lizzio & Wilson, 2004).

In Green et al. (2017), the three learning domains presented in Table 4.1 were used to assess students’ values and self-efficacy beliefs towards psychology content. In that study, the concept of students’ psychological literacy was incorporated into their measure of self-efficacy, asking students to rate their confidence in expressing and applying theory-, research-, and practice-related skills to personal, professional, and societal problems. Psychological literacy has been suggested as a main graduate outcome of the three-year undergraduate psychology program; the aim of which is to enhance students’ ability to apply the science of psychology to psychological problems students encounter in their personal and professional lives, and to problems impacting on society (Cranney et al., 2012; McGovern et al., 2010). According to Cranney and Dunn (2011), psychological literacy also includes a range of other capabilities, including critical thinking, scientific and ethical literacy, and cultural competency.

While these capabilities contribute to the development of psychological literacy, Murdoch (2016) argues that they do not constitute the ‘meta-literacy’ itself, describing psychological literacy as “a higher order literacy that requires and incorporates other essential literacies” (p. 191). Instead, critical thinking, scientific and ethical literacy and cultural competence are considered generic capabilities or skills that most undergraduate programs aim to develop, while only two aspects – discipline knowledge and the application of that knowledge to psychological problems – are considered exclusive to psychology education (Barrie, 2006; Murdoch, 2016).

The current study therefore examined whether social influences and task values predicted students’ self-efficacy beliefs for each domain at Time 1 (in the first year of
study) and at Time 2 (12 months after the Time 1 survey). The study also investigated whether students’ social influences, task values, and self-efficacy beliefs for theory, research, and practice students’ social influences, task values, and self-efficacy beliefs for theory, research, and practice changed from Time 1 to Time 2. Based on earlier findings (Green et al. 2017), it was hypothesised that students’ perceptions of what their friends and family valued would remain stable over time, while it was expected that students would perceive staff to value the three domains equally at Time 1, but value theory and research over practice at Time 2. The study by Green et al. suggested that students’ task values and self-efficacy beliefs towards research would be comparatively lower than theory and practice at Time 1, but it is unknown whether this would change after one year of study in psychology. Therefore, a follow-up survey was conducted with first year students to assess the extent that social influences, task values, and self-efficacy changed over the first year of study.

Method

Participants

First year psychology students from 22 Australian universities and private colleges offering accredited undergraduate psychology programs were invited to participate in a survey of their motivation with different aspects of psychology education (Time 1). At the end of the survey, students were able to opt-in to a follow-up survey, which was collected in the following academic year (Time 2). The total sample at Time 1 included 475 first year psychology students (77% female), aged between 17 and 57 years, with a mean age of 21.78 years ($SD = 7.17$).

Of the participants who provided a valid contact email at Time 1 ($N = 232$), approximately 50% responded to the follow-up survey. There were 13 incomplete responses, yielding a final Time 2 sample of 105 participants (71% female, $M_{age} = 24.07, SD = 10.37$). The characteristics of students with incomplete responses at Time
2 did not differ from those who completed the questionnaire. As the sample was collected over an academic year, participants ranged in their experience of psychology; the sample was divided to control for this in the longitudinal comparisons by creating a low-experience and some-experience group. At Time 1, the low-experience group included 201 first year students who participated within the first 8 weeks of their first semester of psychology education. The some-experience group comprised 274 first year students who had more than 8 weeks’ experience. The Time 2 sample included 52 students from the low-experience group and 53 students from the some-experience group. Demographics (age, gender) for subgroups did not differ from the total sample.

**Measures**

The following scales were presented on a 6-point Likert response scale with no neutral midpoint (1 “Strongly Disagree” to 6 “Strongly Agree” with “Somewhat Disagree” and “Somewhat Agree” as midpoints). Questions relating to each of the domains (theory, research, practice) were preceded by the relevant description (refer to Table 4.1) and scale anchors were matched to the question text. Positive beliefs about a domain were indicated by higher scores, except on cost value, where lower scores indicated a domain was less difficult.

**Social Influences.** Social influences were assessed by a 2-item *personal social influences* scale, which asked students to what extent they thought their friends and family valued their learning of each theory, research, and practice; and a 2-item *academic social influences* scale, which asked students to what extent they thought their tutors and lecturers valued their learning of each domain. Previous research has shown average scale reliabilities of .72 for personal social influences and .94 for academic social influences (Green et al., 2016). The current study found scale reliabilities of .71 for theory, .75 for research, and .78 for practice, for the personal social influence scale, and .92, .94, and .92, respectively, for the academic social influence scale.
**Subjective Task Values.** Each task value (intrinsic, utility, attainment, and cost) was assessed using a 5-item subscale (Green et al., 2016). These subscales were based on the *Self-and-Task Perception Questionnaire* (Eccles & Wigfield, 1995) and the *Motivated Strategies for Learning Questionnaire* by Pintrich et al. (1991). Green et al. (2016) reported weak to moderate positive correlations between the subscales for undergraduate psychology students; correlations for the current study were also positive and weak to moderate in strength (see Table 3.2). Scale reliabilities for subjective task values are also reported in Table 3.2.
Table 3.2

*Correlations Between Intrinsic, Utility, Attainment, and Cost Value for the Time 1 Sample (N = 475) with Scale Reliabilities.*

<table>
<thead>
<tr>
<th></th>
<th>Cronbach’s α</th>
<th>Intrinsic</th>
<th>Utility</th>
<th>Attainment</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Intrinsic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Theory</td>
<td>.92</td>
<td>.92</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Research</td>
<td>.94</td>
<td>.95</td>
<td>.35**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3 Practice</td>
<td>.95</td>
<td>.94</td>
<td>.46**</td>
<td>.30**</td>
<td>-</td>
</tr>
<tr>
<td>Utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Theory</td>
<td>.86</td>
<td>.87</td>
<td>.79**</td>
<td>.30**</td>
<td>.49**</td>
</tr>
<tr>
<td>5 Research</td>
<td>.87</td>
<td>.86</td>
<td>.40**</td>
<td>.69**</td>
<td>.33**</td>
</tr>
<tr>
<td>6 Practice</td>
<td>.92</td>
<td>.94</td>
<td>.49**</td>
<td>.23**</td>
<td>.76**</td>
</tr>
<tr>
<td>Attainment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Theory</td>
<td>.88</td>
<td>.90</td>
<td>.73**</td>
<td>.29**</td>
<td>.47**</td>
</tr>
<tr>
<td>8 Research</td>
<td>.91</td>
<td>.90</td>
<td>.48**</td>
<td>.56**</td>
<td>.34**</td>
</tr>
<tr>
<td>9 Practice</td>
<td>.93</td>
<td>.93</td>
<td>.47**</td>
<td>.24**</td>
<td>.74**</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Theory</td>
<td>.71</td>
<td>.70</td>
<td>.05</td>
<td>.03</td>
<td>.06</td>
</tr>
<tr>
<td>11 Research</td>
<td>.81</td>
<td>.83</td>
<td>.22**</td>
<td>-.01</td>
<td>.17**</td>
</tr>
<tr>
<td>Practice</td>
<td>.77</td>
<td>.81</td>
<td>.12*</td>
<td>.28**</td>
<td>.10*</td>
</tr>
</tbody>
</table>

*Note.* Correlations were conducted on the Time 1 (N = 475) and Time 2 (N = 105) samples, but as they were consistent in strength, direction, and significance, correlations are only reported for the Time 1 sample.

* p < .05, ** p < .001.
**Self-Efficacy Beliefs.** A 7-item measure of psychological literacy was used to explore students’ confidence in their knowledge of theory, research, and practice, and their ability to apply that knowledge to personal, professional, and societal issues (Cranney et al., 2012; Green et al., 2017). This measure was adapted from the self-efficacy scale of Pintrich et al. (1991). A single factor structure was reported in undergraduate psychology students (Green et al., 2017). Previous scale reliabilities have ranged between .81 to .94 (Green et al., 2017), while the current study reports Cronbach’s alphas of .86 for theory, .92 for research, and .93 for practice. At Time 2, the reliability of the theory domain was somewhat lower (α = .77), but theory and practice (both α = .94) were consistent with Time 1.

**Procedure**

Psychology Heads of School at Australian higher education providers were contacted with a request to assist in distributing the online questionnaire to their first-year psychology cohorts. Where approval was granted, the online questionnaire was distributed to students through learning websites, mass email, and social media platforms. The study was approved by the University Human Research Ethics Committee and endorsed by ethics committees in participating universities as required. Participants who opted into the Time 2 follow-up received an initial email invitation to participate in a replication of the Time 1 survey followed by a up to five reminder emails sent over a 12-week period. Students enrolled in courses with research participation requirements were offered course credit, in addition to a prize draw incentive offered to all students.

**Results**

**Predictors of Self-Efficacy**
Multiple regression analyses examined six predictors of self-efficacy for each of the theory, research, and practice domains. These were personal and academic social influences and intrinsic, utility, attainment, and cost values. These analyses were conducted on Time 1 and Time 2 data to determine the best predictors of self-efficacy in students’ first year and after one year of experience with theory, research, and practice.

The model was significant for each of the three domains at Time 1 (Table 3.3) and Time 2 (Table 3.4). At Time 1, the six predictors explained 21.46% of the variance in self-efficacy for theory, 40.34% of the variance in self-efficacy for research, and 31.13% of the variance in self-efficacy for practice. Although the sample size limited the power of the Time 2 analyses, the six-predictor model was significant, explaining 30.79% of the variance in self-efficacy for theory, 58.69% of the variance in self-efficacy for research, and 22.37% of the variance in self-efficacy for practice.

**Time 1 Predictors of Self-Efficacy.** Students’ personal and academic social influences were significant predictors in the model for each of the three domains, with an increase in the perceived value that social connections placed on a domain associated with greater self-efficacy for that domain. For students’ subjective task values, both intrinsic and cost value were significant predictors of self-efficacy for theory, research, and practice. For all domains, greater interest in a domain was associated with increased self-efficacy for that domain and lower cost values were associated with higher self-efficacy scores. Utility value was a significant predictor of self-efficacy for the research domain only, with students who perceive research to be useful reported greater self-efficacy for this domain.
Table 3.3.

Regression Coefficients for Self-Efficacy Towards Theory, Research, and Practice, at Time 1 (N = 475).

<table>
<thead>
<tr>
<th></th>
<th>Theory</th>
<th></th>
<th>Research</th>
<th></th>
<th>Practice</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>β</td>
<td>t</td>
<td>sr²</td>
<td>B (SE)</td>
<td>β</td>
</tr>
<tr>
<td>Social Influences</td>
<td>F(6, 474) = 21.27, p &lt; .001</td>
<td></td>
<td>F(6, 474) = 52.74, p &lt; .001</td>
<td></td>
<td>F(6, 474) = 35.25, p &lt; .001</td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>.12 (.03)</td>
<td>.18</td>
<td>4.26**</td>
<td>.03</td>
<td>.11 (.03)</td>
<td>.14</td>
</tr>
<tr>
<td>Academic</td>
<td>.16 (.03)</td>
<td>.20</td>
<td>4.80***</td>
<td>.04</td>
<td>.14 (.04)</td>
<td>.15</td>
</tr>
<tr>
<td>Task Values</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic</td>
<td>.17 (.06)</td>
<td>.20</td>
<td>2.81**</td>
<td>.01</td>
<td>.32 (.05)</td>
<td>.37</td>
</tr>
<tr>
<td>Utility</td>
<td>.13 (.08)</td>
<td>.14</td>
<td>1.73</td>
<td>.01</td>
<td>.17 (.06)</td>
<td>.15</td>
</tr>
<tr>
<td>Attainment</td>
<td>-.09 (.07)</td>
<td>-.08</td>
<td>1.20</td>
<td>.00</td>
<td>-.08 (.06)</td>
<td>-.07</td>
</tr>
<tr>
<td>Cost</td>
<td>-.19 (.04)</td>
<td>-.20</td>
<td>4.68**</td>
<td>.04</td>
<td>-.34 (.04)</td>
<td>-.32</td>
</tr>
</tbody>
</table>

* p < .05 ** p < .01 *** p < .001
**Time 2 Predictors of Self-Efficacy.** While the perceived value that friends and family placed on each of the three domains had a substantial influence on students’ self-efficacy beliefs at Time 1, the influence of students’ personal social connections was not significant at Time 2. Instead, students’ self-efficacy for using theory was best explained by their intrinsic, utility, attainment, and cost values, with academic social influences remaining a small but significant predictor, suggesting that students’ own experience with the different domains had the greatest impact on their self-efficacy beliefs after the first year of training. Self-efficacy for research continued to be predicted by students’ interest and cost values, although students’ personal and academic social influences no longer contributed to the explanation of research self-efficacy. As with theory, self-efficacy for practice was predicted by students’ intrinsic and utility values, but not attainment or cost value, although academic influences explained the greatest unique variance. As with Time 1, academic influences, intrinsic and utility values had a positive association with self-efficacy, while cost value had a negative association. This was also true of the relationship between attainment value and self-efficacy for theory, where students who placed greater importance on theory reported lower self-efficacy for this domain.
Table 3.4.

