Predictors of Academic Achievement, Motivation and Student Disengagement in University Students

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Statement of Sources

I declare that this report is my own original work and that contributions of others

have been duly acknowledged.

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Abstract

The aim of this study was to expand the work on academic achievement and motivation by examining the relationships among success-orientation, fear-of-failure and academic disengagement in university students. Further, the cognitive-behavioural Quadripolar and Motivation and Engagement theories were included to determine whether the models independently contribute to the prediction of self-handicapping and defensive pessimism. Participants were 110 university students enrolled at the University of Tasmania who completed a standardised questionnaire assessing achievement orientation. The hypothesis that fear-of-failure would positively correlate with self-handicapping and defensive pessimism in university students was partially supported. A strong positive correlation was found between fear-of-failure and self-handicapping, however a non-significant correlation was found between fear-of-failure and defensive pessimism. Secondly, the hypothesis that success-orientation would be negatively associated with self-handicapping however positively associated with defensive pessimism was refuted as a non-significant correlation was found for both relationships. The hypothesis that there would be an interaction between success-orientation and fear-of-failure on self-handicapping was also refuted. Lastly, due to the substantially small sample it was not possible test the hypothesis that the dimensions of the Quadripolar Model of Need Achievement would be positively associated with theoretically similar dimensions of the Motivation and Engagement Wheel. Instead, the dimensions of each model were compared for predictive utility regarding self-handicapping and defensive pessimism. It was concluded that fear-of-failure in university students is a significant predictor of self-handicapping. However further research is required with a larger sample size to determine if the two theories are independent from each other.

The importance of understanding student motivation and engagement in the university context cannot be overestimated. High motivation and engagement has been associated with a range of positive outcomes (e.g. excelling on tasks, graduating from course/degree, progressing onto post-graduate courses and future career options; Klem & Connell, 2004) whereas low motivation and engagement has been associated with negative outcomes (e.g. financial costs and consequences of failing a course; Nevill & Rhodes, 2006). In university settings academic outcomes are extremely important due to the high-risk learning environment in which performance outcomes can make the difference between a satisfying career and failure to achieve accredited qualifications. University education requires students to learn and adapt to new educational environments, and to cope with numerous associated stressors such as increasing study demands, competing assignment deadlines, ambiguous tasks and exam preparation (Ross, Niebling, & Heckert, 1999), all of which require the student to be highly engaged and motivated. Furthermore, due to the weight placed on university academic outcomes there is greater pressure on students at a university level than a high school level to be self-directed in their study and to delegate their time more effectively. Despite the high-risk learning environment of university, a relative dearth of research has focussed on this vulnerable population, and instead has primarily been orientated towards high school students and how motivation and engagement influences their future academic success (Parker, Summerfeldt, Hogan, & Majeski, 2004). However, considering the heavily weighted implications associated with university academic outcomes and the continuously changing demographics of the university population it is imperative that the mechanisms that underpin motivation and engagement are understood.

There are many different conceptualisations of student engagement and motivation in academic literature, however they all share similar underlying characteristics that involve a student's attention, involvement and persistent effort directed at learning (Klem & Connell, 2004; Marks, 2000) that in turn influence a student's academic successes and failures. Student motivation and engagement are often terms coupled together as for a student to be engaged in their studies they must also be motivated, for example to reach a set goal (e.g., high marks on an assignment or graduating from a degree) or to avoid failure (Pintrich, 2003). Student motivation and engagement can be viewed on a continuum in which levels fluctuate over time, and in response to various challenges that students may be facing including increased workload and time pressures (Lutz, Guthrie, & Davis, 2006). This reveals that students cannot be simply classified as either possessing or lacking motivation and engagement, but instead experience a complex interaction of the two constructs which vary between individuals and over time.

In academic settings students are concerned with wanting to be perceived as competent students that work hard and succeed in tasks (De Castella, Bryne, & Covington, 2013). In contexts such as universities where performance is assessed the consequences associated with failure are high in terms of both self-perceptions and career opportunities. Students can avoid such failure by succeeding in academic tasks or by managing and/or altering their meaning of failure by engaging in deflective strategies (i.e. self-handicapping and defensive pessimism) designed to externalise the cause of failure (De Castella et al., 2013). Researchers have found that differences in student approaches to avoiding failure can be explained by the cognitions underpinning such behaviour, and as such primarily categorise students as having a fear-of-failure (i.e. being motivated by fear of anxiety associated with

failure) or being success-orientated (i.e. being motivated to do well; Martin & Marsh, 2003). Students who are high in fear-of-failure are characterised by their fears and doubts in their ability to succeed in academic tasks whereas students who are highly success-orientated are argued to be motivated, resilient and excited to learn (De Castella et al., 2013). Having a strong success-orientation enables a student to be resilient in the face of failure, persist for high academic outcomes and remain engaged in their studies (De Castella et al., 2013), whilst a fear-of-failure can either act as a motivational drive for a student to persist and try hard in academic assessments or it can make them vulnerable to disengage (Martin & Marsh, 2003).

Self-Worth Theory and Deflective Strategies

Self-worth theory is often used as a theoretical framework when examining why some individuals are success-orientated and others have a fear-of-failure (De Castella et al., 2013). Self-worth theory is based on the premise that the search for self-acceptance is the highest priority an individual can strive for (Covington, 2009). It is this search for acceptance that leads individuals towards certain orientations (i.e. approach success or fear failure; De Castella et al., 2013). According to Covington (1992) in a university setting self-acceptance is achieved from academic success and competence in a task which in turn increases an individual's sense of self-worth. However this can exacerbate anxiety and further reinforce engagement in maladaptive strategies (i.e. self-handicapping) for students who are already vulnerable. This tends to occur less in highly success-orientated students as they already have a strong sense of self-worth (Simons, Van Rheenen, & Covington, 1999) in which succeeding in academic tasks only acts to further reinforce their positive self-beliefs.

Unlike success-orientated students, students who fear failure commonly have a low sense of self-worth (Simons et al., 1999). Incompetence or failure (perceived or actual) in a task lowers a student's sense of self-worth, confidence and self-esteem regardless of their success/failure orientation (Covington, 2009). Research has shown that in order to protect their self-worth, students who fear failure often employ deflective strategies aimed to alter the meaning of such failure (De Castella et al., 2013). Students who try to avoid the negative implications associated with failure rationalise that these deflective strategies are the cause for their failure on a task rather than lacking the ability, thereby protecting their sense of self-worth by externalising the cause of failure (Simons et al., 1999). Two common deflective strategies are self-handicapping and defensive pessimism (De Castella et al., 2013; Martin, Marsh & Debus, 2001a).

Self-handicapping is a strategy that places the cause of failure away from the student's ability, using pre-planned excuses such as 'I failed because I was too busy to study' (De Castella et al., 2013). This strategy alters the meaning of failure as failure from lack of effort is less debilitating than failure following effort, thus protecting an individual's sense of self-worth (Norem & Cantor, 1986a). Self-handicapping is evident through a number of behaviours such as task avoidance, procrastination, purposely withholding effort, alcohol or drug use, and engaging in activities that may debilitate performance on an academic task (Urdan & Midgley, 2001). Much of the research on academic self-handicapping has been associated with a range of negative academic outcomes including lower academic achievement, lower self-esteem and disengagement from studies (Urdan & Midgley, 2001). Thus it would seem that although it appears to alleviate distress in the short-term, it can result in a series of negative long-term outcomes.

Similarly, defensive pessimism is another strategy students use to alter their meaning of failure. Defensive pessimism is used when an individual disregards their past successes and lowers their expectations of future performance before engaging in a task (Norem & Cantor, 1986a; De Castella et al., 2013). An example of defensive pessimism in an academic context includes a student having a preconceived idea that they are going to fail on a task, even if they have previously succeeded on a similar task. If failure should occur this strategy prepares and protects students from the anxiety and loss of self-esteem associated with failing (Norem & Cantor, 1986a). Similar to self-handicapping, defensive pessimism appears to alleviate distress in the short-term however it is associated with a series of negative long-term outcomes such as fatigue, emotional variability and eventually lower academic performance (Norem & Cantor, 1989). Defensive pessimism in an academic context has not received as much attention as self-handicapping in the literature. This may be due to the fact that unlike self-handicapping which has an array of strategies students can employ, defensive pessimism primarily only has one strategy thus the need for such research may not have been warranted as the motivations, behaviours, and consequences are considered clear. The current study will therefore help to expand the research and give insight into the defensive pessimism strategies employed within a university context.

Whilst self-handicapping and defensive pessimism may act to protect the students' sense of self-worth in the short term in the long term the failure that students are trying to avoid often occurs regardless (De Castella et al., 2013). This is primarily because after continued use of these strategies the excuses become transparent and begin to lose much of their self-protective value (De Castella et al., 2013). This reveals that ultimately self-handicapping and defensive pessimism are

not adaptive strategies to be used in an academic context for achieving academic success (Martin, Marsh, Williamson, & Debus, 2003). Furthermore, this also suggests that deflective strategies are increasingly likely to hinder, rather than foster, a student's motivation and engagement in their studies.