<table>
<thead>
<tr>
<th></th>
<th>Theory</th>
<th></th>
<th></th>
<th>Research</th>
<th></th>
<th></th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>β</td>
<td>t</td>
<td>sr²</td>
<td>B (SE)</td>
<td>β</td>
<td>t</td>
</tr>
<tr>
<td>Social Influences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F(6, 98) = 7.27, p &lt; .001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F(6, 98) = 23.21, p &lt; .001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>.03 (.06)</td>
<td>.04</td>
<td>0.46</td>
<td>.00</td>
<td>.02 (.08)</td>
<td>.02</td>
<td>0.28</td>
</tr>
<tr>
<td>Academic</td>
<td>.17 (.06)</td>
<td>.24</td>
<td>2.64**</td>
<td>.05</td>
<td>.08 (.10)</td>
<td>.05</td>
<td>0.80</td>
</tr>
<tr>
<td>Task Values</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic</td>
<td>.34 (.13)</td>
<td>.39</td>
<td>2.62**</td>
<td>.05</td>
<td>.31 (.08)</td>
<td>.35</td>
<td>3.68***</td>
</tr>
<tr>
<td>Utility</td>
<td>.39 (.13)</td>
<td>.45</td>
<td>3.06**</td>
<td>.07</td>
<td>.18 (.12)</td>
<td>.15</td>
<td>1.47</td>
</tr>
<tr>
<td>Attainment</td>
<td>-.35 (.15)</td>
<td>-.39</td>
<td>2.30*</td>
<td>.04</td>
<td>.07 (.13)</td>
<td>.06</td>
<td>0.58</td>
</tr>
<tr>
<td>Cost</td>
<td>-.30 (.08)</td>
<td>-.34</td>
<td>3.69***</td>
<td>.09</td>
<td>-.68 (.09)</td>
<td>-.59</td>
<td>7.89***</td>
</tr>
</tbody>
</table>

* p < .05 ** p < .01 *** p < .001
Longitudinal Comparisons

A 3 (Domain) × 2 (Time) × 2 (Experience) mixed factorial ANOVA was conducted on students’ social influences, subjective task values, and self-efficacy beliefs to test the hypotheses relating to theory, research, and practice. A violation to Mauchly’s Test of Sphericity was detected, for which the Huynh-Feldt correction was applied (Keppel, 1991), with no other violations to the analyses’ assumptions detected. Due to the number of analyses conducted, non-significant effects are only reported when relevant to hypotheses.

Personal Social Influences. Means and standard deviations for personal and academic social influences are reported in Table 3.5. There was a significant main effect of Domain, $F(2, 187) = 111.92, p < .001, \eta_p^2 = .52$, and Time, $F(1, 103) = 5.09, p = .026, \eta_p^2 = .05$, which were modified by a significant Domain by Time interaction, $F(2, 187) = 6.86, p = .002, \eta_p^2 = .06$. At Time 1, first year students perceived their friends and family to value practice over theory ($p = .001$), and theory over research ($p < .001$). From Time 1 to Time 2, students reported a significant decrease in the perceived value that friends and family placed on theory ($p = .019$) and practice ($p = .001$), but not research ($p = .726$). Relative to Time 1, at Time 2, the difference between students’ perceptions of their friends and family’s values for theory and practice was significant ($p = .049$), with both domains continuing to be perceived as more valuable than research ($ps < .001$).

Academic Social Influences. While a 3-way interaction between Domain, Time, and Experience was expected for academic social influences, this was not supported, $F(2, 204) = 1.84, p = .161$. There was a significant main effect of Domain, $F(2, 168) = 4.67, p = .016, \eta_p^2 = .04$, and a significant Domain by Time interaction, $F(2, 204) = 4.31, p = .015, \eta_p^2 = .04$. Regardless of experience, first year students reported no significant difference between the value they perceived academic staff to place on theory, research, or practice at Time 1 (all
At Time 2, students perceived staff to value theory ($p = .009$) and research ($p = .004$) significantly more than the practice domain.

Table 3.5.

*Time 1 and Time 2 Means and Standard Deviations for Social Influences (N = 105).*

<table>
<thead>
<tr>
<th></th>
<th>Low Experience ($n = 52$)</th>
<th>Some Experience ($n = 53$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td></td>
<td>$M$ (SD)</td>
<td>$M$ (SD)</td>
</tr>
<tr>
<td><strong>Personal Influences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>3.94 (1.03)</td>
<td>3.74 (0.91)</td>
</tr>
<tr>
<td>Research</td>
<td>2.78 (1.13)</td>
<td>2.92 (1.01)</td>
</tr>
<tr>
<td>Practice</td>
<td><strong>4.15 (1.41)</strong></td>
<td><strong>3.91 (1.18)</strong></td>
</tr>
<tr>
<td><strong>Academic Influences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>5.32 (0.69)</td>
<td>5.31 (0.84)</td>
</tr>
<tr>
<td>Research</td>
<td><strong>5.22 (0.93)</strong></td>
<td><strong>5.37 (0.83)</strong></td>
</tr>
<tr>
<td>Practice</td>
<td>5.27 (0.96)</td>
<td>4.93 (1.18)</td>
</tr>
</tbody>
</table>

*Note.* Significant ($p < .05$) Time 1 to Time 2 changes identified in bold.

**Subjective Task Values.** Means and standard deviations for the four subjective task values are reported in Table 3.6. The intrinsic value students place on theory, research, and practice was expected to be modified by a significant 3-way interaction, which was not supported, $F(2, 199) = 0.04, p = .956$. There was a significant main effect of Domain, $F(2, 159) = 96.00, p < .001, \eta_p^2 = .48$, and no significant interactions between Time or Experience and other variables. Regardless of experience, students at Time 1 and Time 2 reported no significant difference between theory and practice ($p = .999$) for students’ interest, but both domains were considered significantly more interesting than research ($ps < .001$).

For utility value, there was a significant main effect of Domain, $F (2, 194) = 47.75, p < .001, \eta_p^2 = .32$, and a significant Time by Experience interaction, $F (2, 103) = 8.60, p =
.004, $\eta_p^2 = .08$. The main effect of Domain was explained by students reporting that practice was a more useful domain than theory, and that theory was more useful than research (all $ps < .001$). The Time-Experience interaction indicated that first year students with little experience of psychology show a decline in the perceived utility of all domains from Time 1 to Time 2 ($p = .001$). There was no significant decline from Time 1 to Time 2 in utility value for students with some experience of psychology ($p = .496$), suggesting that students’ utility value does not continue to decline further within the first year.

For attainment value, only a significant main effect of Domain emerged, $F (2, 187) = 21.75, p < .001, \eta_p^2 = .17$. This was explained by students reporting that both theory and practice were more important to develop skills in than research (both $ps < .001$), with no difference between the theory and practice domains ($p = .999$). Finally, significant main effects of Domain, $F (2, 159) = 47.21, p < .001, \eta_p^2 = .31$, and Experience, $F (1, 103) = 5.76, p = .018, \eta_p^2 = .05$, emerged for students’ cost values. Students reported that practice was significantly less costly ($ps < .001$) than either theory or research, with no significant difference between the latter domains ($p = .126$). Further, students with little experience of psychology tended to report lower cost values than students with more experience ($p = .018$), suggesting that, early in their degree, students may underestimate the time and effort required for theory, research, and practice domains.
Table 3.6.

Means and Standard Deviations for Task Values by Experience Level and Time.

<table>
<thead>
<tr>
<th></th>
<th>Low Experience (n = 52)</th>
<th>Some Experience (n = 53)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Intrinsic Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>4.99 (0.78)</td>
<td>4.71 (0.74)</td>
</tr>
<tr>
<td>Research</td>
<td>3.74 (1.19)</td>
<td>3.48 (1.15)</td>
</tr>
<tr>
<td>Practice</td>
<td>4.74 (1.02)</td>
<td>4.62 (0.93)</td>
</tr>
<tr>
<td>Utility Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>5.05 (0.68)</td>
<td>4.80 (0.79)</td>
</tr>
<tr>
<td>Research</td>
<td>4.77 (0.89)</td>
<td>4.40 (0.97)</td>
</tr>
<tr>
<td>Practice</td>
<td>5.25 (0.73)</td>
<td>5.10 (0.87)</td>
</tr>
<tr>
<td>Attainment Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>5.24 (0.68)</td>
<td>5.06 (0.72)</td>
</tr>
<tr>
<td>Research</td>
<td>4.81 (0.88)</td>
<td>4.86 (0.86)</td>
</tr>
<tr>
<td>Practice</td>
<td>5.20 (0.73)</td>
<td>5.09 (0.85)</td>
</tr>
<tr>
<td>Cost Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory</td>
<td>4.08 (0.57)</td>
<td>3.97 (1.03)</td>
</tr>
<tr>
<td>Research</td>
<td>4.06 (1.01)</td>
<td>4.04 (0.13)</td>
</tr>
<tr>
<td>Practice</td>
<td>3.42 (1.00)</td>
<td>3.32 (1.06)</td>
</tr>
</tbody>
</table>

Note. Significant (p < .05) Time 1 to Time 2 changes identified in bold.

Self-Efficacy Beliefs. Mean self-efficacy ratings are presented in Figure 4.1. There were significant main effects of Domain, $F(2, 158) = 49.53$, $p < .001$, and Time, $F(1, 103) = 129.34$, $p < .001$. These main effects were modified by a significant Domain-Time interaction, $F(2, 189) = 65.87$, $p < .001$. At Time 1, regardless of experience, first year students reported significantly greater confidence in using practice than theory ($p = .012$) in psychologically literate ways, and greater confidence in using theory than research ($p < .001$). Over the course of a year, students’ self-efficacy for research ($p < .001$) and practice ($p < .001$) showed a significant increase, while students’ self-efficacy for theory ($p = .249$) did
not. Further, at Time 2, students reported significantly greater confidence in practice than research and in research than theory (all $p < .001$).

Figure 3.1. Mean self-efficacy scores for first year students at Time 1 and Time 2 by level of experience (error bars represent ± 1 standard error of the mean).

**Discussion**

The aim of the current study was to explore the impact of the first year of psychology education on psychology students’ perceptions of personal and academic social connections, subjective task values, and self-efficacy beliefs for the three domains (theory, research, and practice). The current results suggest that students’ values are somewhat resistant to change, despite their exposure to psychology education and training over the first year. The predictors of self-efficacy, at Time 1 and Time 2, will first be discussed.

**Predictors of Self-Efficacy**

In examining the predictors of students’ self-efficacy for the different domains, some commonalities emerged. For all domains, personal and academic social influences had a
significant impact on students’ self-efficacy ratings at Time 1, although the influence of personal social connections was reduced by Time 2 for all domains, and the impact of academic influences was significant only for theory and practice. In addition, students’ cost value had a negative association with self-efficacy for all domains at Time 1, and this remained significant for both the theory and research domain, at Time 2, although cost was no longer a significant predictor of self-efficacy for practice. Irrespective of these commonalities, the best predictors of self-efficacy differed for each domain. Research on improving achievement motivation has focussed primarily on enhancing students’ interest and utility values (Hulleman et al., 2010). However, the current results suggest that, for developing self-efficacy, different strategies may be required depending on the target domain and year level.

For example, at Time 1, students’ self-efficacy for theory was better explained by their perceptions of the value that friends, family, and academic staff placed on their development of this domain than by their subjective task values, while the reverse occurred at Time 2, which indicates that students’ exposure to content in their classes was most influential in explaining self-efficacy for theory, research, and practice. Thus, to increase students’ self-efficacy in applying theoretical constructs, interventions aimed at the learning environment and academic culture may be more effective during the first year of study than those aimed at improving students’ subjective task values. One model that takes these aspects of the learning environment into account is Lizzio’s (2006) senses of success, which suggests that students’ need to have a sense of purpose, a sense of their own capability and resourcefulness, and a sense of connectedness and academic culture, to develop their professional identity in the university setting and their chosen discipline. As social influences were a significant predictor of self-efficacy at Time 1 for all domains, fostering a ‘psychology identity’ early in the program may be one way to communicate positive values
towards each of the three domains (Lodge, 2012; Sidebotham, Fenwick, Carter, & Gamble, 2015).

While there is some overlap between the senses of success model and expectancy-value theory, Lizzio’s (2006) model does not account for specific task values (Wigfield & Eccles, 2000). Consistent with the theory and practice domains, self-efficacy for research was explained by students’ personal and academic social influences at Time 1, but these influences were no longer significant predictors at Time 2. However, research self-efficacy was significantly predicted through students’ intrinsic, utility, and cost values at Time 1, and by their intrinsic and cost values at Time 2. This suggests that for domains where the practical relevance is not as clear to students, the perceived utility of a domain is critical to students’ development of self-efficacy early in their studies (Murtonen et al., 2016). Further, as utility interventions have a significant impact on students’ interest and performance with a domain (Hulleman et al., 2010), utility interventions are recommended as a suitable avenue for improving students’ research self-efficacy in their first and later years of study.

For the practice domain, self-efficacy was significantly explained by students’ perceptions of important others (personal and academic social influences), their interest in the domain, and the cost value at Time 1. As with theory, students’ self-efficacy for practice was not predicted by their utility values until Time 2. However, the results of Green et al. (2017) suggest that while students’ confidence with the practice domain remains high, this is not true for students’ confidence with the research domain. While it is unlikely that psychology students develop the skills to confidently apply their knowledge of communication and interpersonal skills effectively to personal, professional, and societal problems of a psychological nature in their first year, it is currently unknown how psychology students perform on objective measures of the practice domain. Therefore, future research should assess whether there is a discrepancy between students’ subjective assessments of ability (i.e. self-efficacy) and objective measures of performance with the practice domain (e.g.
competence). A discrepancy between these forms of assessment could indicate that students’ have little motivation, but a great need to develop their skills with the practice domain.

The findings from the Time 2 analyses should be interpreted with caution, due to the limited sample size available for this time point. However, if these findings accurately reflect how first year students’ self-efficacy is affected over time, this would suggest that the relationship between task values and self-efficacy is more complex than previously thought. As such, a multi-faceted approach to improving student engagement and retention appears to be most appropriate, with a combination of strategies for changing the learning environment, fostering a sense of professional identity in students, and facilitating the implementation of utility interventions is recommended.

**Longitudinal Comparisons**

**Social Influences.** It was expected that students’ perceptions of what their friends and family valued would remain stable over time. Instead, first year students reported a significant decline in the value friends and family placed on theory and practice domains, while the perceived value placed on research remained the same and consistently lower than both theory and practice. This suggests there may be a discrepancy between what friends and family expect students to learn, under the umbrella of *theory* and *practice*, and the knowledge or skills they can demonstrate after their first year. The greater value for theory and practice over research is consistent with the findings of the cross-sectional study reported previously (Green et al., 2017).

Contrary to findings regarding personal social influences, Green and colleagues (2017) found that first year students’ perception of academic staff differed significantly between the first and middle years of study. This finding was replicated with the current longitudinal study, which showed no significant difference between the value that first year students perceived staff to place on theory, research, and practice at Time 1, but perceived staff to
value theory and research significantly more than practice at Time 2. This suggests that the previous findings of Green and colleagues were not due to cohort differences, but instead reflected the way students’ views of their instructors changed.

Subjective Task Values. The current results suggest that the first year of psychology education has minimal impact on psychology students’ task values towards theory, research, and practice. First year students appear to enter psychology with significantly less interest in the research aspects of their program and place significantly less importance on developing these skills when compared to theory and practice, and this does not change after one year of study. Further, while students reported no significant difference between theory and practice for their intrinsic and attainment values, they perceived practice to be more useful and less difficult to learn than theory, and in turn perceived theory to be more useful and less difficult than research. There was also evidence to suggest that students’ perception of the utility of all domains decline somewhat from when they commence their studies, although this decline does not appear to persist beyond students’ second semester. Conversely, first year students with more experience of psychology reported greater cost values for all domains than those with little experience, suggesting that studying psychology involves a greater commitment of time and effort than commencing students believe.

These results suggest that the first year of study provides students with a greater appreciation of the time and effort required to succeed in psychology, but does not give students an appreciation of the utility of the three domains. The first year of study may be an opportune time to cultivate positive values towards the research domain and enhance motivation in this area, as currently the first year of study does not have a significant impact on students’ subjective task values for the three domains, and fails to engage students’ research interests.
Self-Efficacy Beliefs. While students’ values changed little over the first year, their self-efficacy beliefs underwent significant change. At Time 1, students reported the greatest confidence in expressing and applying their knowledge of practice followed by theory, followed in turn by research. However, over the first year of study, first year students reported a significant increase in their confidence for using research and practice skills in psychologically literate ways. So while students continued to report the greatest self-efficacy for practice, at Time 2 this was followed by research, which was followed in turn by theory.

Unfortunately, as reported previously, self-efficacy for research may not continue to increase (Green et al., 2017). Green et al. found that middle and fourth year students reported significantly lower self-efficacy for research than both theory and practice, and these students’ mean research self-efficacy was lower than that found in the current Time 2 first year sample. This suggests that students’ introduction to research may initially be effective, but their confidence in using research does not necessarily increase when presented with more complex tasks in later years of undergraduate psychology education. The reverse is shown for students’ self-efficacy for practice, which appears to remain high over the course of their undergraduate studies (Green et al., 2017). Students’ greater self-efficacy for practice at Time 1 suggests a self-selection effect, with students’ who perceive themselves to be skilled with communication and interpersonal skills choosing to study psychology. This is consistent with first year students’ preconceptions of psychology education, where students reported that their studies would develop pre-existing qualities necessary for being a psychologist (Goedeke & Gibson, 2011).

Finally, while Green et al. (2017) reported that undergraduate students were most confident with the theory domain, the current findings suggest that students do not develop their confidence with theoretical topics over their first year. Unlike research and practice, first year students did not show a significant increase in self-efficacy for the theory domain;
this could be explained by the more applied nature of the practice and research domains when compared to theory, which primarily relates to knowledge, rather than skill, development. However, students may simply develop their self-efficacy for using theoretical knowledge later in their studies – probably during their second or third year (Green et al., 2017).

Overall, the current findings suggest that, for establishing the early scientist-practitioner values, the first year of study is not effective. However, the first year does seem to effectively provide students with the confidence to apply basic skills in research and practice to problems of a psychological nature. While psychological literacy is now established as a valuable outcome for the three-year undergraduate degree, this should be emphasised from the start of first year psychology, equipping the large numbers of students with the ability to use and promote psychological knowledge and research in the community (APS, 2012). While the theoretical domain is a critical component to students’ psychological literacy, this was the only domain where students’ self-efficacy beliefs did not increase across the first year of psychology education. Therefore, to enable all first-year students to develop a beginning level of psychological literacy, education in the first year of psychology may need to provide more opportunities for students to apply ideas gained from psychological theories and psychological research.

**Summary of Chapter 3**

Chapter 3 sought to explore how students’ social influences, task values and self-efficacy beliefs for theory, research, and practice, changed over the first year of study. The longitudinal findings suggest that the first year of psychology had a minimal impact on students’ values towards theory, research, and practice. Regression was used to explain students’ self-efficacy beliefs at Time 1 and Time 2 using the six predictors. The findings supported the conclusions of Study 1 that the first year is a critical time for developing positive task values and self-efficacy beliefs towards the research domain. Regression
analysis showed that, students’ self-efficacy beliefs for the three domains were significantly influenced by their social connections (both personal and academic) at Time 1. The influence of personal social connections was not significant for any domain at Time 2, but students’ self-efficacy for theory and practice continued to be influenced by academic staff and their task values. However, self-efficacy for the research domain was influenced only by students’ task values, suggesting that improving students’ self-efficacy and shaping positive task values for research should be important aims for the first year of study.

The following chapter will address differences in social influences, task values, and self-efficacy beliefs of postgraduate psychology students towards the three domains (theory, research, and practice\(^2\)). Study 3 examines the motivations of Master of Psychology, research-only PhD, and Psychology Doctorate (including Doctor of Psychology and Master of Psychology with PhD) students. It was expected that differences would emerge between students enrolled in different levels of training (Masters vs. Doctorate) based on the focus of their training (professional psychology vs. research-only) programs.

\(^2\) The term ‘communication’ was used to refer to the practice domain to avoid confusion with professional practice in Study 3.
STUDY 3

STATEMENT OF CONTRIBUTION TO CO-AUTHORED PUBLISHED PAPER

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to the paper included:

- Conducted data analysis to produce the article,
- Review and interpretation of literature,
- Writing of the paper, and
- Identifying implications for future research.

We agree to the inclusion of the paper in this doctoral research submitted for examination.

The journal in which this paper has been submitted for publication is peer-reviewed.

Elizabeth G. Conlon
10 March, 2017

Shirley A. Morrissey
10 March, 2017
Abstract

Objective: Postgraduate psychology students must develop three generic capabilities: theory, research, and communication. This is critical to strengthen the link between science and practice. The current study explored the impact of students’ postgraduate program on task values and self-efficacy beliefs using an expectancy-value perspective. Method: 237 postgraduate psychology students (195 females, $M_{\text{age}} = 30.98, SD = 8.34$) completed a survey investigating student values and expectations. Students were enrolled in a Master of Psychology ($n = 90$), research-only PhD ($n = 72$), or professional doctorate/Masters with PhD ($n = 75$). Results: A series of 3 (Domain) $\times$ 3 (Program) mixed factorial ANOVAs were conducted to explore postgraduates’ social influences, task values, and self-efficacy beliefs towards theory, research, and communication. Coursework students perceived peers to value communication skills significantly more than research, while research-only students perceived peers to value theory, research, and communication equally. Postgraduate students in all programs reported consistently lower task values and self-efficacy beliefs towards the research domain. Conclusions: Australian universities and professional organisations are encouraged to support the development of practice-research networks to facilitate greater collaboration and stronger links between future psychological scientists and practitioners.
CHAPTER 4:
THE VALUES AND SELF-EFFICACY BELIEFS OF POSTGRADUATE PSYCHOLOGY STUDENTS

In Australia, students’ choice of postgraduate psychology program is an area that receives some recognition, but little attention, in learning and teaching research. There are a range of postgraduate study options for psychology students to consider. At the Masters level, students have two options: one-year of postgraduate study followed by a one-year internship (5+1 model) or a two-year professional Masters in an area of practice (e.g., organisational, clinical psychology). At the doctoral level, students have three options: they can complete a professional doctorate, a higher degree by research, typically a Doctor of Philosophy (PhD), or the two-year Masters combined with a Doctor of Philosophy (Australian Psychology Accreditation Council [APAC], 2010). Despite the range of programs and practice areas, most research on postgraduate students has focussed on the Masters and Doctoral programs in clinical psychology (Scott, Pachana, & Sofronoff, 2011). However, for all students undertaking postgraduate psychology coursework, their program is grounded in the Scientist-Practitioner model of training (APAC, 2010).

Despite the scientist-practitioner emphasis in Australian psychology education, there is evidence to suggest a decline in research interest occurs among clinical psychology students during postgraduate training. Horn et al. (2007) examined students’ interests using the Scientist-Practitioner Inventory (Leong & Zachar, 1991) at the beginning and end of their coursework program. Interest in scientist activities decreased (e.g., reviewing the literature on an issue in psychology), while interest in practitioner activities remained stable (e.g., consulting with other psychologists about a particular client's concerns). Therefore, it is important that the emphasis on practitioner skills in Australian postgraduate psychology
education does not simultaneously reduce students’ value in the scientific approach necessary for functioning as a scientist-practitioner (Jones, 2008).

The scientist-practitioner model is typically translated into postgraduate training through evidence-based practice (EBP; Australian Psychological Society, 2012). EBP posits that professional decision-making should be based on best available research evidence, client preferences, and professional expertise (Briner & Rosseau, 2011; Spring, 2007). EBP aims to overcome biases and errors in professional judgement by incorporating evidence in the context of relevant theories or processes (Bell & Mellor, 2009). Further, the best point to improve adherence to EBP is at the postgraduate level (Spring, 2007). Ideally, postgraduate students should develop three generic capabilities: theory, research, and communication (see Table 1). These skills are also critical for psychology students in postgraduate research pathways, as these graduates will progress to become psychological scientists, researchers, and educators (Lodge, 2015). However, research-only PhD students often do not have the same access to skills training (especially communication skills; McGagh et al., 2016).

Table 4.1.

Definitions of Theory, Research, and Communication for Postgraduate Psychology Students.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td><em>Theoretical knowledge in psychology.</em> Psychological models or theories for explaining or predicting behaviour, psychopathology, and other concepts in professional practice.</td>
</tr>
<tr>
<td>Research</td>
<td><em>Research methods and statistics in psychology.</em> The different research methods implemented by psychologists, the ability to effectively search and critically analyse the available literature, the measurement and assessment of variables, and the ability to analyse data and interpret results accurately and clearly.</td>
</tr>
<tr>
<td>Communication</td>
<td><em>Communication and interpersonal skills in psychology.</em> Effective written and oral skills, and developing the ability to listen and speak effectively.</td>
</tr>
<tr>
<td></td>
<td>This might include establishing and maintaining professional relationships (with external stakeholders, supervisors, organisations, or clients), as well as presenting at conferences, or developing clinical and therapeutic skills.</td>
</tr>
</tbody>
</table>
The Training of Psychological Scientists

Research on PhD students has generally focused on students across all disciplines (Edwards, Radloff, & Coates, 2009), or those concurrently enrolled in professional psychology programs (e.g., Graham & Kim, 2011). There has yet to be a systematic exploration of students’ motivation and self-efficacy beliefs across different Australian psychology pathways. Although research has rarely focused on this group, graduates of research-only psychology programs remain important members of the psychological community. It is important to ensure PhD graduates are adequately prepared for employment, in terms of their ability to apply theoretical knowledge, research skills, and to communicate with stakeholders.

Unlike the U.S. system, Australian research training does not include formal coursework or placement requirements (McGagh et al., 2016). The Australian Council of Learned Academies (ACOLA) conducted a review into Australia’s research training, with employers reporting that PhD graduates were recruited for their research skills, but those with effective oral and written communication skills, advanced disciplinary knowledge, and flexibility in applying critical thought to diverse problems were highly sought after (McGagh et al., 2016). However, Manathunga, Pitt, and Critchley (2009) reported less than 60% of graduates believed they developed their communication skills during their degree and less than 30% reported developing teamwork. This corresponds to a major concern voiced by employers of PhD graduates: that graduates lack communication and human relations skills (Cumming, 2010). The current study, therefore, examined postgraduate psychology students’ motivation towards developing theory, research, and communication knowledge and skills. Motivation was compared across those in research-only postgraduate training and professional coursework programs using Expectancy-Value Theory (EVT; Eccles et al., 1983).
**Expectancy-Value Theory of Achievement Motivation**

EVT explains students’ choices to begin and persist with achievement-related tasks, such as their motivation to develop their knowledge and skills in theory, research, and communication (Eccles et al., 1983). EVT does this through students’ social influences, subjective task values, and self-efficacy beliefs (Eccles & Wigfield, 2002). Social influences refer to the value that influential others are thought to place on a domain and how this value is interpreted by the student (Eccles & Wigfield, 2002). For example, students perceived academic staff to value theory and research significantly more than communication skills (Green, Conlon, & Morrissey, 2017). Conversely, when asked about their own values, fourth-year students reported significantly more positive values towards communication than research and, at times, theory (Green et al., 2017). This mismatch may be detrimental to student engagement. The perception that peers and influential others value the benefits of research has been shown to be a significant predictor of practitioners’ intentions to use research (Tasca, Grenon, Fortin-Langelier, & Chyurlia, 2014). Therefore, to encourage the uptake of research evidence, it is important that postgraduate students perceive important others (especially peers and academic staff) to value the three domains equally.