Quadripolar Model of Need Achievement

Particularly in educational psychology, researchers have been interested in why some students learn and perform well in learning contexts while other students struggle to attain knowledge and resultantly perform poorly academically (Pintrich, 2003). A prominent theory in the academic achievement and motivational literature is Covington's (1992) Quadripolar Model of Need Achievement (QMNA). This theory provides a framework for understanding the motives students use to avoid failure and approach success (Martin et al., 2001a). In contrast to previous conceptualisations in which success-orientation and fear-of-failure were considered as opposites of the behavioural spectrum, the QMNA attempts to explain the different motivational drives that result when students are either highly success-orientated, failure-fearing, or have an interaction of the two (De Castella et al., 2013). The two-dimensional structure of the model as shown in Figure 1 allows students to be categorised into one of four orientations: optimists, overstrivers, self-protectors and failure acceptors (Martin & Marsh, 2003). This theory is primarily applied to academic achievement literature as it provides explanations for disengagement and underperformance whilst simultaneously integrating self-handicapping and defensive pessimism strategies used by students to protect their self-worth (Martin et al., 2001a). Integrating self-handicapping and defensive pessimism into the model allows researchers and teachers to see what type of

students are most at risk of using these types of deflective strategies and the

preventative measures that can be put in place to reduce their use.

High Fear of Failure

Self Protectors   Overstrivers

Low Success   High Success
Orientation   Orientation

Failure Acceptors   Optimists

Low Fear of Failure

Figure 1. The Quadripolar Model of Need Achievement

Optimists

According to the QMNA students who are classified as optimists are high on

success-orientation and low on fear-of-failure (De Castella et al., 2013). These

students are argued to be characterised by their self-confidence (e.g. to succeed in a

task), resiliency, and high motivation and engagement in tasks (De Castella et al.,

2013). Due to the confidence optimists have in their abilities they are less likely to

engage in deflective strategies such as self-handicapping and defensive pessimism as

failure is something that is not often contemplated by these individuals (De Castella

et al., 2013).

Overstrivers

Individuals who manage their fears of failure by working hard to avoid such

failure meet the criteria of an overstriver. Overstrivers are high on both success-

orientation and fear-of-failure (Martin & Marsh, 2003; De Castella et al., 2013). Performance in overstrivers is largely driven by fear of underperformance (i.e. failing) thus anxiety and low self-control remain high in these students (Martin & Marsh, 2003). Whilst students in this category often achieve success, it is often at a cost (De Castella et al., 2013). Constant hard efforts to avoid failure commonly results in students feeling fatigue, burnout and difficulty dealing with setback and/or challenges (Hui-Jen, 2004). Although overstriving students may demonstrate defensive thinking it is unlikely to translate into deflective strategies/behaviours such as self-handicapping and defensive pessimism (De Castella et al., 2013). This is because these students still have high success-orientations in which their equally high levels of fear-of-failure serve to foster their academic performance.

Self-protectors

Students high on fear-of-failure and low on success-orientation meet the criteria for self-protectors. Rather than trying to prevent failure like overstriving students, self-protectors aim to reduce and avoid the implications of failure (De Castella et al., 2013). This is often accomplished by using deflective strategies to protect their self-worth (Martin & Marsh, 2003). This allows the student to externalise failure through the use of pre-meditated excuses such as 'lack of time to study' or exceptionally low expectations, rather than inferring that failure occurred due to a lack of ability (Martin & Marsh, 2003). Although these students are predominantly driven by their fears of failing, unlike overstrivers their fear-of-failure overrides their desire to succeed (De Castella et al., 2013). These students are at a higher risk of using strategies such as self-handicapping and defensive pessimism to protect their self-worth than optimists and overstrivers.

Failure acceptors

Students low on both the dimensions of success-orientation and fear-of-failure are classified as failure acceptors (De Castella et al., 2013). According to the QMNA these students are indifferent to academic success and often disengage from their studies (Covington, 1992). Researchers have found that students who were classified as failure acceptors were unconcerned with failure and the consequences that may arise from it, thus their self-worth is not damaged and the need to engage in protective strategies such as self-handicapping and defensive pessimism is low (Covington & Roberts, 1994). It has been argued that failure acceptance is associated with the poorest academic outcomes (De Castella et al., 2013) not necessarily due to lack of ability, but due to failure to learn the information in the first place due to interference by deflective strategies or disengagement (Covington & Roberts, 1994).

Supporting evidence for the QMNA

Research with high school and university students has supported the QMNA's four proposed orientations. De Castella et al. (2013) employed the QMNA to examine how fear-of-failure and success-orientation were related to self-handicapping and defensive pessimism in Japanese high school students. Students completed a series of questionnaires assessing achievement orientation and self-protective strategies. De Castella et al. (2013) found that self-handicapping was highest when students were low in success-orientation and high in fear-of-failure. It was also found that students who were high in success-orientation (i.e. optimists and overstrivers) were less likely to engage in self-handicapping, however reported higher levels of defensive pessimism about future performance (De Castella et al., 2013).

Martin et al. (2001a) examined the QMNA and its relationship with self-handicapping, defensive pessimism, reflectivity and self-worth among university

students. It was found that defensive pessimism was positively correlated with fear-of-failure (i.e. overstrivers and self-protectors) whilst self-handicapping was largely employed by students who were high in fear-of-failure but low in success-orientation (i.e. self-protectors; Martin et al., 2001a). Whilst these findings support the dimensions of the QMNA Martin et al. (2001a) did not directly measure success-orientation and fear-of-failure, rather they were represented by a group of observed variables. Thus results must be interpreted with caution as measuring these concepts indirectly may produce ambiguity in their meaning. Martin et al. (2001a) suggests that direct measures need to be established for measuring success-orientation and fear-of-failure.

Simons et al.'s (1999) study that investigated 361 university student athletes' motivational drives and academic achievements also lends support to the QMNA. Using the theoretical basis of self-worth theory and the QMNA students completed a survey examining their attitudes and motivation towards study. It was found that success-orientated athletes, including overstrivers, were highly motivated to achieve well academically and had greater achievement outcomes than athletes who feared failure and were failure acceptors (Simons et al., 1999). Furthermore success-orientated students were found to have higher levels of self-worth than failure acceptors, supporting self-worth theory (Simons et al., 1999). However, the generalisations of such findings are limited due to only examining a specific sub-population of university students. As these participants were used to performing at an elite level athletically the ability to perform at such a high level may have carried over to their academic performance, thus may have skewed their success and failure orientations. Alternatively, as these participants were athletes who continuously engage in strenuous activity their concentration and motivation to focus on academic

tasks may be fatigued (Simons et al., 1999) thus findings may change when using a more representative university sample.

The Motivation and Engagement Wheel

An alternative model that aims to explain academic motivation and engagement in students is the Motivation and Engagement Wheel (MEW). This model aims to represent the cognitive thoughts and feelings along with behaviours that underlie academic engagement (Martin & Marsh, 2006). The MEW as displayed in Figure 2 is comprised of 11 first order factors (e.g. failure avoidance and self-efficacy) that are categorised into four higher-order factors: adaptive cognitions, adaptive behaviours, maladaptive cognitions and impeding/maladaptive behaviours (Martin, 2007). The model can be separated in terms of motivational factors that enhance academic motivation and motivational factors that reduce academic motivation (i.e. self-handicapping; Martin & Marsh, 2006). According to the MEW students who are high on the adaptive dimensions and low on the maladaptive dimensions of the wheel are academically motivated and engaged in their study whereas students high on the maladaptive dimensions and low on the adaptive dimensions are less motivated and more likely to engage in self-protective strategies (i.e. self-handicapping; Martin & Marsh, 2006).

Research has demonstrated support for the MEW. For example, Martin and Marsh's (2006) study provided support for the MEW when examining academic resilience in 402 high school students using the theory's accompanying instrument the Motivation and Engagement Scale (MES; Martin, & Marsh, 2006). From using this model as a theoretical basis and employing the MES, Martin and Marsh (2006) concluded that self-efficacy, control, planning, low anxiety and persistence promoted academic resilience and therefore increased motivation and engagement. These

findings are similar to those found using the QMNA when examining students who achieve well academically and have high success-orientations.