Tasca et al. (2014) identified attitudes as the strongest predictor of research intentions; within EVT, *subjective task values* are used to assess attitudes towards a domain using four dimensions (Eccles & Wigfield, 2002). These include 1) students’ perception of how interesting a task is (intrinsic value), 2) how useful a task is to their future (utility value), 3) how important they consider performing well on a task to be (attainment value) and 4) how difficult that task is (cost value). While EVT has not been formally studied with postgraduate psychology students, program directors overseeing clinical psychology students have identified a lack of interest in research as a critical factor in the timely completion of the postgraduate thesis (Pachana, O’Donovan, & Helmes, 2006). Findings by Green et al. (2017)
also provided evidence of this lack of interest in research, with fourth year students reporting that it was equally important to perform well in theory, research, and communication, but that research was less interesting, less useful, and costlier than theory and communication. Fourth year students also reported significantly lower self-efficacy for using research skills compared to using their theory and communication skills (Green et al., 2017).

Self-efficacy has been operationalised as students’ confidence in their knowledge of theory, research, and communication and the ability to apply that knowledge (Bandura, 1997; Eccles & Wigfield, 2002). Self-efficacy has been shown to be a significant predictor of intentions to use research (Tasca et al., 2014). Further, studies have indicated that clinical psychology postgraduates have poor research self-efficacy (Wright & Holttum, 2012), and this leads to difficulty engaging with their research project (Gelso, Baumann, Chui, & Savela, 2013). This also forms a barrier to using EBP in professional psychological practice (Tasca et al., 2014).

To date, students’ values and self-efficacy beliefs have not been directly compared between those in different postgraduate programs. The current study examined the values and self-efficacy beliefs of students in Master of Psychology programs, Psychology Doctorates (PsyD: professional doctorate or Masters with PhD), and research-only PhD programs (i.e., no coursework component). Based on findings with fourth-year psychology students (Green et al., 2017), postgraduate students, regardless of program, were expected to perceive friends and family to value communication over theory, and theory over research. However, unlike undergraduate students (Green et al., 2017), postgraduate students were expected to perceive academic staff to value the three domains equally. Finally, students’ perceptions of their peers were explored to provide additional information on the perceived subjective norms.
For students’ task values, doctoral students (PhD & PsyD) were expected to have more positive attitudes towards research compared to Masters students, while coursework students (Masters & PsyD) were expected to have more positive attitudes towards communication than research-only PhD students. As a lack of interest in research was reported by Pachana et al. (2006), for both Masters and PsyD students, it was expected that coursework students would report lower intrinsic and higher cost values towards research. These students were expected to report equal utility and attainment values for the three domains, due to the emphasis on EBP in their programs. As the results of Manathunga et al. (2009) suggest that communication skills are not prioritised in the research environment, research-only PhD students were expected to report higher intrinsic, utility, and attainment values towards theory and research. Students’ self-efficacy beliefs were also expected to diverge with their postgraduate sequence. Coursework students were expected to report greater self-efficacy with communication skills than research-only PhD students. Doctoral students were expected to report greater self-efficacy for research skills than Masters students.

Method

Participants and Procedure

There were 237 psychology students aged between 22 and 59 years ($M = 30.98, SD = 8.34, 195$ females). Participants were recruited from 24 Australian universities and colleges offering postgraduate qualifications in psychology. There were 90 students enrolled in a 2-year Master of Psychology (MPsych), and 75 students enrolled in a Psychology Doctorate (PsyD) with extensive research and coursework components. The PsyD group included those in a professional doctorate (DPsyCh, $n = 45$) or Master of Psychology with PhD (MPsych/PhD, $n = 30$). Students enrolled in the DPsyCh and MPsych/PhD did not differ on any target variables, so were combined into a single group. Finally, 72 students were enrolled in a research-only Doctor of Philosophy (PhD-RO). Participants time in their program ranged
from 0-4 years for MPsych students ($M = 1.57, SD = 0.58$), and 0-7 years for doctoral students (PsyD: $M = 2.83, SD = 1.34$; PhD-RO: $M = 2.66, SD = 1.38$). The areas of practice endorsement for students in accredited psychology programs are reported in Table 4.2.

Table 4.2.

_Area of Practice Endorsement (AoPE) for MPsych, DPsych, and MPsych/PhD Students._

<table>
<thead>
<tr>
<th>AoPE</th>
<th>MPsych</th>
<th>DPsych</th>
<th>MPsych/PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Psychology</td>
<td>58.9%</td>
<td>50%</td>
<td>56.7%</td>
</tr>
<tr>
<td>Organisational Psychology</td>
<td>25.6%</td>
<td>4.3%</td>
<td>10%</td>
</tr>
<tr>
<td>Clinical Neuropsychology</td>
<td>3.3%</td>
<td>17.4%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Health Psychology</td>
<td>2.2%</td>
<td>10.9%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Sport and Exercise Psychology</td>
<td>1.1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Educational and Developmental</td>
<td>1.1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Forensic Psychology</td>
<td>-</td>
<td>2.2%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Did not specify</td>
<td>7.8%</td>
<td>15.2%</td>
<td>20%</td>
</tr>
</tbody>
</table>

This research was approved by the University Human Research Ethics Committee, with further approvals obtained from Heads of Schools and HREC committees at participating universities. The survey was created using Qualtrics and distributed through email broadcasts and social media; participation was voluntary with a prize draw incentive.

**Measures**

A 6-point Likert response scale, extending from 1 “Strongly Disagree” to 6 “Strongly Agree” with no neutral midpoint, was used with all scales and text anchors were matched to each question. Higher scores indicated more positive social influences, intrinsic, utility, and attainment values, and self-efficacy beliefs towards a domain. For cost value, higher scores indicated greater difficulty, reflecting a negative attitude towards a domain.

**Social Influences.** Two social influences scales were developed for the current study based on the measures used in Green et al. (2017). The _personal social influences_ scale...
assessed the extent to which students perceived friends and family to value their learning of theory ($\alpha = .86$), research ($\alpha = .86$), and communication ($\alpha = .87$), in psychology, using a 2-item subscale. *Academic social influences* used a 3-item subscale to assess the extent that students perceived previous and current tutors, lecturers, and supervisors to value their learning in theory ($\alpha = .86$), research ($\alpha = .88$), and communication ($\alpha = .89$), in psychology. A single item measure was used to assess the extent to which students perceived their peers to value each domain (theory, research, and communication).

**Subjective Task Values.** The four task values were measured with the same 5-item subscales used in Green et al. (2017). Participants rated their agreement with statements about the intrinsic ($\alpha$s = .93 to .96), utility ($\alpha$s = .81 to .91), attainment ($\alpha$s = .88 to .93), and cost ($\alpha$s = .73 to .84) value of each domain. These scale reliabilities are similar to previous research where $\alpha$ ranged from .76 to .96 (Green et al., 2017).

**Self-Efficacy Beliefs.** Self-efficacy was assessed using a 7-item scale, which asked about students’ confidence in their knowledge of theory, research, and communication, and their ability to apply that knowledge to personal, professional, and societal issues (Cranney et al., 2012; Green et al., 2017). The factor structure of each domain was previously examined using Principle Components Analysis, where a single factor emerged for each domain (Green et al., 2017). The current study conducted confirmatory factor analysis (CFA), using the maximum likelihood estimation procedure in AMOS 21, to test the fit of a single factor structure for students’ self-efficacy beliefs for each domain. Standardised regression coefficients are reported in Table 4.3. The Chi-Squared ($\chi^2$) test showed acceptable absolute fit, while the Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) demonstrated good model fit (Jackson, Gillaspy, & Purc-Stephenson, 2009). All items loaded significantly on their latent variables, with internal reliabilities of .81 for theory, .92 for research, and .91 for communication.
Table 4.3.

*Standardised Regression Coefficients for Theory, Research, and Communication (n = 237).*

<table>
<thead>
<tr>
<th>Item</th>
<th>Theory</th>
<th>Research</th>
<th>Comm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent do you feel confident…</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>…in your understanding of [domain]?</td>
<td>.59</td>
<td>.79</td>
<td>.80</td>
</tr>
<tr>
<td>… your ability to learn new [domain] skills?</td>
<td>.57</td>
<td>.73</td>
<td>.71</td>
</tr>
<tr>
<td>…expressing your knowledge of [domain] in your written assignments at university?</td>
<td>.56</td>
<td>.87</td>
<td>.82</td>
</tr>
<tr>
<td>…expressing your knowledge when discussing [domain] with a group of friends?</td>
<td>.70</td>
<td>.84</td>
<td>.83</td>
</tr>
<tr>
<td>…applying your knowledge of [domain] to a personal problem?</td>
<td>.58</td>
<td>.76</td>
<td>.79</td>
</tr>
<tr>
<td>…applying your knowledge of [domain] to a professional problem?</td>
<td>.68</td>
<td>.73</td>
<td>.79</td>
</tr>
<tr>
<td>…applying your knowledge of [domain] to a societal problem?</td>
<td>.59</td>
<td>.75</td>
<td>.68</td>
</tr>
</tbody>
</table>

^a^ Fit indices for Theory: $\chi^2 (10) = 15.10, p = .128, CFI = .99, RMSEA = .05 (95% CI .00-.09), PCLOSE = .510.

^b^ Fit indices for Research: $\chi^2 (10) = 21.68, p = .017, CFI = .99, RMSEA = .07 (95% CI .03-.11), PCLOSE = .189.

^c^ Fit indices for Comm.: $\chi^2 (12) = 18.22, p = .115, CFI = .99, RMSEA = .05 (95% CI .00-.09), PCLOSE = .527.
Results

A series of 3 (Domain: theory, research, communication) × 3 (Program: MPsych, PhD-RO, PsyD) mixed factorial ANOVAs were used to test the hypotheses for social influences, subjective task values, and self-efficacy. With the exception of violations to sphericity, for which the Huyhn-Feldt correction was applied (Keppel, 1991), assumptions of each analysis were acceptable. Significance was assessed against an alpha level of .01 to control for Type 1 error.

Social Influences

**Personal Social Influences.** There was a significant main effect of Domain, $F(2, 456) = 218.99, p < .001, \eta_p^2 = .48$. As expected, independent of program, students perceived friends and family to value communication over theory, and theory over research (all $ps \leq .001$, see Figure 4.1). An unexpected significant Domain by Program interaction emerged, $F(4, 456) = 3.48, p = .009, \eta_p^2 = .03$. MPsych students perceived friends and family to value communication significantly more than theory, and theory more than research (all $ps \leq .001$), while PhD-RO and PsyD students perceived friends and family to value theory and communication significantly more than research (all $ps \leq .009$), with no difference between theory and communication domains (all $ps \geq .015$).

**Peer Influences.** There was a significant main effect of Domain, $F(2, 460) = 24.16, p < .001, \eta_p^2 = .09$, and a significant Domain by Program interaction, $F(4, 460) = 4.52, p = .001, \eta_p^2 = .04$. This was explained by MPsych and PsyD students reporting that their peers would value theory and communication significantly more than research (MPsych, $ps < .001$, PsyD, $ps \leq .009$), with no difference between theory and communication domains ($p \geq .249$). In contrast, PhD-RO students reported their peers would value the three domains equally ($p \geq .097$).
Figure 4.1. Mean scores for student perceptions of important others’ values towards theory, research, and communication, by program (error bars represent ± 1 standard error of the mean).
**Academic Social Influences.** For academic influences, there was a significant main effect of Domain only, $F(2, 464) = 4.83, p = .009, \eta^2_p = .02$. Regardless of students’ program, academic staff were perceived to value theory followed by communication, which was followed by research, with only the difference between theory and research reaching significance ($p = .004$).

**Subjective Task Values**

The mean intrinsic, utility, attainment, and cost values for each program type is shown in Figure 4.2.

**Intrinsic Value.** There was a significant main effect of Domain, $F(2, 418) = 98.48, p < .001, \eta^2_p = .30$, and a significant Domain by Program interaction, $F(4, 418) = 9.18, p < .001, \eta^2_p = .07$. As expected, PhD ($p < .001$) and PsyD ($p = .006$) students reported significantly greater interest in research than MPsych students, with no difference between PhD and PsyD students’ research interest ($p = .191$). Consistent with the emphasis of their program choice, MPsych students ($p = .002$) reported significantly greater interest in communication than PhD-RO students, with no significant difference between PsyD and MPsych students ($p = .629$). Despite this, students in all programs reported significantly more interest in theory and communication than the research domain (all $ps \leq .009$), with Masters students also reporting greater interest in communication skills than in theory ($p = .001$).
Figure 4.2. Mean subjective task values towards theory, research, and communication for MPsyh, PhD-RO, and PsyD students (error bars represent ± 1 standard error of the mean).
Utility Value. There was a significant main effect of Domain, $F(2, 446) = 90.81, p < .001, \eta_p^2 = .28$, and a significant Domain by Program interaction, $F(4, 446) = 10.54, p < .001, \eta_p^2 = .08$. PhD and PsyD students did not differ in their utility values towards research ($p = .125$), although both PhD ($p < .001$) and PsyD ($p = .006$) students reported significantly higher utility value towards research than MPsych students. Communication was considered significantly more useful than both theory and research (all $ps \leq .009$) by students in all programs. However, while MPsych students perceived theory to also be more useful than research ($p < .001$), both PhD-RO and PsyD students reported no significant difference between the utility of theory and research ($p \geq .179$).