Further evidence that supports the theoretical framework of the MEW is Martin's (2009a) study. Martin (2009a) examined motivation and engagement across primary, high school and university students using the MES. Findings supported the MEW in which maladaptive and impeding dimensions of the Wheel were associated with lower academic motivation and engagement (i.e. reduced academic success) whilst adaptive dimensions were associated with increased engagement in academic tasks. Martin (2009a) also found that primary school students were more motivated than university students. This finding emphasises the urgency of the research that is needed in the motivation and engagement literature in university populations to understand why academic motivation and engagement may lack in this group.
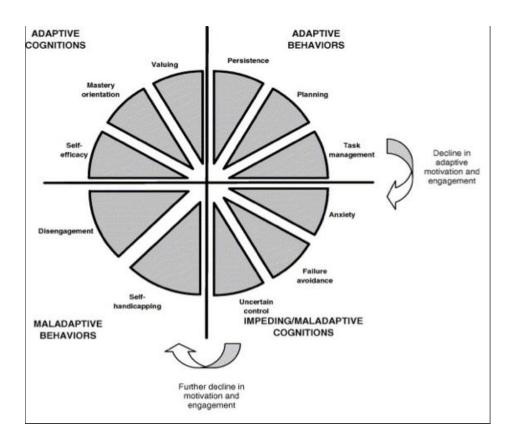

Figure 2. The Motivation and Engagement Wheel

Overlap in Theories

To date, research in the field of academic motivation and engagement has been criticised for being inconsistent and fragmented (Pintrich, 2003; Martin, 2007). Inconsistency in the literature may be due to a failure to adopt a single model that comprehensively explains academic achievement and motivation in students. Currently the two most commonly used models are Covington's (1992) previously mentioned QMNA and the MEW (Martin, 2007). Although the MEW is proposed as a separate and distinct model from the QMNA it is evident that there is obvious overlap in terms of concepts and measurement between them. For example, both theories place emphasis on fear-of-failure and failure avoidance and how this is closely related to lower academic achievement, increased likelihood to engage in deflective strategies (i.e. self-handicapping and defensive pessimism) and disengagement from studies. Additionally, both theories also contrast failure against success-orientations. In the QMNA high success-orientations fall into categories of optimists and overstrivers whilst in the MEW success-orientations are the result of adaptive cognitions and behaviours. Researchers have argued that a change in theorising motivational research is warranted (Martin, 2007). Thus the current research will help understand to what degree these models are independent from each other and whether there is redundancy in using both.

The Current Study

The current study was an extension of De Castella et al.'s (2013) research that examined the predictors of academic achievement, motivation and disengagement in high school students. The present study aimed to expand the work on academic achievement and motivation by examining the relationships among success-orientation, fear-of-failure and student disengagement in university students.

The cognitive-behavioural Quadripolar (Covington, 1992) and Motivation and Engagement (Martin, 2007) theories were included to determine whether the models independently contribute to the prediction of self-handicapping and defensive pessimism.

It was hypothesised that fear-of-failure would be positively associated with self-handicapping and defensive pessimism in university students. Secondly it was hypothesised that success-orientation would be negatively associated with self-handicapping, however positively associated with defensive pessimism. Additionally it was hypothesised that there would be an interaction between success-orientation and fear-of-failure on self-handicapping in that when students are low in success-orientation, fear-of-failure would be significantly positively associated with self-handicapping but non-significantly negatively associated when students are highly success-orientated. Lastly, it was hypothesised that the dimensions of the Quadripolar Model of Need Achievement would be positively associated with theoretically similar dimensions of the Motivation and Engagement Wheel.

Method

Participants

The sample comprised 110 university students from the University of Tasmania enrolled in a variety of undergraduate and postgraduate courses. However of the total 110 participants, 49 had incomplete data sets. The mean age of participants was 25 years (SD=9.61) with an overall range of 18 to 58 years. Table 1 contains demographic information about sex (male, female) and age (categorised into traditional or non-traditional university entry age) of participants identified in the study. Participants were recruited via advertisements in lectures, tutorials, University of Tasmania notice boards and the School of Medicine (Psychology) SONA research

participation system. Participation was voluntary. Upon completion of the survey participants were eligible to enter the draw to win one of four $50 Coles/Myer gift vouchers. First-year psychology students at the University of Tasmania automatically received 45 minutes of research credit on completion of the survey through the School of Medicine (Psychology) SONA research participation system.

Table 1

Demographic Variables of Participants

Demographic Variable	Category	N	%
Sex	Female	56	50.91%
	Male	14	12.73%
	Non-identified	40	36.36%
Age (years)	17-21 yrs (Traditional)	36	32.73%
	22 + yrs (Non-Traditional)	36	32.73%
	Non-identified	38	34.54%

Note. Not all participants provided demographic information

Materials

Both predictor variables (fear-of-failure and success-orientation) and outcome variables (self-handicapping and defensive pessimism) were measured and assessed using a series of reliable and well validated scales and questionnaires discussed below.

Achievement Goal Questionnaire-Revised (AGQ-R). The AGQ-R (Elliot & Murayama, 2008) was used to measure achievement goals (and therefore achievement orientation) in regards to motivation in an achievement setting. The AGQ-R comprised 12 items. Respondents rated their agreement for each item of a five-point Likert scale with end point designations ranging from *Strongly Disagree (1)* to *Strongly Agree (5)*. Sample items included *'I am striving to do well compared to other students'* and *'I am striving to understand the content as thoroughly as possible.'* The total possible scores ranged from 12 – 60 with higher scores reflecting greater motivation in achievement goals. The authors do not allude to the internal consistency of the AGQ-R. The present study had a Cronbach's alpha of 0.89.

Performance Failure Appraisal Inventory-Short Form (PFAI-S). The PFAI-S (Conroy, Willow, & Metzler, 2002) measured the cognitive-motivational-relational appraisals associated with fear-of-failure. The scale consisted of five items that represented fears of experiencing shame and embarrassment, fears of devaluing one's self-estimate, fears of having an uncertain future, fears of having important others losing interest and fears of upsetting important others (De Castella et al., 2013). Respondents indicated how much they believe each statement on a five-point Likert scale with end points ranging from *Do not believe at all (1)* to *Believe 100% of the time (5)*. An example fear-of-failure item was *'When I am failing, I am afraid that I might not have enough talent.'* Total scores ranged from 5-25 with higher scores indicating a greater fear-of-failure. The authors do not give an indication of the internal consistency of the PFAI-S. The present study had a Cronbach's alpha of 0.77.

Patterns of Adaptive Learning Survey (PALS). The PALS (Midgely et al., 2000) examined the relationship between the learning environment and students'

motivation, affect and behaviour. The present study used the academic self-handicapping strategies subscale of the PALS. The academic self-handicapping strategies subscales comprised six items. Each item assessed the defensive strategies students use if performance on an academic task is low (Midgely et al., 2000). Respondents indicated how true each statement was of them on a five-point Likert scale with end points ranging from *Not at all true (1)* to *Very true (5).* An example item of a self-handicapping strategy was '*Some students put off doing their class work until the last minute. Then if they don't do well on their work, they can say that is the reason. How true is this of you?'* Total scores ranged from 6 – 30 with higher scores reflecting greater use of self-handicapping strategies in an academic context. The PALS has a Cronbach's alpha of 0.84 for the academic self-handicapping strategies subscale (Midgely et al., 2000). The present study had a Cronbach's alpha of 0.85.

Optimism-Pessimism Prescreening Questionnaire (OPPQ). The OPPQ (Norem & Cantor, 1986b) measured the use of defensive pessimism or optimism strategies used in academic situations. The OPPQ comprised nine statements describing either defensive pessimism or optimism that were characteristics of students' cognitions and behaviours in academic situations (Norem & Cantor, 1986b). Respondents indicated how much each statement was true of them on a five-point Likert scale end point designations ranging from *Not at all true of me (1)* to *Very true of me (5)*. Items included *'I go into academic situations expecting the worst, even though I know I will probably do OK' (defensive pessimism)* and *'I generally go into academic situations with positive expectations about how I will do' (optimism).* For the purpose of this study only scores from the defensive pessimism items were calculated thus total scores ranged from 4-20. Higher scores on defensive

pessimism items reflect a greater use of defensive pessimism strategies in academic situations. The authors do not mention the internal consistency of the OPPQ. The present study had a Cronbach's alpha of 0.69 for the pessimism scale.

The Motivation and Engagement Scale- University & Colleges (MES-UC). The MES-UC (Martin, 2008b) was used to measure university students' motivation and engagement. The MES-UC comprised 44 items assessing motivation and engagement through statements regarding adaptive and maladaptive cognitions and adaptive and maladaptive/impeding behaviours. Respondents rated their agreement with each statement on a seven-point Likert scale with end points designated at *Strongly Disagree (1)* to *Strongly Agree (7).* Sample items include *'If I try hard, I believe I can do my university work well' (adaptive cognition), 'When I don't do well at university I don't know how to stop that happening next time' (maladaptive cognition), 'If I can't understand my university/college work at first, I keep going over it until I do' (adaptive behaviour)* and *'I've pretty much given up being interested in university/college' (maladaptive/impeding behaviour).* Four items are associated with each of the 11 motivation and engagement factors thus total scores for each factor ranged from 4 – 28. Higher scores were associated with higher levels of that particular cognition or behavior (i.e., self-handicapping and failure avoidance). The 11 factors comprised in the MES-UC each have a Cronbach's alpha that exceeds 0.70 (Martin, 2009b). The present study had Cronbach's alphas ranging from 0.66 (task management) to 0.90 (self-handicapping).

Demographic Questionnaire: A series of socio-demographic questions including age and sex were asked at the beginning of the online survey to enable statistical evaluation of whether these variables systematically influenced results.

Procedure

Ethical approval for the present study was obtained through the Tasmanian Human Research and Ethics Committee (reference number H0014852, Appendix A). All participants were directed to Limesurvey to complete the online survey. Prior to commencing the survey all participants read an information sheet outlining the purpose, risks, benefits and the voluntary nature of the study (Appendix B). Participants were also informed that their responses would be anonymous and kept confidential, and that completion and submission of the online survey implied consent. Participants completed the online survey which was comprised of several questionnaires: the *Achievement Goal Questionnaire-Revised (AGQ-R),* the *Performance Failure Appraisal Inventory-Short Form (PFAI-S), Patterns of Adaptive Learning Survey (PALS), Optimism-Pessimism Prescreening Questionnaire (OPPQ), The Motivation and Engagement Scale- University & Colleges (MES-UC)* and a demographic questionnaire that was always presented first (Appendix C). The survey took approximately 45 minutes to complete. After submission of the online survey participants were eligible to enter the draw to win one of four Coles/Myer gift vouchers or alternatively first year psychology students at the University of Tasmania could receive 45 minutes research credit. All participant data was de-identified to ensure anonymity.

Design and Analysis

This study employed a cross-sectional design. This study consisted of two predictor variables. The first predictor variable was participants' level of success-orientation which had two levels: high or low. The second predictor variable was participants' level of fear-of-failure which also had two levels: high or low. The outcome variable was participants' scores on the measures of self-handicapping and defensive pessimism.

A correlational design was used to address hypotheses one and two. Pearson's Product Moment correlations were used to determine the strength and direction of the relationship between fear-of-failure and self-handicapping, and fear-of-failure and defensive pessimism as predicted in hypothesis one. Pearson's Product Moment correlations were also used to determine the strength and direction of the relationship predicted in hypothesis two between success-orientation and self-handicapping, and success-orientation and defensive pessimism.

To address hypothesis three a multiple regression analysis was conducted to examine the amount of variance explained by each predictor on self-handicapping and defensive pessimism, and to explore if there was an interaction between success-orientation and fear-of-failure on these constructs.

Originally to address the fourth hypothesis an exploratory factor analysis was to be conducted to examine whether theoretically similar dimensions of the QMNA and the MEW have the same underlying latent variable. However, an exploratory factor analysis could not be conducted due to the substantially small sample size and several violations of assumptions that would have occurred as a result. Instead, two stepwise regression analyses were conducted in which the predictive utility of the QMNA and the MEW regarding self-handicapping and defensive pessimism were compared.

Results

Data Screening

Prior to conducting analyses, all variables were assessed with tests of normality. Assumptions of normality, homogeneity of variance and linearity were met. Additionally, Pearson product moment correlations were examined for any possible concerns of multicollinearity. All correlations between variables were below

.6, as displayed in Table 2 along with the means (M) and standard deviations (SD) of the predictor and outcome variables. To further ensure multicollinearity was not an issue Tolerance and Variance Inflation Factor (VIF) were examined. Following the recommendations of Field (2013), Tolerance levels below 0.1 and VIF levels above 10 are cause for concern. Within the current study, no levels of Tolerance were found to be below 0.71 and no VIF levels were found above 1.41. As previously identified, of the total of 110 participants that attempted the survey, 49 had incomplete data. A missing data analysis was to be performed on the incomplete data sets however participants who had incomplete data had ignored whole scales within the survey. As a result only complete response scales were included in the analyses (Table 2).

Descriptive Statistics

Scores for each of the variables' measures were trichotomised into percentages of low, medium and high in order to conceptualise where students fell within the QMNA (Covington, 1992) and are presented in Table 3. Inspection of the means displayed in Table 2 revealed that on average students reported medium levels of both success-orientation (AGQ-R) and fear-of-failure (PFAI-S). Inspection of the means also revealed that of the outcome variables, students primarily endorsed medium levels of defensive pessimism (OPPQ) and low levels of self-handicapping (PALS). (See Appendix D for complete descriptive statistics and correlations between variables).

Table 2

Means and Standard Deviations, and Pearson Product Moment Correlations for Each Variable

					Correlations			
Variable	M	SD	Possible Range	N	1	2	3	4
1. Fear-of-Failure (PFAI-S)	13.86	4.12	5-25	72	-	.05	-.11	.50**
2. Success-Orientation (AGQ-R)	44.29	8.47	12-60	72		-	.05	-.11
3. Defensive Pessimism (OPPQ)	14.80	3.37	4-20	61			-	.09
4. Self-Handicapping (PALS)	12.31	4.41	6-30	70				-

Note. **$p<.001$

Table 3

Percentage of Students that fell into Low, Medium or High Classifications for Each

Variable

Variable	Low	Medium	High
	%	%	%
Fear-of-Failure (PFAI-S)	21.8	33.6	10.0
Success-Orientation (AGQ-R)	5.5	25.7	34.9
Defensive Pessimism (OPPQ)	5.6	24.1	26.9
Self-Handicapping (PALS)	46.4	17.3	0.0

Correlations between variables

As predicted, there was a significant strong positive correlation between fear-of-failure and self-handicapping, $r(70) = .50$, $p < .001$, $d = 0.36$, revealing a small to medium effect size. Following the recommendations of Cohen (1992), what constitutes a small or large effect are as follows: $d = 0.2$ (small), 0.5 (medium) and 0.8 (large). However a non-significant correlation was found between fear-of-failure and defensive pessimism, $r(46) = -.11$, $p > .05$, $d = 0.25$, revealing a small effect size. Success-orientation also yielded a non-significant correlation between self-handicapping, $r(54) = -.11$, $p > .05$, $d = 4.74$, and defensive pessimism, $r(61) = .05$, $p > .05$, $d = 4.58$ in which both relationships had very large effect sizes.

Multiple regression analyses

Firstly, two regression analyses using the forced entry approach were conducted on the demographic variables sex and age to determine whether they contributed to any explained variance in the outcome variables of self-handicapping and defensive pessimism. The forced entry approach was chosen as it is appropriate to use when there are only a small number of predictors and when it is unknown which predictors will contribute to the best prediction equation (Tabachnick & Fidell, 2001). It was found that both sex (β= .18; 95% CI [-1.45, 5.32]) and age (β= -.01; 95% CI [-2.83, 2.58]) were non-significant predictors of self-handicapping, F(2, 42) =0.68, p=.513. Sex (β= .29; 95% CI [-0.10, 5.22]) and age (β= -.16; 95% CI [-3.25, 0.94]) were also non-significant predictors of defensive pessimism, F(2, 39) =2.69, p=.081. (See Appendix E for complete regression statistics).

Two separate three-step hierarchical regression analyses were conducted with self-handicapping and defensive pessimism as the outcome variables to determine how much fear-of-failure and success-orientation contributed to the explained variance of these outcome variables. This was first explored with self-handicapping as the outcome variable. Fear-of-failure was entered in at stage one and the addition of success-orientation was entered at stage two. The third model included the addition of a fear-of-failure*success-orientation interaction term to explore whether there was a moderating effect. Fear-of-failure and success-orientation were entered in this order based on the theoretical argument posed by Covington (1992) that fear-of-failure is the strongest predictor of self-handicapping. The hierarchical regression revealed that at stage one, fear-of-failure significantly contributed to the regression model F(1, 52) =18.41, p<.001, β= .51, 95% CI [0.27, 0.76], ΔR^2= .25, explaining 25% of the variance in self-handicapping. When success-

orientation was added to the model it did not significantly improve the amount of variance explained in self-handicapping, $F(1, 51) =1.19$, $p=.280$, $\beta= -.13$, 95% CI [-0.20, 0.05], $\Delta R^2= .25$. Lastly, the addition of the fear-of-failure*success-orientation interaction term to the regression model did not significantly add to the explained variance in self-handicapping, $F(1, 50) =0.00$, $p=.951$, $\beta= -.05$, 95% CI [-0.03, 0.03], $\Delta R^2= .24$. Thus model 1 was identified as the best fit.

Although originally there were no significant correlations found between defensive pessimism and both fear-of-failure and success-orientation a hierarchical regression analysis was conducted to analyse whether there were any moderating effects when all predictor variables were combined. The predictors were entered in the same order as the above regression, again in keeping with theoretical propositions as argued by Covington (1992). The hierarchical regression revealed that both fear-of-failure, $F(1, 44) =0.51$, $p=.479$, $\beta= -.11$, 95% CI [-0.31, 0.14], success-orientation, $F(1, 43) =0.25$, $p=.779$, $\beta= .01$, 95% CI [-0.13, 0.14], and the fear-of-failure*success-orientation interaction term $F(1, 42) =0.53$, $p=.668$, $\beta= -1.32$, 95% CI [-0.05, 0.01], were non-significant predictors of defensive pessimism. (See Appendix F for complete hierarchical regression statistics).