Attainment Value. There was a significant main effect of Domain, $F(2, 461) = 22.55, p < .001, \eta_p^2 = .09$, and a significant Domain by Program interaction, $F(4, 461) = 8.99, p < .001, \eta_p^2 = .07$. The importance placed on the research domain was significantly lower amongst students in coursework programs (MPsych. $p < .001$, PsyD students, $p = .006$) compared to PhD-RO students. Contrary to our predictions, students in coursework programs reported that communication was significantly more important than theory and research (all $ps < .001$). MPsych students also reported theory to be significantly more important than research ($p < .001$), while PsyD students reported no difference between these domains ($p = .186$). In contrast, for PhD-RO students, there was no significant difference between their attainment values for theory, research, and communication (all $ps \geq .135$).

Cost Value. There was a significant main effect of Domain only, $F(2, 413) = 117.79, p < .001, \eta_p^2 = .34$. Students in all programs viewed research as significantly more difficult than theory, and theory to be significantly more difficult than communication (all $ps < .001$).

Self-Efficacy Beliefs

There were significant main effects of Domain, $F(2, 349) = 51.70, p < .001, \eta_p^2 = .18$, and Program, $F(2, 234) = 4.70, p = .010, \eta_p^2 = .04$, which were modified by a significant
Domain by Program interaction, $F(3, 349) = 4.08, p = .007, \eta_p^2 = .03$ (see Figure 4.3). As hypothesised, both PhD-RO ($p < .001$) and PsyD ($p = .004$) students reported significantly greater self-efficacy for using research than MPsych students. However, the hypothesis that students’ confidence in using communication skills would differ based on their program was not supported (all $p$s $\geq .585$). Students’ self-efficacy for the domains did differ, with PhD-RO students reporting significantly greater self-efficacy for theory ($p = .002$) and communication ($p = .008$) than for research, while both MPsych and PsyD students reported significantly greater self-efficacy with the communication domain than theory ($p \leq .005$), and with theory over research ($p \leq .002$).

![Figure 4.3. Self-efficacy beliefs for theory, research, and communication by program type (error bars represent $\pm 1$ standard error of the mean).](image)

**Discussion**

Previous research had not investigated differences in values between psychology students in different postgraduate programs. The current study compared students enrolled in
coursework postgraduate psychology programs (Master of Psychology), research-only programs (PhD), and coursework programs with a substantial research component (Psychology Doctorates) on measures of achievement motivation. These included social influences, subjective task values, and self-efficacy beliefs towards theory, research, and communication domains.

**Social Influences**

Consistent with Green et al. (2017), postgraduate students perceived friends and family to value communication and theory significantly more than research. This suggests that the importance of research is not well understood by postgraduate students’ personal support networks. Previous research has not addressed subjective norms by assessing postgraduate psychology students’ perceptions of their peers. The current findings suggest that coursework (Master and PsyD) students perceive their peers to value theory and communication more than research, while research-only students report that their peers value the three domains equally. Thus, subjective norms towards research appear to be less positive among coursework students than research-only students. Previous findings from Tasca et al. (2014) suggest that this may have implications for coursework students’ willingness to rely on research in their professional practice.

Students in all programs perceived academic staff to value theory significantly more than research, but communication was perceived to be on par with both theory and research domains. These findings differ substantially from previous research with fourth year students, who reported academic staff value theory and research significantly more than communication skills (Green et al., 2017). As students progress through their postgraduate studies, the value of good communication skills becomes more apparent. To promote positive perceptions of research among postgraduate peers, programs might wish to encourage greater collaboration in postgraduate research classes by combining training for
coursework students (Masters and PsyD) with research-only students (Castonguay, Barkham, Lutz, & McAleavey, 2013).

Subjective Task Values

It was expected that postgraduate students’ values towards theory, research, and communication would correspond to their program of study. This was not found for all program types. Students completing a Masters program reported that communication was more interesting, more useful, and more important to develop than theory, and theory was more valuable than research. While these findings are consistent with reports of reduced research interest in clinical Masters programs (Pachana et al., 2006), it is concerning that Masters students do not consider research skills to be as useful, or important to develop in, as theory or communication skills. Further, Masters students also considered theory to be less valuable than communication. As with the Masters group, PsyD students also reported that communication was more interesting, more useful, and more important to develop in than theory and research, but did not report any difference between the latter domains. However, both MPsych and PsyD students reported significantly lower attainment values for the research domain compared to PhD-RO students. This may be due to the competing priorities and heavy workloads reported in psychology coursework programs (Scott et al., 2011).

Further, the hypothesis that PhD students would show a preference for theory and research domains relative to communication was not supported. PhD-RO students reported greater interest for communication and theory than research, and considered communication to be of more use than the theory and research domains. However, where PhD students differed was in their attainment values; PhD-RO students considered theory, research, and communication to be equally important to develop, suggesting that research-only students are aware of the importance of developing their communication skills (McGagh et al., 2016). While research-only students reported less interest in communication than Masters students,
their interest did not differ from the PsyD group. In addition, PhD-RO students responded in line with coursework students when reporting on the perceived difficulty of theory, research, and communication. Collectively, postgraduate students reported that communication was considerably less difficult than theory, which in turn was considered significantly less difficult than research. Green and colleagues (2017) suggest that students may enter psychology training with significantly greater self-efficacy for their communication skills. Thus, students may perceive their communication skills to be highly developed when they enter undergraduate and postgraduate studies, and therefore, more easily developed than skills required in the theory and research domains.

While recommendations for closing the science-practice divide have often concentrated on practitioners alone, this has been criticised in favour of a more balanced approach (Beutler, Williams, Wakefield, & Entwistle, 1995). To address negative beliefs about research, Tasca et al. (2014) promoted the establishment of practice-research networks (PRNs) where clinicians collaborate directly with researchers to “define research questions, design research protocols, and implement studies” (p. 201). It was expected that PRNs could encourage research-clinician pairings that would change existing subjective norms, improve attitudes, and provide opportunities for clinicians to engage in and build confidence towards research (Castonguay et al., 2013; Tasca et al., 2014). Thus, the development of formal PRNs may be an ideal place to bridge the science-practice divide during postgraduate study and beyond. Ideally, students in all programs would be encouraged to attend and collaborate on projects to forge stronger links. PRNs could introduce beneficial changes to the research training environment for PhD-RO students who report less interest and greater cost for research compared to theory and practice domains. A review by Gelso et al. (2013) suggested that presenting research as a partly social experience and emphasising the
collaborative aspects of the research environment was associated with improved research attitudes and better self-efficacy among psychology postgraduates.

Self-Efficacy Beliefs

Students reported on their confidence in expressing and applying their knowledge of theory, research, and communication to personal, professional and societal issues. The hypothesis that doctoral students would report greater self-efficacy for research than Masters students was supported. However, students in all programs still reported greater self-efficacy for communication than theory, and for theory than research. All postgraduate psychology students successfully complete research projects as part of their studies. Despite students having the capability to use research skills, they appear to have less confidence in applying these skills. This could be explained by the high perceived cost of research compared to the other domains. An alternative explanation for this may be a lack of preparation for students to translate their knowledge of research, independently, to applied problems (Luebbe, Radcliffe, Callands, Green, & Thorn, 2007). This coincides with the findings of the ACOLA review, which suggested that greater emphasis should be placed on developing research students’ transferable skills and improving the assessment of research competencies (McGagh et al., 2016). Further, while the programs examined in the current study all include a research component, it is critical to note that the 5+1 pathway, does not (APAC, 2010).

Limitations and Future Research

The current study offers a snapshot of the values and self-efficacy beliefs of postgraduate psychology students. However, there are two major limitations. First, the values and self-efficacy beliefs discussed reflect the views of postgraduate students at all stages of their respective programs. A cross-sectional study of commencing postgraduate psychology students with a longitudinal follow-up at the end of each year of study would contribute much to our understanding of how postgraduate psychology students’ task values
and self-efficacy beliefs are influenced by training. Second, while the current study aimed to compare students enrolled in the 5+1 pathway to the 2-years Masters pathway, there were insufficient respondents to form a comparison group. Therefore, it is critical that future research investigate the impact of research training on 5th year students in 1-and-2-year Masters programs, especially as the 5+1 program is growing in popularity as a pathway to general registration.

Implications for Psychology Education and Training

Currently psychology education and training is limited by the traditional didactic approaches used in the Australian postgraduate training environment (Scott et al., 2011). However, the current research suggests that students require more integrated postgraduate learning experiences. Strategies to provide this can include scaffolding students’ use of research and decision-making skills in simulated or problem-based learning (PBL) scenarios (Hmelo-Silver, 2004). There has been much support for the inclusion of simulation and PBL approaches in postgraduate education (Stevens, Hyde, Knight, Shires, & Alexander, 2015). Research suggests that PBL has advantages over traditional learning activities in enhancing self-directed learning and cognitive competencies, understanding of content, and interpersonal or collaborative skills (Hmelo-Silver, 2004; Stevens et al., 2015). Most studies of PBL have used self-report assessments, which, due to students’ preference for this teaching style, could be biased in favour of PBL (Scott et al., 2011; Stevens et al., 2015). According to EVT, this may be an advantage of the approach: by enhancing students’ interest and enjoyment of research training and demonstrating the utility of research skills in problem-based scenarios, students’ values (and achievement motivation) towards research can be improved.

The current model of education and training may partially explain students’ diminished interest in research. It is considered by some that the science followed by practice model is
outdated and not fit for purpose. Emphasis on research training in the first four years of psychology education with little incorporation of interpersonal and communication skills may result in a desire by postgraduate students to develop these skills as a priority. Hence, they are likely to hold less interest in additional research pursuits, particularly as research self-efficacy was low at the honours level. This is especially the case among the Masters programs. A more balanced approach to the science and practice of psychology throughout the education and training of psychologists may remedy this and ensure students value all three domains equally. Perhaps as the review of education and training in psychology in Australia is completed, the new APAC Standards for accreditation will allow for this. A balanced model such as this can provide a richer integration of specialised skills-based training in both postgraduate coursework and research programs. This is likely to increase the efficacy of tomorrow’s psychological workforce, including practitioners, researchers, and educators.

Summary of Chapter 4

In Chapter 4, the social influences, values and self-efficacy beliefs of postgraduate students were examined in relation to theory, research, and communication domains. Study 3 demonstrated that the poorer task values and self-efficacy beliefs for the research domain found in the undergraduate years persist into the postgraduate years. This was reported by students in professional and research-only postgraduate programs, although Masters students specifically, reported poorer task values and self-efficacy beliefs for the research domain compared to doctoral students. The results on students’ self-efficacy beliefs suggest that students are not being adequately prepared to confidently apply their knowledge of the research domain to personal, professional, and societal problems, and this may have adverse impacts on their development as evidence-based practitioners (Tasca et al., 2014).

The next chapter will review and synthesise the findings of the previous three chapters. Further, the findings will be discussed in the context of expectancy-value theory
and how this model can be used more effectively in higher education. Following this, recommendations for psychology educators to improve students’ motivation will be discussed, and suggestions for the future of psychology education and training in Australia will be provided. The chapter and this thesis concludes with a discussion of the limitations of the studies, recommendations for future research, and concluding comments about psychology education.
CHAPTER 5:

GENERAL DISCUSSION

This thesis made several contributions to the understanding of undergraduate and postgraduate psychology students’ motivation towards their core learning domains, theory, research, and practice. This is the only current study (to the author's knowledge) of students’ motivation across the breadth of psychology education; previous studies of motivation have focused on specific courses, years of study, or programs (Burton, Chester, Xenos, & Elgar, 2013; Karantzas et al., 2013; Kiernan, Murrell, & Relf, 2008). This thesis contributes to our understanding of students’ motivation and their development of self-efficacy in each year of the undergraduate program, and for the honours and postgraduate programs. The major findings from the studies are:

1) students in each of the undergraduate years and in all of the postgraduate programs reported less motivation to engage with the research domain than with either theory or practice;

2) students placed the greatest value on the practice domain throughout their studies;

3) the development of self-efficacy for undergraduate students showed evidence of different patterns based on domain.

4) students’ task values were more similar to their personal networks (peers, family, friends) than with the perceived values of academic staff, although there were some differences found at the undergraduate and postgraduate levels of study.

These findings will each be discussed and the implications for future training in psychology described. The implications of the studies will be outlined with respect to expectancy-value theory. Recommendations for enhancing students’ motivation and their learning outcomes in psychology programs will be put forward. The strengths and limitations of the thesis will be explored before the chapter concludes with final conclusions for the
future of education and training in psychology in Australia.

Motivation and Self-Efficacy for Research

Psychology students from first year to professional and research-only postgraduate programs reported significantly less motivation to engage with the research domain than with either theory or practice. In psychology, the research domain is vital for developing students’ critical thinking, scientific literacy, and capacity for functioning as a scientist-practitioner (Roberts, 2016). Students entering psychology are often unaware of the research requirements of their degree and often do not understand the benefit of research in their training in psychological science or as a professional psychologist (Rowley et al., 2008; Sizemore & Lewandowski, 2011). As students progressed through each year level, the relevance of developing research skills, interpreting research findings, and finally undertaking independent research was expected to promote increased research self-efficacy and an understanding of the importance of developing these skills (Lacot et al., 2016). However, this prediction was not supported by the current research.