As previously indicated, due to sample size limitations an exploratory factor analysis could not be conducted to examine the independence of constructs theorised within the Quadripolar and Motivation and Engagement theories of achievement behaviour. Instead, a series of stepwise regression analyses were conducted in which the predictive utility of the theoretical constructs in regards to defensive pessimism and self-handicapping were compared. A stepwise method was chosen as it is a particularly useful method when there are a large number of predictor variables being explored but not enough data to estimate their coefficients meaningfully (Gelman &

Hill, 2007). In the first stepwise regression analysis self-handicapping was the outcome variable and fear-of-failure and success-orientation of the QMNA and the 11 first order factors (displayed in Figure 2) of the MEW were the predictor variables. The stepwise regression revealed that of the predictor variables only fear-of-failure significantly contributed to the model, $F(1, 44) = 14.47$, $p < .001$, $\beta = .50$, 95% CI [0.22, 0.73], $\Delta R^2 = .23$, explaining 23% of the variance in self-handicapping.

Secondly, a stepwise regression analysis was conducted with the same predictor variables and defensive pessimism as the outcome variable. The final model revealed that of the predictor variables only the MEW's factors of anxiety ($\beta = .52$, 95% CI [0.28, 0.73]), disengagement ($\beta = .45$, 95% CI [0.14, 0.52]), and valuing ($\beta = .37$, 95% CI [0.13, 0.68]) significantly contributed to the model $F(3, 42) = 14.96$, $p < .001$, $\Delta R^2 = .48$, explaining 48% of the variance in defensive pessimism. (See Appendix G for complete stepwise regression statistics).

Discussion

The current study was an extension of De Castella et al.'s (2013) research with the aim to expand the work on academic achievement and motivation by examining the relationships among success-orientation, fear-of-failure and academic disengagement in university students. The cognitive-behavioural Quadripolar (Covington, 1992) and Motivation and Engagement (Martin, 2007) theories were included to determine whether the models independently contributed to the prediction of self-handicapping and defensive pessimism.

The results of the current study partially supported the hypothesis that fear-of-failure would be positively associated with self-handicapping and defensive pessimism in university students. A strong positive correlation was found between fear-of-failure and self-handicapping, however a non-significant negative correlation

was found between fear-of-failure and defensive pessimism. Secondly, the hypothesis that success-orientation would be negatively associated with self-handicapping however positively associated with defensive pessimism was refuted as a non-significant negative correlation was found for self-handicapping and a non-significant positive correlation was found for defensive pessimism. The hypothesis that there would be an interaction between success-orientation and fear-of-failure on self-handicapping in that when students were low in success-orientation, fear-of-failure would be positively associated with self-handicapping but non-significantly negatively associated when students are highly success-orientated was also refuted. Lastly, due to the substantially small sample it was not possible test the hypothesis that the dimensions of the QMNA would be positively associated with theoretically similar dimensions of the MEW. Instead, the dimensions of each model were compared for predictive utility on how well each predicted self-handicapping and defensive pessimism. It was found that the QMNA's dimension fear-of-failure significantly predicted self-handicapping whilst the MEW's dimensions of anxiety, disengagement and valuing significantly predicted defensive pessimism.

Fear-of-Failure and the Self-Handicapping Relationship

The finding that fear-of-failure was significantly positively associated with self-handicapping lends support to the theoretical argument posed by Covington's (1992) QMNA in that students who fear failure are more likely to engage in self-handicapping, thus have lower motivation and engagement in their studies. This finding is also consistent with the notion that university education poses an environment in which fear-of-failure and the implications of failure are of higher stakes (i.e. financial consequences and career opportunities; Nevill & Rhodes, 2006). Thus engaging in self-handicapping, for example going to a party the night before a

test, allows an individual to avoid the implications associated with failure and protect their self-worth (De Castella et al., 2013). This is because failure from lack of effort is less debilitating than failure following effort (Norem & Cantor, 1986a). This finding was further supported by the regression analysis that was performed in which fear-of-failure was able to explain 25% of the variance in the prediction of self-handicapping in university students. In addition to theoretical support, these findings also support the empirical findings of De Castella et al. (2013) who found that fear-of-failure significantly predicted self-handicapping in high school students. De Castella et al. (2013) interpreted such findings as students who have a high fear-of-failure being increasingly more likely to engage in self-handicapping and disengage from their studies.

Implications and applications

Fear-of-failure is likely to act as the driving force behind the range of self-handicapping strategies that students engage in designed to explain and excuse poor academic outcomes (De Castella et al., 2013). Self-handicapping therefore contributes to lower motivation and engagement in university students' studies. However as mentioned previously, the strategies students use (i.e. self-handicapping) to protect their self-worth ultimately lose much of their self-protective value as the excuses become transparent (De Castella et al., 2013). In addition to this, De Castella et al. (2013) also proposed the idea that as self-handicapping was associated with fear-of-failure it can easily be interpreted that students do not care enough about their studies, however the opposite may be true in which self-handicapping may be the result of caring too much about failure and the consequences it holds. This has important practical implications not only for future research but also educational interventions and preventative strategies trying to reduce self-handicapping in

students. This finding suggests that in order to reduce the self-handicapping strategies students employ that contribute to lower academic performance, motivation and disengagement in studies, reducing their levels of fear-of-failure first would have the most beneficial outcomes. If educational strategies attempted to reduce the use of self-handicapping in students before investigating the factors that predicted self-handicapping (i.e. fear-of-failure) their effectiveness in reducing such strategies is likely to be short lived unless the factors such as fear-of-failure that predict self-handicapping are considered. Therefore future research should focus on both preventative and intervention strategies designed to reduce the fear-of-failure among university students. These intervention programs designed to prevent or minimise fear-of-failure and self-handicapping should be able to be effectively applied to university settings across different areas of study (Schwinger, Wirthwein, Lemmer, & Steinmayr, 2014). Reducing fear-of-failure in university students would not only reduce self-handicapping but may also help to improve academic motivation and engagement in their studies, and therefore career opportunities and outcomes.

Furthermore, Covington (1992) argued that educators and family members who place pressure on students to succeed in the face of failure can in fact increase fear-of-failure among students who do not believe they have the potential to succeed academically. Consequently, these students are likely to engage in self-protective strategies such as self-handicapping. Future research would benefit by examining the relationship between social pressures to succeed academically and fear-of-failure in university students in an attempt to be able to further reduce the level of fear-of-failure in students.

Success-Orientation and Self-Protective Strategies

The finding that both fear-of-failure and success-orientation were non-significantly correlated with defensive pessimism is inconsistent with pre-existing theoretical and empirical literature. This finding contradicts the QMNA that suggests that fear-of-failure and success-orientation are predictors of defensive pessimism (Covington, 1992). According to this model both self-protecting and overstriving students are argued to engage in defensive pessimism due to their high levels of fear-of-failure, with the only thing that alters their academic outcome being their level of success-orientation (high or low; De Castella et al., 2013). In addition to these findings, the finding that success-orientation was not associated with self-handicapping was also inconsistent with the QMNA that argues that students who are success-orientated (i.e. optimists and overstrivers) are less likely to engage in self-handicapping strategies as they are motivated to perform well (Covington, 1992). The absence of this expected relationship also explains why a non-significant interaction was found between success-orientation and fear-of-failure on self-handicapping, as success-orientation was not found to have a meaningful association with self-handicapping in any way.

The above findings are also inconsistent with the empirical findings of Martin et al. (2001a) who found an association between fear-of-failure and defensive pessimism in students. The absence of a relationship between success-orientation and deflective strategies found in the current study were also inconsistent with the findings of Simons et al. (1999) that found that success-orientated students were likely to have high levels of self-worth therefore less likely to engage in self-protective strategies. The findings also did not lend support to Simons et al. (1991) conclusions that success-orientated student athletes were more motivated to perform

well academically and had greater achievement outcomes than student athletes who feared failure.

Implications and applications

The inconsistent findings with both theoretical and empirical literature regarding defensive pessimism may be due to several reasons. Firstly, the sample size was substantially smaller than expected due the large amount of missing data. This may have impacted the ability to detect a meaningful relationship between fear-of-failure, success-orientation and defensive pessimism, and success-orientation and self-handicapping. Secondly, the measure used to assess defensive pessimism in this study (the OPPQ) only consisted of four items designed to specifically measure defensive pessimism. Therefore these items may not have encompassed a comprehensive representation of the cognitions of a defensive pessimist. For example, researchers have commonly argued that anxiety plays an important role in individuals who engage in defensive pessimism (Norem, 2008) however the items of the OPPQ neglect to include an element of anxiety. Furthermore, as research examining the predictors of academic achievement as outlined in the QMNA in university students has not been widely researched it may be that this model does not apply as well to this cohort as it does to high school students, due to the differing cognitive, social, and academic environments in which study is being undertaken. The non-significant relationships found between success-orientation and self-handicapping may also be due to operationalisation of the QMNA in which there is no one measure to assess its theory. For example the measures used to assess fear-of-failure and success-orientation in this study are not the only measures available. De Castella et al. (2013) note that there is a debate of how such constructs should be measured. Many of the existing measures assessing fear-of-failure and success-

orientation focus on the comparative nature of success and failure to other students (Smith, Duda, Allen, & Hall, 2002). It is suggested that further research be directed at establishing measures that focus on fear-of-failure and success-orientation in regards to how this impacts the individual (Martin et al., 2001a).