Undergraduate students in all years had poorer task values towards research compared to practice, and at times, theory. Students enter psychology with generally low expectations for research (Goedeke & Gibson, 2011; Rowley et al., 2008). Importantly, students in all year levels reported that research was significantly less interesting, less useful, more difficult and more effortful than the theory or practice domains. When assessing general attitudes towards the research domain, Roberts and Castell (2016) found that advanced students reported, on balance, more positive than negative attitudes. However, the current study found fourth year students reported significantly higher difficulty and effort towards the research domain than first year students. These findings suggest that first year psychology students are more open to learning about and developing research skills prior to their experiences in the middle and later years of study. Nevertheless, students in all undergraduate years
consider this domain to be the most difficult to develop in and the least useful for their futures.

Further, while students in all years reported more positive utility values for theory and practice than research, results from the longitudinal study showed that first year students considered all domains to be less useful after one year of training. These results are both surprising and concerning. For first year students to rate the usefulness of their introductory classes in psychology as lower at the end of year one, than when they commenced their degree, suggests a real mismatch between what they expect to be learning and what is being taught. This mismatch has implications for undergraduate students’ self-efficacy beliefs and educators need to understand that the perceptions that students have on entry to psychology degrees are very important. Findings from the longitudinal study indicated that self-efficacy for research increases during the first year. However, the findings from the cross-sectional studies of the undergraduate years and postgraduate programs indicate that this is not maintained with further study. These findings will be further addressed when the different patterns, which emerged for self-efficacy towards the three domains across the undergraduate and postgraduate studies, are discussed.

Consistent with undergraduate students, and with previous qualitative findings with professional psychology students (Scott et al., 2011), both the Masters and PsyD students reported research to be less interesting, useful, or important to develop in than their communications and interpersonal skills, and at times, theoretical knowledge. Previous research using the theory of planned behaviour, suggest that these attitudes are detrimental to students’ ability and willingness to develop as scientist-practitioners (Tasca et al., 2014). Doctoral students in professional and research-only programs reported significantly greater self-efficacy for the research domain than did Masters students. Indeed, students in all programs reported significantly greater self-efficacy for theory and practice over research. As
psychologists must develop the capacity to work as scientist-practitioners and employ evidence-based practice (Bearman et al., 2015), the limited development of students’ research self-efficacy in professional programs is of concern and may relate to the separation of scientist and practitioner training. While postgraduate students in all programs complete research projects, they are unlikely to apply their research skills in the workforce if they are not confident in these skills. This has implications for graduates’ ability to effectively provide psychological services with a strong evidence base (Eke, Holttum, & Hayward, 2012; Tasca et al., 2014).

The finding that all postgraduate student groups reported significantly lower self-efficacy for the research domain was surprising. Furthermore, this could suggest that the undergraduate and Honours years are not preparing graduates to confidently apply their research knowledge and skills. This is still not resolved through advanced research training at the postgraduate level. It has been suggested that students who are better prepared to confidently apply their research skills are more likely to complete their research theses in a timely manner (Gelso et al., 2013; Pachana et al., 2006). Further research is needed to understand how this lower self-efficacy impacts students’ ability to fulfil the requirements of postgraduate study. Perhaps by facilitating the integration of the domains in their psychology education and training, students could begin to apply theory and research as essential components of psychological problem solving (Maree, 2015; Wiberg, 2009). This would further aid the transition of students entering postgraduate programs, as well as those entering the workforce (Luebbe et al., 2007; Tasca et al., 2014).

**Motivation and Self-Efficacy for Practice**
The practice domain was consistently rated more positively than the research domain, and at times, the theory domain. This suggests that psychology students, from their first year to research-only PhD, perceive communication skills to be the most important aspect of their training when compared to these other domains. These findings are consistent with previous research that reported that undergraduate students perceive that the main purpose of psychology programs is to develop empathy and other interpersonal skills (Goedeke & Gibson, 2011; Harton & Lyons, 2003). Students’ positive perceptions of the practice domain are largely beneficial for students’ motivation to engage with tasks that develop these skills. However, students throughout the undergraduate years and in each postgraduate pathway also reported significantly more positive self-efficacy beliefs with the practice compared to theory or research domains. The longitudinal findings showed that students entered psychology with the greatest confidence for the practice domain compared to theory and research, and that this increased further after one year of study, and remained high throughout the undergraduate years and postgraduate pathways. This is surprising, as undergraduate psychology students generally receive little explicit training in these skills. So, while this confidence is expected in professional postgraduate programs, it is unlikely that students in their first year of undergraduate psychology education have attained a high level of expertise in applying their communication and interpersonal skills to personal, professional, and societal problems. Therefore, students’ confidence in this may be misplaced.

Undergraduate students’ high level of confidence for the application of practice, would occur because of a poor understanding of their own capacity given that these skills are not formally assessed in the undergraduate program (Kuittinen, Meriläinen, & Räty, 2014).

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3 As indicated earlier, practice specifically refers to communication and interpersonal skills.
Kuittinen and colleagues (2014) reported that recently graduated psychologists from a generalist Master’s degree (5.5 years) rated their competency significantly higher than those who had been working in the field for a few years. The authors argue that, rather than new psychologists being significantly more competent (due to the recency of training), these graduates could lack an adequate frame of reference for gauging their abilities. It is expected that, rather than psychology education attracting students with advanced communication and interpersonal skills, students may not yet be able to accurately judge their capacity to apply these skills at either the undergraduate or postgraduate level (Dunning, Johnson, Ehrlinger, & Kruger, 2003). Therefore, students at this level may require additional emphasis on the effective use of communication and interpersonal skills, as this is an area that has limited the employability of third-year university graduates (Norton, 2013), and it is an area that they have a great deal of confidence in. This observation, that graduates have poorer communication skills, has also been made by employers of research-only PhD graduates (Cumming, 2010), and within the ACOLA review (McGagh et al., 2016).

The importance of effective communication and interpersonal skills for research-only PhD students is immense, as graduates must manage complex and competing demands from their workplaces (e.g., academia/universities, government research bodies, or private organisations) and usually maintain global networks with those in their field (Craswell, 2007; Manathunga et al., 2012). In Australia, there is no formal coursework required in the research-only PhD program (AQF, 2013; McGagh et al., 2016), although PhD students can engage in a range of activities and opportunities to develop their communication skills (Turner, 2015). These include conference presentations, workshops, undergraduate teaching activities, and writing for academic and non-academic sources (e.g., ‘The Conversation’). Most students will engage with at least some of these communication-related tasks (Pearson et al., 2008). However, the extent to which an individual student is encouraged to develop
these skills will depend on their supervisors, peers, institutions’ values, and their own motivation towards developing a particular skill set (Craswell, 2007; Platow, 2012).

The lack of mandatory skills training has brought PhD graduates’ capabilities into question, specifically regarding their ability to communicate effectively and relate to others in the workplace (Craswell, 2007; Cumming, 2010). While previous research has generally focussed on PhD students from a range of disciplines, with diverse interests and undergraduate experiences (Edwards et al., 2009), the present findings suggest that research-only PhD students in psychology may have different values towards theory, research, and communication than for other non-psychology PhD candidates in Australia. In the postgraduate study (Study 3), research-only PhD students reported that the practice domain was more interesting and useful than theory and research, and reported the same level of self-efficacy for this domain as students in professional psychology programs. PhD students in research-only programs reported that developing their theory, research, and practice skills was equally important to them and this was consistent with their perceptions of what their peers and academic staff valued. Thus, research-only PhD students in psychology have few motivational barriers to engaging in communication skills training, although it is unclear to what extent these skills are currently being developed and to what extent research-only PhD students seek developmental opportunities for their communication and interpersonal skills.

Based on the findings by Norton (2013) for undergraduate students and Cumming (2010) for PhD students, graduates from these two exit points tend to have poor communication and interpersonal skills. There are two possible interpretations for the research findings reported in this thesis. One explanation is that psychology programs attract a high proportion of students with advanced communication and interpersonal skills, or that these skills are developed over the first year, and are maintained or increased throughout their studies. An alternative explanation is that students who are attracted to psychology believe
that they have advanced communication and interpersonal skills but this perception may not be accurate (Kuittinen et al., 2014). Additionally, the lack of focus on developing these skills, coupled with this overconfidence, may influence their ability to perform effectively in the workforce (Cumming, 2010; Norton, 2013).

**The Impact of Year Level on Self-Efficacy Beliefs**

Results from the longitudinal study suggest that first year students begin to develop their self-efficacy for applying knowledge of research and practice over the first year of study. Previous research also reported a large increase to students’ statistical self-efficacy from the beginning to end of their first statistics course (Finney & Schraw, 2003), which was replicated in the current study. However, results from students in their later years suggest that this research self-efficacy is not maintained when students are exposed to more advanced research training. Further, a concurrent increase in self-efficacy for theory did not occur in the longitudinal sample. Despite this, the cross-sectional undergraduate study showed that students in all year levels reported significantly greater self-efficacy for the theory domain than for practice or research. In this study, middle year students’ perceptions of the usefulness for the theory domain were significantly higher than those reported by either first or fourth year students. This suggests that the greatest increase to students’ self-efficacy for using theory occurs in students’ middle years of psychology education. This finding is important as typically undergraduate psychology programs build on the theoretical approaches introduced in year one, in the 2nd and 3rd years of the degree. The scaffolding of learning activities to ensure more advanced knowledge builds on the introductory content is critical and the findings that middle year students report that their self-efficacy for theory increases during that period is reassuring.

However, a disquieting finding in the undergraduate cross-sectional sample, showed that fourth year students did not differ in their reports of their task values or self-efficacy
beliefs from students in the middle years of their programs. As the measure was developed to assess self-efficacy with theory, research and practice, it was expected that 4th year students should show a higher level of confidence with all three domains. However, the current results suggest that 4th year students’ confidence in applying theory, research, and practice to their personal and professional lives or to societal issues was not significantly greater than that of a combined group of 2nd and 3rd year students. This may be due to the academic nature of the capstone research experience (i.e., their Honours thesis), which might increase students’ research knowledge (Balloo, Pauli, & Worrell, 2016), without increasing their confidence in how to apply their research skills outside formal research environments (Allen, Dorozenko, & Roberts, 2016a).

In a study by Allen and colleagues (2016b), third-year psychology students had difficulty articulating a process for statistical decision making (i.e., how to choose the correct test for their data). The authors reported that students were “pushed […] outside their comfort zones” (Allen et al., 2016a, p. 11) by research vignettes that required statistical decision making. Taken together with the current research, it is suggested that a greater emphasis on transferable skills that emerge from formal research training could support students in developing more positive task values and greater self-efficacy with the research domain. This could include explicit development of these skills, like statistical decision making (Allen et al., 2016a, 2016b), or everyday (non-academic) applications of research skills, such as evidence-checking claims in online media (Lacot et al., 2016) or finding ways to creatively express the links between research knowledge and practical applications (Provost, 1998).

**The Relevance of Personal Social Connections**

According to EVT, students’ perceptions of important others are critical to developing positive values towards a domain (Jacobs & Eccles, 2000). Across the undergraduate years
and in each of the postgraduate programs, students reported perceiving friends and family to value theory and practice significantly more than research. At the beginning of students’ first year, personal social influences predicted students’ self-efficacy for each of the three domains, although this influence was no longer significant after one year of study. However, the impact of personal influences was reduced after one year of training, although students’ task values continued to align more closely with the values held by personal connections than those of academic staff. This is consistent with the findings of Amsel et al. (2014), who reported that undergraduate students could take the perspective of their instructors and report on their beliefs about the scientific nature of psychology, but that students did not share those values.

As personal social influences were no longer significant at the end of students’ first year, it could be inferred that social influences from friends and family would have a limited impact on postgraduate students. However, as postgraduate students are often under a great deal of stress, these students may rely on their personal social support networks (friends, family, and romantic partners; El-Ghoroury, Galper, Sawaqdeh, & Bufka, 2012) much more than students in their undergraduate years (who are more likely to be seeking independence; Davies & Elias, 2003). Therefore, the influence of these personal connections, as well as the influence of postgraduate students’ peers, may have a greater influence on postgraduate students’ values and self-efficacy beliefs. The postgraduate study included a measure of students’ perceptions of their peers, with findings suggesting that professional students may experience a lack of support for engaging in research from their peers. Students undertaking professional programs at the Masters or doctoral levels reported that their peers would value theory and communication significantly more than research. In contrast, research-only students thought their peers would value the three domains equally, suggesting that their development in each of the domains is supported by their peers.
Congruence between Student and Staff Values

Compared to students’ personal connections, the perceived values of academic staff were more favourable towards research, with undergraduate students’ reporting that staff would value theory, research, and practice equally in their first year, but valuing theory and research significantly more than practice in their middle and fourth years. However, there was little evidence that students’ own task values were becoming more congruent with the values of staff. If students’ values are discrepant to those they perceive academic staff hold, they are likely to feel misunderstood, or disconnected from academic staff. This may in turn lead to dissatisfaction with the program, avoidance of class, or a range of maladaptive coping mechanisms, that could then lead to dropping out from higher education altogether.

These notions are consistent with previous research by Holmes (2014) who suggested that academic staff who teach into undergraduate psychology courses are significantly more interested in scientific activities within psychology than students are, and that this mismatch could lead to disengagement from the learning process, rather than an improvement to students’ values (Jacobs & Eccles, 2000). This would reflect a paradoxical effect, which runs counter to the theoretical and empirical evidence for EVT. Here, as students enter psychology with positive values towards the practice domain, the perception that academic staff value research significantly more than practice may lead to disengagement and a decline in research values. This is supported by the findings that the middle and fourth year students showed the greatest discrepancy between the perceived values of staff and friends and family to theory, research and practice.

Finally, across the undergraduate and postgraduate studies, students’ task values did not align, as suggested by expectancy-value theory, with what they perceived academic staff to value. Instead students’ task values were more congruent with personal social connections. One strategy to reduce the discrepancy between student and staff values towards research is
to incorporate qualitative and mixed methods approaches early in students’ studies (Povee & Roberts, 2014, 2015). Research suggests that students consider qualitative research approaches as akin to professional practice, as the methods often require the use of communication skills and building interpersonal relationships (Povee & Roberts, 2014). Further, students view qualitative methods as more meaningful and capturing of the ‘lived experience,’ which is much more in line with what they expect from their degree (Roberts & Castell, 2016).

At the postgraduate level, students generally perceived staff to value all three domains, with a small, but significant preference for theory over research, but with no difference between the value placed on practice compared to either theory or research. Postgraduate students have far more direct contact with academic staff, and experience greater exposure to the attitudes of staff, potentially leading to more accurate understanding of their values. Despite this, postgraduate students’ task values shared more similarities with the perceived values of personal connections than those of academic staff. While it is suggested that experts in psychology should be more influential for the development of students’ task values, this did not appear to be the case. These findings are not consistent with the hypotheses of this research, but could be consistent with EVT. The implications for the use of this model in a higher education setting are discussed.

**Implications for Expectancy-Value Theory in Psychology Higher Education**

**Social Influences**

Social influences are an important element in the formation of motivational beliefs towards a learning domain in primary and secondary students (Jacobs & Eccles, 2000). In tertiary students, studies that adapt or apply expectancy-value theory often neglect this facet (Hood et al., 2012). The studies in this thesis indicate that both personal and academic social influences are important for predicting students’ self-efficacy beliefs for a range of learning
domains at the tertiary level, but this may vary depending on students’ level of study.

The findings in the first-year study suggest that personal social influences are an important predictor of self-efficacy (for all domains) at the beginning of students’ psychology education. The relevance of students’ personal social connections in their first year may be in part due to the standard living arrangements of Australian tertiary students, as many Australian tertiary students choose to remain at home for at least part of their studies (Australian Bureau of Statistics, 2013; Brown, 2010). For this reason, future research with commencing tertiary students should also consider the impact of social connections external to the education setting, such as their friends and family members. The influence of students’ personal connections was reduced by the end of their first year, which might indicate that as students begin to develop their identity as a psychology student, and become part of the psychology student community, that their university peers may become more influential relative to their family and friends outside of university.

This appeared to be the case for the postgraduate students, since the postgraduate study showed that professional students perceived their peers to value theory and practice over research, while research-only PhD students considered their peers to value the three domains equally (consistent with PhD students’ attainment values). As postgraduate programs in psychology are very demanding, it is useful to know that students’ social influences, including personal and peer influences, may impact their development of self-efficacy and/or motivation towards the learning domains. This type of influence could be capitalised on by encouraging activities that harness this social influence, such as inter-program activities that involve research-only and professional psychology students.

**Subjective Task Values**

The current results indicate that attainment value may not be a good measure for predicting students’ development of self-efficacy beliefs in higher education. Expectancy-
value theory was originally developed with children and adolescents (Wigfield & Eccles, 2000), where the importance placed on performing well on a task can vary widely. However, this variability may not be present in tertiary students. The Australian higher education system is built around specific degree programs (Brown, 2010), which include a number of core courses or units that are required to be awarded a degree (i.e. Bachelor of Psychology). In addition, entry to the fourth year of psychology study is competitive, compelling students who seek to become a psychologist to place a great deal of importance on their performance in core courses (Cruwys, Greenaway, & Haslam, 2015), regardless of the content of those courses. Attainment value was not a significant predictor of students’ self-efficacy for research or practice at either the beginning or end of the first year of study, when examined longitudinally, and had a negative association with self-efficacy for theory. Although it should be noted that it remains unclear whether this phenomenon is specific to psychology, where competition for Honours and postgraduate study drives students’ perceptions of importance, or whether this is common to Australian tertiary students who are motivated principally to complete their degree.

In addition, despite the dearth of research on cost value (Wigfield & Cambria, 2010), this task value emerged as a significant predictor of self-efficacy for all three of the learning domains. These findings support those previously reported by Hood et al. (2012), where effort was found to be a significant predictor of performance in a second-year statistics course. Therefore, interventions that consider students’ cost attributions for each domain and manage these attributions effectively are required to facilitate improvements to students’ motivation and further develop their self-efficacy with higher cost domains (specifically, the research domain). While overall expectancy-value theory has been shown to be a suitable model for conducting research into the motivation and engagement of psychology students at all levels, for educators seeking to adjust their teaching processes a more applied model of
achievement motivation (Jones, 2009) that makes use of the key components of EVT is recommended.

**Implications for Psychology Educators**

**The MUSIC Model of Academic Achievement**

The MUSIC model of academic achievement (Jones, 2009) takes the most prominent motivation theories into consideration. In doing so, it may offer a useful framework for designing interventions and improving the motivational qualities of existing curricula. This model was designed to be easily understood by learning and teaching professionals and is largely concerned with curriculum design or re-development (Jones et al., 2015; Jones & Wilkins, 2013). The model synthesised research on student motivation and outcomes with the intention to make the scholarship of learning and teaching (SoLT) literature more accessible to teaching staff (Jones, 2009; Ruff & Jones, 2016). In addition, this model is consistent with some of the most critical elements of EVT that emerged from the current research studies, including the importance of social support, intrinsic and utility values, and self-efficacy. The authors of MUSIC suggest that instructors should design learning environments that foster motivation through five factors; by allowing students to have autonomy (empowerment), demonstrate the utility of material (usefulness), provide opportunities for mastery experiences (success), foster interest, and foster a sense of caring and belonging (Jones, Ruff, & Osbourne, 2015; Ruff & Jones, 2016). It is expected that, by designing learning environments that take these factors into consideration, students’ engagement with theory, research and practice and the integration of these will be enhanced.

Based on the findings in the longitudinal study (Study 2, Chapter 4), it is expected that early interventions – rather than simply focussing on the utility of domains – should be directed towards students’ experience of the academic environment. Specifically, as students transition into the academic culture, the influence of their personal social connections on their
self-efficacy beliefs are reduced. However, the impact of their academic connections on students’ self-efficacy does not appear to increase and, in fact, decreases for the research domain. In the first year, developing students’ sense of empowerment and social support (caring), as suggested by Jones and colleagues (2015), may be critical to the development of students’ academic identity and help create a sense of ownership and responsibility for their psychology studies (Jones et al., 2015; Lizzio, 2006). This is most important in introductory courses, where there is often a great deal of scaffolding for building students’ academic skills (Bennett, Roberts, & Creagh, 2016).

While providing this sense of connection with senior academic staff (lecturers and convenors) can be difficult within the large first year cohorts, there are a range of ways to facilitate connection with students’ peers and their tutors. Perhaps the simplest method is the use of small groups in tutorial classes to encourage peer interaction and a sense of belonging in the course (Ruff & Jones, 2016). Research into more structured transitional programs has shown positive results for students’ sense of belonging and identification with psychology (Burton et al., 2013; Lodge, 2012). These include peer mentoring programs between first- and third-year students to enhance psychological literacy as students’ transition into and out of their psychology degree (Burton et al., 2013), and a principal tutor program to facilitate connection between students and the psychology department (Lodge, 2012). Further research is needed to address the extent that greater autonomy helps or hinders first year students’ performance in their courses and the development of graduate attributes, as well as the impact that increased autonomy over course decisions can have on later year students.

Too much autonomy early in their studies can prevent students from gaining mastery experiences (or a sense of capability or accomplishment) with each domain. Creating opportunities for students to feel a sense of mastery (success) is an important aspect of the MUSIC model (Jones, 2009) that is consistent with self-efficacy or students’ expectancies for
success (Bandura, 1997; Wigfield & Eccles, 2000). The findings in this thesis demonstrated that first year students developed self-efficacy in research and communication skills, suggesting that the current scaffolded approach is effective at building students’ perceptions of success. However, the research self-efficacy reported by middle and fourth year students suggest that these students could require more opportunities to experience mastery of research topics to apply these skills.

While the current findings suggest that a greater focus may be needed on developing a psychological identity in the first year of study, there is much support for the effectiveness of utility interventions for improvements to student interest and performance in both the early and later years of study (Hulleman et al., 2010). The application of the MUSIC model to problems of student engagement allows for barriers to engagement, such as low interest or perceptions of usefulness, to be identified and for the effectiveness of different utility interventions to be evaluated (Canning & Harackiewicz, 2015; Hulleman et al., 2010).

Interest is considered a crucial component in students’ motivational processes, guiding students’ attention, their experience of enjoyment or boredom during a class, and governing the level of effort they are willing to put into their studies (Harackiewicz et al., 2016). Further, this construct can be divided into individual interest, which is an enduring state of interest in a topic, or situational interest, which occurs when a topic engages an individual’s attention and affect (Knogler, Harackiewicz, Gegenfurtner, & Lewalter, 2015; Harackiewicz et al., 2016). In psychology, students tend to have high levels of individual interest towards practitioner activities and low levels of individual interest in scientist activities (Holmes, 2014). Therefore, educators are generally tasked with improving situational interest by maximising the engaging properties of their courses.

Harackiewicz et al. (2016) outlined four strategies to improve situational interest, these included altering the structural features of courses to be more exciting or novel, personalising
the context to take advantage of an individual interest (for example, teaching statistics in the
context of tracking patient outcomes), utility interventions, and problem-based learning.
Research by Sizemore and Lewandowski (2011) suggests that context personalisation does
have an impact on interest, but this impact does not contribute to better performance in the
area. On the contrary, research on utility interventions has shown significant positive
outcomes on students’ interest and performance. Utility interventions can be approached in
different ways, but must involve a manipulation that encourages students to make
connections between what they are learning and their everyday lives (Hulleman, Kosovich,
Barron, & Daniels, 2016). These manipulations can be as simple as asking students to write a
paragraph describing the relevance of a specific topic or domain to their lives or how they
might use new content in their future (Hulleman et al., 2010, 2016). The cost-effectiveness of
utility interventions makes this an attractive option for enhancing student engagement.

However, it is not sufficient to design courses that enhance engagement with the three
domains while continuing to allow these domains to be taught in silos. To enhance students’
ability to apply the three domains meaningfully to personal, professional, and societal issues,
psychology education must improve the level of integration in its undergraduate and
postgraduate learning environments. Lastly, Harackiewicz and colleagues (2016)
recommended the use of problem-based learning (PBL). This approach requires the greatest
resources for both its development and implementation, but offers greater gains to ancillary
skills, such as team work, critical thinking, and problem-solving (Karantzas et al., 2013). The
following section will discuss the relevance of PBL to psychology education today and
provide some recommendations for its inclusion.

**Problem-Based Learning**

Problem-based learning (PBL) was defined by Barrows (2000) as a focussed approach
to learning, which is experiential, group-based, and revolves around specific problems. PBL
has a long history in medical education (Walker & Leary, 2009). The following excerpt shows that the training dilemma faced by medical schools in the 1960s bears remarkable similarity with the issues facing psychology educators today:

This approach [PBL] to learning arose, in part, from a sharp contrast between experiences at the beginning and end of medical school. During the first two years, students were put off by learning vast amounts of factual information, unsure of its connection to their future practice. During their residency however, they tended to be highly motivated while engaging with patients and their problems (Spaulding, 1969).

(Walker & Leary, 2009, p. 1)

The purpose of PBL in both medical education and, more recently, psychology education is to improve students’ awareness of the connection between what they are learning and how this can be applied to a real-life setting (Karpiak, 2011; Stevens et al., 2015). This is especially important for competency-based assessments, which have been in use for professional programs with an area of practice endorsement since 2013 (APS, 2013). The strategies used by PBL includes using ill-defined problems and instructors acting as facilitators rather than teachers. This is intended to produce more integrated and coherent knowledge structures that permit students to display conceptual understanding of the topics (Budé, van de Wiel, Imbos, & Berger, 2011). Thus, the approach is designed to target both students’ engagement with course content and their ability to apply the relevant concepts to practice (Stevens et al., 2015; Walker & Leary, 2009).

PBL was recommended for postgraduate coursework programs to enhance the integration of theory, research, and practice (Stevens et al., 2015). This was rated more engaging and professionally relevant by program directors (Scott et al., 2011). However, Stevens et al. (2015) argued that the introduction of PBL approaches at the postgraduate level can have unintended effects, such as anxiety and poor performance, as students adjust to the
new learning framework. These issues are less likely to occur in medical students, as they are accustomed to problem-based training and assessments through their undergraduate degree (Hmelo-Silver, 2004; Stevens et al., 2015). Problem-based learning therefore should be considered at both undergraduate (Karpiak, 2011) and postgraduate (Kiernan et al., 2008) levels. The shift towards building and assessing competencies in psychology students at all levels is critical. It is anticipated that the new APAC standards (AQFC, 2013) will require appropriate teaching strategies to address this. Research into PBL approaches indicate that these methods may be effective at enhancing students’ engagement with the learning process and provide opportunities for mastery experiences (Hmelo-Silver, 2004; Scott et al., 2011).