Fear-of-failure as measured by the PFAI-S had high face validity. This can be problematic as it makes it easy for students to manipulate their responses in which they may have under or overplayed their tendency to engage in these cognitions/behaviours. Moreover, due to the obvious face validity of the PFAI-S it is clear that most of the items assessed aspects of fear of social evaluation rather than fear-of-failure for the individual, for example, '*When I am failing, I worry about what others think about me.*' Therefore, instead of measuring fear-of-failure at the individual level in which this study aimed to do it also measured failure at the social level. Fear of social evaluation from others relates to the concept of socially prescribed perfectionism. Socially prescribed perfectionism refers to the perceived need to perform well and maintain expectations held by significant others (Hewitt & Flett, 1991). According to Hewitt and Flett (1991) an individual engaging in socially prescribed perfectionism perceives these expectations held by their significant others as unrealistic and exerting pressure on them. It is therefore arguable that students who engage in socially prescribed perfectionism are increasingly likely to engage in defensive pessimism in order to reduce the fear-of-failure of disappointing others. Consequently, as the PFAI-S items were largely concerned with socially prescribed perfectionism this may have contributed to the reason as to why a non-significant relationship was found between fear-of-failure and defensive pessimism. This is because most students at a university level are unlikely to be enrolled to please or satisfy those around them (i.e. parents) and are instead often enrolled with a purpose,

for example to further or foster their career opportunities. Thus, the consequences associated with failing in university studies are likely to impact a student at the individual level rather than at the social level of disappointing others. Further research is therefore warranted in which a different measure of fear-of-failure is used to assess university students' fear-of-failure of the individual consequences failure holds for these students.

Lastly, success-orientation was neither positively nor negatively correlated with defensive pessimism, which is similar to findings reported by Elliot and Church (2003) who suggested that this null relationship indicates that success-orientation may be a positive predictor of defensive pessimism for some students however a negative predictor for others. This had led to the conceptualisation that there are different forms of defensive pessimism. This includes the idea some individuals set low expectations for their performance then simply just prepare for failure (low success-orientation), whereas other defensive pessimists set low expectations then put in extra effort to increase the chances of succeeding (high success-orientation; Elliot & Church, 2003). This has practical and theoretical implications for future research for how defensive pessimism should be characterised and the way in which each form of defensive pessimism may be linked with different achievement outcomes (Elliot & Church, 2003). This idea of different types of defensive pessimists may have contributed to the unexpected findings of this study as it is may not be purely due to the measures used but may instead reflect that this sample contained two different types of defensive pessimists as articulated by Elliot and Church (2003). Further, as these defensive pessimism types have different motives (succeed or fail) thus different academic outcomes, using the same regression

equation for the two different achievement behaviours would be inappropriate and fail to identify a clear predictive relationship.

Predictive utility of the QMNA and the MEW

The predictive utility of the models was assessed for how well each was able to predict self-handicapping and defensive pessimism in university students. In regards to self-handicapping the only predictor was the QMNAs' fear-of-failure. This links back to the present study's previous findings in which fear-of-failure significantly predicted self-handicapping. An expected predictor that was not found to correlate with self-handicapping was the MES's factor of self-handicapping. The MES's self-handicapping factor may not have been a significant predictor in explaining self-handicapping in this instance as it only measured behavioural strategies and neglected to include claimed strategies of self-handicapping. Verbal claims of self-handicapping include for example students stating they are experiencing physiological symptoms that they claim will interfere with their performance (e.g. ill-health; Coudevylle, Ginis, & Famose, 2008). Thus, it may be the case that university students tend to engage in claimed rather than behavioural strategies of self-handicapping and these were not detected by the measures used within the current study. This seems possible considering that claimed self-handicaps may be more socially acceptable in an adult population than behavioural self-handicaps.

It was found that only the MEW's predictors of anxiety, disengagement and valuing significantly contributed to explaining defensive pessimism. This is an interesting finding because theoretically the QMNA's predictors of fear-of-failure and success-orientation should have been the greatest predictors of defensive pessimism as this model specifically argues that when students are failure-fearing or

success-orientated they are at increased risk of engaging in defensive pessimism (De Castella et al., 2013). The MEW on the other hand does not claim to measure defensive pessimism, however does a better job at predicting it than the QMNA. However, the predictor variables that were found from the MEW fit within the theorisation of defensive pessimism. For example, as previously mentioned, researchers argue that anxiety plays an important role in predicting students who are likely to engage in defensive pessimism (Norem, 2008). For these students engaging in defensive pessimism allows them to manage their anxiety and for some serves to facilitate efforts (Norem, 2008). Researchers have also argued that disengagement is associated with defensive pessimism (De Castella et al., 2013; Martin, Marsh, & Debus, 2001b). This is because students who in engage in this self-protective strategy often have lower grade point averages and satisfaction in their studies as the consistent use of this strategy lowers its self-protective value (De Castella et al., 2013). Lastly, valuing is thought to be related to defensive pessimism as the students that engage in this strategy tend to do so because they care about the outcomes of their academic achievement (Hancock, 2001). If a student did not care about their academic achievement or had no fear-of-failure there would be no reason for them to engage in defensive pessimism.

Implications and applications

The above findings support the argument that the academic motivation and engagement literature is fragmented and inconsistent (Pintrich, 2003; Martin, 2007). This is evident in the present study as no single model could comprehensively account for academic achievement cognitions/behaviours in university students. However these findings have practical implications for reducing the use of defensive pessimism in university students. As anxiety and valuing were found to be predictors

of defensive pessimism future research should be directed towards strategies aimed at ameliorating their impact on university students. This is also important as Hancock (2001) found that test anxiety and evaluative threat was associated with lower academic achievement and motivation.

These findings also have theoretical implications for future academic motivation research. Further research with a larger sample size should be conducted as this would allow researchers to conduct a factor analysis to determine whether the QMNA and MEW models are independent from each other. This would also allow researchers to consider the possibility of modifying, refining and consolidating the two models in order to be able to comprehensively explain the academic achievement cognitions and behaviours in university students.

It is important to note that these findings must be interpreted with caution. The current study abided by the ten case rule recommended by Field (2013). According to Field (2013) when conducting a regression analysis there should be at least ten cases of data for each predictor in the model. However due the small sample size of the current study and the large amount of predictor variables in the last regression analyses having ten cases per predictor was not possible.

General limitations and directions for future research

Although the current study does provide some valuable insights into academic achievement behaviours in university students, the findings should be interpreted with the following limitations in mind. Firstly, the findings of this study are of a correlational nature therefore no causal statements can be made about the predictor variables and their influence on the outcome variables. Secondly, the current study was based on self-report online questionnaires thus response bias may have occurred either consciously (i.e. students deny the academic behaviours they

engage in) or unconsciously (i.e. students do not have insight into their use of self-protective strategies). Thus, it is possible that the rates of self-handicapping and defensive pessimism may be higher than reported in this population (De Castella et al., 2013). Future research would benefit from obtaining data from multiple sources such as academic and attendance records, and observations made by teachers (De Castella et al., 2013). Inclusion of these additional sources would allow researchers to grasp a more objective and comprehensive understanding of which students are most vulnerable to engage in these self-protective strategies.

A further methodological limitation of this study is that it was cross-sectional by design. This had the ability to influence the findings of the study as all responses were only measured once and majority of responses were collected early on in the year. Furthermore, as majority of students were in their first-year at university they may not have had insight into their own study habits yet, or had reason to think about what kind of student they perceived themselves to be and the self-protective strategies they might engage in. As such, further studies should be conducted with a longitudinal design in which responses are measured at the beginning, middle and end of the year in order to assess whether these self-protective strategies used by students are more predominant at certain time points in the year. Lastly, as previously mentioned the current study had a smaller than anticipated sample size. This may limit the generalisability of results as they may not reflect the actual academic behaviours that exist in a university population.

Summary of Findings

In summary, the results of the current study indicate that fear-of-failure in university students enhances the likelihood that they will engage in self-handicapping strategies in order to protect their self-worth. This consequently lowers

students' academic motivation and engagement in studies. Therefore both future research and university resources should be directed towards facilitating preventative strategies for first year university students and intervention strategies for students who fear failure in an attempt to reduce its consequential effects (e.g. self-handicapping and defensive pessimism). In particular, these intervention strategies should focus on restructuring students' attributions they hold in relation to failing. This would not only protect their sense of self-worth, but also aid in improving their academic achievement, motivation and engagement as the need to engage self-handicapping would be reduced. Future research is also urgently warranted in regards to university students and defensive pessimism due to the non-existent relationship that was found between fear-of-failure and success-orientation, and the potential implications for understanding the construct in this population. The current study's findings also revealed that at present neither the QMNA or the MEW can comprehensively account and explain the academic achievement cognitions/behaviours found in university students. In addition neither model can sufficiently explain why some students are motivated and engaged to succeed and why others are likely to disengage from their studies.