Currently, psychology courses are mostly dedicated to a specific topic area or domain, which limits the integration of theory, research, and practice (Stoloff, Good, Smith, & Brewster, 2015). This persists into the design of PBL activities, with most research focussing on a specific area of psychology, such as statistics (Budé et al., 2010; Karpiak, 2011) or introductory psychology topics (Muehlenkamp et al., 2015). Integrating theory, research, and practice into a collaborative and PBL approach has been found to have a positive impact on students’ self-reported critical thinking and problem-solving skills (Karantzas et al., 2013). PBL methodology may be an effective way to integrate theory, research and practice throughout the undergraduate degree. This would aid students to develop psychological literacy by applying what they know of psychology to real world problems. Postgraduate psychology students’ show a preference for PBL approaches over lecture formats (Scott et al., 2011). Nevertheless, formal evaluations have not consistently supported the superiority of PBL for sustaining student motivation or competency development (Baillie et al., 2011).

**Research Participation and Collaboration**

In most Australian universities, first year students are involved in research as participants (Roberts & Allen, 2012, 2013), but rarely as active members of a research team.
According to Roberts and Allen, greater use of undergraduate research teams can have a positive impact on students’ critical thinking, conceptual understanding, and motivation to engage in research-related tasks. Similarly, the establishment of practice-research networks (PRNs) is also recommended to foster a scientist-practitioner identity among Masters, PsyD, and research-only PhD students, and to enhance students’ self-efficacy. The establishment of practice-research networks by universities and/or professional societies could foster an environment of collaboration and encourage postgraduate students in all programs to engage in practice-based research driven by problems encountered in the community (Castonguay et al., 2013; Tasca et al., 2014). This would allow students to see the practical relevance of their skills, encourage them to remain active in scholarship after they graduate, and would help to establish a diverse research profile.

The current section offered recommendations for enhancing students’ subjective task values and self-efficacy beliefs that can be employed by individual instructors looking to improve student outcomes from their course(s). It is also recommended that Australian psychology programs take an integrative approach to training. However, this relies on a whole-of-school approach, which may not be feasible in many higher education settings, unless change occurs at the policy level. The following section offers some tentative suggestions for the future of psychology education and training in Australia.

**Implications for Policy**

The scientist-practitioner model is one of the most lauded training philosophies in psychology. While the model has undergone much criticism since its inception in the 1950s, these criticisms have largely related to the application and outcomes of the model, rather than the ideals of the model itself (Chwalisz, 2003; Long & Hollin, 1997). In this, the current study makes no exception – the main findings presented herein suggest that the current application of the scientist-practitioner model in Australia is limited in its ability to produce
graduates who are psychologically literate or who embrace the notion of being a scientist-practitioner. The scientist-practitioner model in Australia is applied in an asynchronous manner, which places the science of psychology in the undergraduate years and professional psychology training in the postgraduate years (APAC, 2010; APS, 2012). Several authors have argued that psychology training must integrate the skills and literacies of the scientist with those of the practitioner (Dyck & O’Donovan, 2003; Provost et al., 2010; Wiberg, 2009). These skills must remain developmentally appropriate for students at each stage of their education. However, the learning domains continue to be taught in isolation (Roberts, 2016; Stoloff et al., 2015), usually at both the undergraduate and postgraduate levels. It is clear from the different patterns of results for theory, research, and practice, that students can differentiate the three domains based on the perceived value each offers, and that this is not currently aligned with the outcomes psychology educators seek to deliver for their students.

The studies conducted in this thesis were undertaken during a time of educational reform. There has been ongoing debate into the ways in which generalist and specialist training pathways can be improved (Bond & Cornish, 2016; Littlefield, 2016a, 2016b), sparked by recent developments in the European psychology education and training model (Lunt et al., 2011). Further, the Australian Council of Learned Academies (ACOLA) released a report on the Australian research training system, with a range of recommendations to improve the research training environment and encourage greater skill development and industry connections in higher degree research programs (McGagh et al., 2016). The current findings do not directly inform these issues, but can offer some general suggestions based on the available alternatives and the current findings with students’ task values and self-efficacy beliefs. Littlefield (2016a) offered a range of new sequences to reform the structure of psychology education and training in Australia. Foremost of these was the ‘3+2+1,’ which involves a 3-year Bachelor, followed by a 2-year generalist Masters, and 1-year of supervised
professional practice for general registration. The primary difference between this model and the current 5+1 model is the integration of the fourth and fifth years of training (Littlefield, 2016a, 2016b).

The current study found that fourth year students did not differ significantly from middle (second and third) year students on their self-efficacy beliefs for the three domains. Further, as discussed, Scott et al. (2011) found that clinical students would prefer a reduction in the theoretical and research requirements of their training programs. While this suggests that theory and research domains are not highly valued by students (as does the current results), other research suggests this may be prompted by the high workload that clinical psychology students report in masters and doctoral programs (Nedeljkovic et al., 2014; Scott et al., 2011). To alleviate these workload issues, and reduce postgraduate students’ perceptions of the high cost of theory and research, it is recommended that the proposed changes to the fourth and fifth years of study be considered a viable option.

The integration of fourth and fifth year studies would reduce repetition of early content, expose students to greater depth, and facilitate greater integration between theory, research, and practice (Littlefield, 2016a, 2016b). Further, as current fifth year programs (i.e. 1-year Masters) do not require a research thesis, students would have two years to complete their research project (APAC, 2010; Littlefield, 2016a). However, it is not sufficient to restructure the accredited training pathways and anticipate significant change to the quality and preparedness of graduates; in this model, the initial 3-year degree would require re-development to provide a greater level of integration of the three learning domains to ensure third-year graduates are adequately prepared to enter a generalist Masters sequence.

**Limitations and Future Research**

The scholarship of learning and teaching remains a developing field of research. As such, benchmarks of quality have only recently been introduced (Wilson-Doenges & Gurung,
2013). The gold standard in learning and teaching research involves an experimental design, based on a strong theoretical foundation, tracking of student outcomes, large and multi-site samples, mixed methods approaches, and advanced statistical analysis (Wilson-Doenges & Gurung, 2013). As the current study aimed to understand students’ motivation towards theory, research, and practice, across the span of undergraduate and postgraduate psychology education, an experimental design was not feasible. Thus, the current research aimed to meet the following standards; first, the studies were based on expectancy-value theory (a well-established framework for understanding students’ achievement motivation); second, diverse samples were collected to be representative of the Australian psychology student population, and third, statistical analyses were multivariate and appropriate. However, the use of multi-site sampling also made it impractical to collect students’ attendance, grades or other objective measurements of performance. Therefore, future research should examine the impact of social influences and task values directly on students’ performance in specific units or on their development of competencies across different domains. The methodological and conceptual limitations to the assessment of the learning domains will be discussed, followed by an evaluation of the sample size used for each study.

**Assessment of the Domains**

Across all three studies, the theoretical domain was less homogenous than either the research or practice domains. Psychology students appear to have a firm understanding and relatively coherent beliefs about the research and practice domains, whereas the findings from the three studies suggest more variability in students’ responses towards the theoretical domain. Rowley et al. (2008) suggest that students may have different beliefs about theories derived from social psychology research and related fields and courses that involve more ‘hard’ science, like cognitive, neuropsychology, and biological approaches. As students’ motivation for theory was significantly lower than that for practice, the recommendations
provided throughout these three studies for improving engagement with the research domain may also be applicable to courses with a strong emphasis on theory, especially those that are generally considered more difficult (such as cognitive or biological psychology courses; Rowley et al., 2008). Further, the utility of such courses should be emphasised at the first-year level. The risk of attrition is greatest in the first year of study (Yorke, 2001), and many students will struggle to see the relevance of learning the anatomy and physiology of the brain if they have yet to grasp that psychology is a science as well as a helping profession (Goedeke & Gibson, 2011). Research that seeks to examine motivational factors aimed at a domain-level should be aware of the heterogeneity of the theoretical domain when assessing or drawing conclusions about the heavier psychological sciences. The research and practice domains appeared to be internally consistent.

Assessment of Psychological Literacy

Murdoch (2016) identified several issues with the graduate outcome of psychological literacy that are relevant to the current findings. First, the conceptualisation of psychological literacy provided by McGovern et al. (2010) and expanded on in Cranney and Dunn (2011) utilises nine different elements. These include skills that can be considered normative for higher education, such as developing critical thinking, ethical conduct, and cultural competence. Murdoch criticised such a broad definition, stating that only two elements (understanding the principles of psychology and applying these principles to psychological problems) are exclusive to psychology training with the remaining elements generic to an effective undergraduate education. The current measure offset this criticism by targeting these two elements when defining students’ self-efficacy for using the domains in psychologically literate ways. However, as research into the graduate outcome of psychological literacy grows, it becomes more relevant to reach a consensus on how psychological literacy will be operationalised and assessed within undergraduate, and even
postgraduate, samples. Thus, future research should endeavour to design a valid and reliable measure of psychological literacy, which captures both the essential components of applying psychological knowledge effectively to problems, and the peripheral skills or attributes associated with being a ‘global citizen’ (Cranney & Dunn, 2011; Heritage et al., 2016; Murdoch, 2016). In developing this new measure, objective assessments of students’ knowledge and skills should be incorporated in the validation process to ensure the measure represents meaningful improvement to students’ graduate knowledge, skills, and attributes (Heritage et al., 2016; Roberts et al., 2015).

**Issues with Student Samples**

The sample in each study had limitations that must be discussed. In the first study, second and third year students had significantly lower response rates than first year students or fourth year students. The first and fourth year groups at most higher education providers had a staff member responsible for them (e.g., first year coordinator, fourth year program convenor). Second and third year students were contacted through an ‘undergraduate program convenor’ where possible, or through academic staff responsible for teaching core second and third year courses. The lower response rate may also be due to rebound resistance to participate in research after being required to do so in first year, which may not occur with fourth year students, as they are actively involved in their own research and have greater awareness of the hardships of data collection.

In the second study, the small Time 2 sample limited the power of the conclusions that could be made when interpreting the Time 2 regression results. This is especially important as the significant predictors of self-efficacy for each domain were different at Time 1 and Time 2. If these findings represent how students’ social influences and task values affect their self-efficacy, further research is needed to explore how the influence of these factors change over the course of students’ undergraduate degree. So, while it was beyond the scope
of the current research project, it would be pertinent to follow a sample of first year students through the entirety of their psychology education using a mix of qualitative and quantitative responses to track how their motivational factors interact with their development, grades, and satisfaction.

The third study was not representative of all postgraduate pathways in psychology. The postgraduate study compared students enrolled in a Master of Psychology, Doctor of Philosophy, and Doctor of Psychology (or Master of Psychology with concurrent PhD). Each group of psychology students was adequately represented in the current series of studies, except the group most critical to recent discussions of the training model and changes to registration pathways (Bond & Cornish, 2016; Littlefield, 2016a, 2016b). The 5+1 pathway includes a 5th year equivalent, 1-year program (Master of Applied Psychology). While course and program convenors for these programs were contacted, there were not sufficient responses from enrolled students to form a comparison group. As the major recommendations for change to the psychologist registration pathways will have the greatest impact on these programs (Littlefield, 2016a, 2016b), it is advised that future research investigate the differences in values, self-efficacy beliefs, and objective outcomes from 5th year equivalent programs compared to the more common two-year Masters programs.

Concluding Comments

As the higher education funding situation for psychology training is unlikely to change in the foreseeable future, it is important that psychology educators are innovative in the way that they deliver their content. Many of the recommendations included within this thesis have resulted from research into the scholarship of learning and teaching, with instructors taking innovative and theory-driven approaches to developing students’ graduate attributes. The concept of academic staff working as ‘scientist-educators’ has been gaining momentum and has resulted in some important findings that advances our understanding of how best to
educate students. However, for this to become the norm in academia, psychology schools need to provide support for educators wishing to establish research into the scholarship of learning and teaching, in addition to providing support and incentives for the continued re-development of their courses or units. The changes to the AQF and the new APAC standards provide direction to guide educators in this endeavour (AQFC, 2013).

The current thesis identified areas where students struggle to develop positive values towards learning domains in psychology. The findings reported throughout converge on the conclusion that students in psychology would benefit from greater integration and more applied experiences in their psychology education. In addition, research-only PhD students would benefit from greater preparation for their studies than is currently offered via standard pathways to a higher degree by research in Australia, a recommendation made recently in the ACOLA review. Several directions for future research were provided to improve our understanding of undergraduate and postgraduate psychology students’ motivation and how their experience of psychology education shapes students’ graduate outcomes. Major directions for future research from the current thesis involve the development of a definitive measure of psychological literacy and a methodology to assess psychological literacy as a graduate outcome for undergraduate psychology students, and further research into the value and outcomes of the professional training programs that lead to registration as a psychologist. For psychology educators, this thesis reviews interventions and provides recommendations for curriculum design to improve students’ engagement with their courses. Psychology education is entering a new era of quality training for its students guided by the principles of scholarly learning and teaching. The quest to engage and motivate the next generation of psychology students is pivotal to ensuring the future of the discipline.
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Dear Miss Green,

I write further to the additional information provided in relation to the conditional approval granted to your application for ethical clearance for your project "NR: Graduate Outcomes for Psychology: A Nation-wide Exploration of Expectancy-Value Theory within the Domains of the Scientist-Practitioner Model of Training" (GU Ref No: PSY/F7/14/HREC).

This is to confirm receipt of the remaining required information, assurances or amendments to this protocol. Consequently, I reconfirm my earlier advice that you are authorised to immediately commence this research on this basis. The standard conditions of approval attached to our previous correspondence about this protocol continue to apply.

Regards,

Ms Kim Madison
Policy Officer
Office for Research, Bray Centre, Nathan Campus
Griffith University