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Appendix A

Minimal Risk Ethics Application Approval

Social Science Ethics Officer
Private Bag 01 Hobart
Tasmania 7001 Australia
Tel: (03) 6226 2763
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Katherine.Shaw@utas.edu.au

HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK

16 April 2015

Dr Kimberley Norris
Psychology
Private Bag 30

Student Researcher: Aleisha Howlett

Sent via email

Dear Dr Norris

Re: MINIMAL RISK ETHICS APPLICATION APPROVAL
Ethics Ref: H0014852 - An analysis of the variables predicting academic achievement, motivation and student disengagement in university students

We are pleased to advise that acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 14 April 2015.

This approval constitutes ethical clearance by the Tasmania Social Sciences Human Research Ethics Committee. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approval of other bodies or authorities is required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

Please note that this approval is for four years and is conditional upon receipt of an annual Progress Report. Ethics approval for this project will lapse if a Progress Report is not submitted.

The following conditions apply to this approval. Failure to abide by these conditions may result in suspension or discontinuation of approval.

1. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval, to ensure the project is conducted as approved by the Ethics Committee, and to notify the Committee if any investigators are added to, or cease involvement with, the project.

A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

2. <u>Complaints</u>: If any complaints are received or ethical issues arise during the course of the project, investigators should advise the Executive Officer of the Ethics Committee on 03 6226 7479 or human.ethics@utas.edu.au.

3. <u>Incidents or adverse effects</u>: Investigators should notify the Ethics Committee immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.

4. <u>Amendments to Project</u>: Modifications to the project must not proceed until approval is obtained from the Ethics Committee. Please submit an Amendment Form (available on our website) to notify the Ethics Committee of the proposed modifications.

5. <u>Annual Report</u>: Continued approval for this project is dependent on the submission of a Progress Report by the anniversary date of your approval. You will be sent a courtesy reminder closer to this date. **Failure to submit a Progress Report will mean that ethics approval for this project will lapse.**

6. <u>Final Report</u>: A Final Report and a copy of any published material arising from the project, either in full or abstract, must be provided at the end of the project.

Yours sincerely

Katherine Shaw
Executive Officer
Tasmania Social Sciences HREC

Appendix B

Information Sheet for Participants

PARTICIPANT INFORMATION SHEET

An analysis of the variables predicting academic achievement, motivation and student disengagement in university students.

<u>[To currently enrolled university students]</u>

1. Invitation

Thank you for your interest in the study and taking the time to read this information sheet. This study is being conducted as partial fulfilment of a Psychology Honours Degree for Aleisha Howlett supervised by Dr. Kimberley Norris at the University of Tasmania. Please read this information sheet carefully to fully understand what this study is about and what it involves. It is important that you understand this information before consenting to participate. If you have any questions regarding this research or would like more information please contact the researchers;<u>aleishah@utas.edu.au</u> (Aleisha Howlett)
or <u>Kimberley.Norris@utas.edu.au</u> (Kimberley Norris).

2. What is the purpose of this study?

The aim of the study is understand the motivational and engagement factors that lead some students to do better academically, while other students disengage from their study. The results of this study will help us better understand the factors influencing academic achievement and help future research promote intervention programs that help improve students' academic success.

3. Why have I been invited to participate?

You have been invited to participate in the study if you are at least 18 years old and currently enrolled as a student at the University of Tasmania. Please not that your involvement in this study is voluntary. There are no consequences should you decide to not participate and this will not affect your relationship with the university in any way.

4. What will I be asked to do?

As a participant you will be asked to complete an online survey in relation to your university study. All questions on the survey are in multiple choice format and you will be asked to click the response that is most applicable to you. The survey will take approximately 45 minutes to complete. The online survey can be accessed via any computer that has internet access.

5. Are there any possible benefits from participation in this study?

Your participation in the study will help us better understand the motivational and engagement factors that contribute to academic success. The results of this study will also assist future research, policy makers and the university in helping students improve academically.

You are able to go into the draw to win one of four $50 Coles/Myer gift cards or if you are enrolled in an introductory psychology class at the University of Tasmania you are able to receive 45 minutes research credit.

6. Are there any possible risks from participation in this study?

The study poses no more than minimal risk, that is risks that are encountered in everyday life. Additionally no foreseeable specific risk has been anticipated by participating in the study. The study does not involve any deception. If at any point in completing the survey you feel uncomfortable in responding please stop. However if participating in the study has caused you any distress we recommend you contact counselling services and support through Lifeline: 13 11 44, or BeyondBlue: 1300 22 4636.

7. What if I change my mind during or after the study?

Please remember that your involvement in the study is voluntary and you are free to withdraw from it at any time prior to submission without an explanation or negative consequence. It is important to note however that once you have submitted the survey it is not possible to remove your data from the data-set as there is no way of identifying which response-set belong to you.

8. What will happen to the information when this study is over?

The data from the study will be kept confidential and will be archived by the School of Medicine (Psychology) in a locked repository for five years following publication. The student researcher and supervisor will be the only people who have access to the data. Five years after publication the data will be destroyed following the University of Tasmania's data destruction process.

9. How will the results of the study be published?

The results of the study will be able available at the University of Tasmania's websitehttp://www.utas.edu.au/psychology/. The approximate release date of findings from the study is November 2015. The results of the study will be de-identified and only reported at a group level therefore it is not possible for your own data to be identified.

10. What if I have questions about this study?

If you have any further questions please email Aleisha Howlett (Student Researcher) at <u>aleishah@utas.edu.au</u> or Dr. Kimberley Norris (Chief Investigator) at <u>Kimberely.Norris@utas.edu.au</u>.

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on +61 3 6226 6254 or email <u>human.ethics@utas.edu.au</u>. The Executive Officer is the person nominated to receive complaints from research participants. Please quote ethics reference number '[H0014852].

Thank you for taking the time to read this information sheet. This form is for you to keep and refer to at any point during the study if needed. Your consent to participate in the study is implied by completion and submission of the survey. If you have any further questions or enquires please contact Aleisha Howlett at <u>aleishah@utas.edu.au</u>.

Appendix C

Demographic Questionnaire

Information about You

The following questions will help us understand a little more about you, and how things like age, sex, year of university study and entry pathway can affect your learning, goals, and motives.

1. **How old are you?**

2. **What is your sex?**

- Male

- Female

- No Answer

3. **What is your year of university study?**

   - First-year

   - Second-year

   - Third-year

   - Honours

   - Masters

   - PhD

   - Other: Please Specify

4. **What is your citizenship?**

   - Australian Citizenship

   - International

   - Permanent Resident

   - Humanitarian Visa

5. **Are you of Aboriginal or Torres Strait Islander Origin?**

   - Yes, I am of Aboriginal Origin

   - Yes, I am of Torres Strait Islander Origin

- Yes, I am both of Aboriginal and Torres Strait Islander Origin

- No, I am not of Aboriginal or Torres Strait Islander Origin

6. What was your Entry Pathway?

- Secondary Qualification (ATAR) – Directly from high school

- Secondary Qualification (ATAR) – Following a gap year

- University College Program

- University Preparation/Enabling Program

- TAFE/VET Completion (Cert III)

- Previous University Study

- International Application

- Personal Competency Statement

- Aptitude Test

- Other: Please Specify

Appendix D

Summary of Descriptive Statistics and Correlations between Variables

Descriptive Statistics

	Mean	Std. Deviation	N
OPPQpessimism	14.8033	3.36561	61
PALStotalSelfhandicapping	12.3143	4.40863	70
PFAIStotalFearofFailure	13.8611	4.10875	72
AGQRtotalSucessOrientation	44.2917	8.47272	72

Defensive Pessimism Classifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	low	6	5.6	9.8	9.8
	medium	26	24.1	42.6	52.5
	high	29	26.9	47.5	100.0
	Total	61	56.5	100.0	
Missing	System	47	43.5		
Total		108	100.0		

Self-handicapping Classifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	low	51	46.4	72.9	72.9
	medium	19	17.3	27.1	100.0
	Total	70	63.6	100.0	
Missing	System	40	36.4		
Total		110	100.0		

Success-orientation Classifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	low	6	5.5	8.3	8.3
	medium	28	25.7	38.9	47.2
	high	38	34.9	52.8	100.0
	Total	72	66.1	100.0	
Missing	System	37	33.9		
Total		109	100.0		

Fear-of-failure Classifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	low	24	21.8	33.3	33.3
	medium	37	33.6	51.4	84.7
	high	11	10.0	15.3	100.0
	Total	72	65.5	100.0	
Missing	System	38	34.5		
Total		110	100.0		

Correlations

		OPPQpessimism	PALStotalSelfhandicapping	PFAIStotalFearofFailure	AGQRtotalSucessOrientation
OPPQpessimism	Pearson Correlation	1	.085	-.107	.054
	Sig. (2-tailed)		.578	.479	.679
	N	61	45	46	61
PALStotalSelfhandicapping	Pearson Correlation	.085	1	.500**	-.106
	Sig. (2-tailed)	.578		.000	.446
	N	45	70	70	54
PFAIStotalFearofFailure	Pearson Correlation	-.107	.500**	1	.053
	Sig. (2-tailed)	.479	.000		.702
	N	46	70	72	55
AGQRtotalSucessOrientation	Pearson Correlation	.054	-.106	.053	1
	Sig. (2-tailed)	.679	.446	.702	
	N	61	54	55	72

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix E

Summary of Demographic Variables Predicting Self-handicapping and Defensive

Pessimism

1. Sex and Age Predicting Self-handicapping

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.177[a]	.031	-.015	4.49616	.031	.678	2	42	.513

a. Predictors: (Constant), Sex, Age

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.395	2	13.697	.678	.513[b]
	Residual	849.050	42	20.215		
	Total	876.444	44			

a. Dependent Variable: PALStotalSelfhandicapping

b. Predictors: (Constant), Sex, Age

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	9.978	3.030		3.293	.002	3.863	16.092		
	Age	-.124	1.344	-.014	-.092	.927	-2.836	2.588	.996	1.004
	Sex	1.934	1.679	.175	1.152	.256	-1.455	5.323	.996	1.004

a. Dependent Variable: PALStotalSelfhandicapping

2. Sex and Age Predicting Defensive Pessimism

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.348[a]	.121	.076	3.33859	.121	2.686	2	39	.081

a. Predictors: (Constant), Sex, Age

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.870	2	29.935	2.686	.081^b
	Residual	434.702	39	11.146		
	Total	494.571	41			

a. Dependent Variable: OPPQpessimism

b. Predictors: (Constant), Sex, Age

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	13.341	2.312		5.769	.000	8.664	18.018		
	Age	-1.152	1.038	-.167	-1.110	.274	-3.252	.947	.994	1.006
	Sex	2.559	1.316	.293	1.945	.059	-.102	5.220	.994	1.006

a. Dependent Variable: OPPQpessimism

Appendix F

Summary of Hierarchical Regression Analyses Predicting Self-handicapping and

Defensive Pessimism

1. Predicting Self-handicapping from Fear-of-failure, Success-orientation, and Fear-of-failure*Success-orientation interaction term

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.511[a]	.261	.247	3.97157	.261	18.406	1	52	.000
2	.528[b]	.278	.250	3.96427	.017	1.192	1	51	.280
3	.528[c]	.278	.235	4.00356	.000	.004	1	50	.951

a. Predictors: (Constant), PFAIStotalFearofFailure

b. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation

c. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation, SO_FoF

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	290.322	1	290.322	18.406	.000[b]
	Residual	820.215	52	15.773		
	Total	1110.537	53			
2	Regression	309.050	2	154.525	9.833	.000[c]
	Residual	801.487	51	15.715		
	Total	1110.537	53			
3	Regression	309.111	3	103.037	6.428	.001[d]
	Residual	801.426	50	16.029		
	Total	1110.537	53			

a. Dependent Variable: PALStotalSelfhandicapping

b. Predictors: (Constant), PFAIStotalFearofFailure

c. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation

d. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation, SO_FoF

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.948	1.751		2.826	.007	1.435	8.461		
	PFAIStotalFearofFailure	.524	.122	.511	4.290	.000	.279	.769	1.000	1.000
2	(Constant)	7.990	3.289		2.429	.019	1.387	14.592		
	PFAIStotalFearofFailure	.530	.122	.517	4.344	.000	.285	.776	.998	1.002
	AGQRtotalSucessOrientation	-.071	.065	-.130	-1.092	.280	-.201	.059	.998	1.002
3	(Constant)	7.325	11.325		.647	.521	-15.421	30.072		
	PFAIStotalFearofFailure	.578	.778	.563	.742	.462	-.986	2.141	.025	39.940
	AGQRtotalSucessOrientation	-.056	.251	-.103	-.223	.825	-.561	.449	.068	14.736
	SO_FoF	-.001	.017	-.055	-.061	.951	-.036	.033	.018	55.834

a. Dependent Variable: PALStotalSelfhandicapping

2. Predicting Defensive Pessimism from Fear-of-failure, Success-orientation, and Fear-of-failure*Success-orientation interaction term

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.107[a]	.011	-.011	3.44824	.011	.510	1	44	.479
2	.107[b]	.012	-.034	3.48795	.000	.004	1	43	.951
3	.190[c]	.036	-.033	3.48504	.025	1.072	1	42	.306

a. Predictors: (Constant), PFAIStotalFearofFailure

b. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation

c. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation, SO_FoF

ANOVAᵃ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.063	1	6.063	.510	.479ᵇ
	Residual	523.176	44	11.890		
	Total	529.239	45			
2	Regression	6.110	2	3.055	.251	.779ᶜ
	Residual	523.129	43	12.166		
	Total	529.239	45			
3	Regression	19.128	3	6.376	.525	.668ᵈ
	Residual	510.111	42	12.146		
	Total	529.239	45			

a. Dependent Variable: OPPQpessimism

b. Predictors: (Constant), PFAIStotalFearofFailure

c. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation

d. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation, SO_FoF

Coefficientsᵃ

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	Upper Bound	Collinearity Statistics Tolerance	VIF
1	(Constant)	15.941	1.671		9.541	.000	12.574	19.308		
	PFAIStotalFearofFailure	-.081	.114	-.107	-.714	.479	-.310	.148	1.000	1.000
2	(Constant)	15.753	3.465		4.546	.000	8.765	22.740		
	PFAIStotalFearofFailure	-.081	.115	-.107	-.706	.484	-.313	.150	1.000	1.000
	AGQRtotalSucessOrientation	.004	.067	.009	.062	.951	-.131	.140	1.000	1.000
3	(Constant)	2.670	13.102		.204	.839	-23.770	29.111		
	PFAIStotalFearofFailure	.797	.856	1.052	.931	.357	-.930	2.524	.018	55.659
	AGQRtotalSucessOrientation	.291	.285	.657	1.021	.313	-.284	.866	.055	18.035
	SO_FoF	-.019	.019	-1.342	-1.035	.306	-.057	.018	.014	73.227

a. Dependent Variable: OPPQpessimism

Appendix G

Summary of Stepwise Regression Comparing the Predictive Utility of the two

Models in regards to Self-handicapping and Defensive Pessimism

1. Predicting Self-handicapping from the dimensions of the Quadripolar Model of Need Achievement and the Motivation and Engagement Wheel

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.497[a]	.247	.230	3.98340	.247	14.468	1	44	.000

a. Predictors: (Constant), PFAIStotalFearofFailure

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	229.572	1	229.572	14.468	.000[b]
	Residual	698.167	44	15.867		
	Total	927.739	45			

a. Dependent Variable: PALStotalSelfhandicapping

b. Predictors: (Constant), PFAIStotalFearofFailure

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	5.628	1.851		3.041	.004	1.898	9.358		
	PFAIStotalFearofFailure	.483	.127	.497	3.804	.000	.227	.739	1.000	1.000

a. Dependent Variable: PALStotalSelfhandicapping

2. Predicting Defensive Pessimism from the dimensions of the Quadripolar Model of Need Achievement and the Motivation and

Engagement Wheel

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.107[a]	.011	-.011	3.44824	.011	.510	1	44	.479
2	.107[b]	.012	-.034	3.48795	.000	.004	1	43	.951
3	.190[c]	.036	-.033	3.48504	.025	1.072	1	42	.306

a. Predictors: (Constant), PFAIStotalFearofFailure

b. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation

c. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation, SO_FoF

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.063	1	6.063	.510	.479[b]
	Residual	523.176	44	11.890		
	Total	529.239	45			
2	Regression	6.110	2	3.055	.251	.779[c]
	Residual	523.129	43	12.166		
	Total	529.239	45			
3	Regression	19.128	3	6.376	.525	.668[d]
	Residual	510.111	42	12.146		
	Total	529.239	45			

a. Dependent Variable: OPPQpessimism

b. Predictors: (Constant), PFAIStotalFearofFailure

c. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation

d. Predictors: (Constant), PFAIStotalFearofFailure, AGQRtotalSucessOrientation, SO_FoF

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	15.941	1.671		9.541	.000	12.574	19.308		
	PFAIStotalFearofFailure	-.081	.114	-.107	-.714	.479	-.310	.148	1.000	1.000
2	(Constant)	15.753	3.465		4.546	.000	8.765	22.740		
	PFAIStotalFearofFailure	-.081	.115	-.107	-.706	.484	-.313	.150	1.000	1.000
	AGQRtotalSucessOrientation	.004	.067	.009	.062	.951	-.131	.140	1.000	1.000
3	(Constant)	2.670	13.102		.204	.839	-23.770	29.111		
	PFAIStotalFearofFailure	.797	.856	1.052	.931	.357	-.930	2.524	.018	55.659
	AGQRtotalSucessOrientation	.291	.285	.657	1.021	.313	-.284	.866	.055	18.035
	SO_FoF	-.019	.019	-1.342	-1.035	.306	-.057	.018	.014	73.227

a. Dependent Variable: OPPQpessimism