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2 Dispositional Goals and Academic Achievement: Refining the 2x2 Achievement Goal

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Model

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2 ABSTRACT

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4 Achievement goal theory (AGT) is widely used to examine the influences of goal adoption on
5 academic and sporting achievement. Striving for methodological coherence with AGT's ever
6 expanding scope (Korn & Elliot, 2016), we examined the 2x2 framework and propose a refined model
7 outlining the theoretical differences between achievement goal orientations. Building on Van Yperen's
8 concept of a *Dominant Achievement Goal Approach* we developed and tested a method of
9 representing a Dominant Dispositional Achievement Goal (DDAG). The construct symbolises
10 preference for one achievement goal while recognising that multiple achievement goals can be valued
11 in a dispositional orientation. Finally, we measured the relationship between dispositional
12 achievements goals, including work-avoidance goals and the DDAG, and academic performance of 165
13 university students. Contrary to expectations mastery-approach, mastery-avoidance, performance-
14 approach and performance-avoidance positively correlated to academic grade, although approach
15 goals predicted performance more strongly than avoidance. Consistent with previous studies of
16 pharmacy students, work-avoidance negatively predicted academic grade. However, although the
17 DDAG successfully captured dominant goal distribution, scores did not predict academic attainment.
18 We argue for the application of consistent conceptualisations of AGT to clarify the role of achievement
19 goals in promoting learning and academic performance to inform educational practice in sport and
20 exercise psychology.

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1 **1. Introduction**

2 Motivation is a key variable of interest in high-performance contexts, whether sport, business, or
3 education. To become academically successful, students need to be motivated to become active,
4 independent learners (Gavaza et al., 2014; Magnusson & Zackariasson, 2018; Meyer et al., 2008). A
5 number of theories have been used to try and understand students' motivation. Over the past half a
6 century the most prominent has been achievement goal theory (AGT: Bodmann & Harackiewicz, 2010;
7 Elliot, 1999; Gavaza et al., 2014; Hulleman et al., 2010; Nicholls, 1984; Senko et al., 2011). AGT is used
8 to understand students' achievement motives and temperaments for the academic domain (Elliot &
9 Thrash, 2010; Fryer & Elliot, 2007; Han, 2016; Plante et al., 2013) and goals related to specific academic
10 situations (Harackiewicz & Sansome, 1991; Kaplan & Maehr, 2007; Payne et al., 2007; Pintrich et al.,
11 2003). Research inspired by AGT has led to significant advances in the understanding of the
12 relationship between students' academic motivations and their attainment. Such findings include that
13 students are motivated differently (e.g., by increasing their knowledge or beating others) through
14 achievement goals (Alrakaf et al., 2014; Deshon & Gillespie, 2005; Han, 2016) and that some
15 motivations, such as fear of failing are more maladaptive in academic settings (Elliot & McGregor,
16 2001; Pintrich et al., 2003).

17 Although AGT-inspired research progressed understanding of academic motivation, this has
18 nonetheless been undermined by a lack of consistency in the conceptualisation of fundamental
19 theoretical components and consequently the investigative methods used to examine those
20 components (Hulleman et al., 2010; Senko & Tropiano, 2016). A lack of consistency has created
21 ambiguous empirical findings (Korn & Elliot, 2016; Deshon & Gillespie, 2005) resulting in the
22 relationships between achievement goals and academic performance remaining unclear. Therefore,
23 the aim of this current research was two-fold. First, this paper tenders an alternative way of portraying
24 the interactive relationships between AGT components which in turn, informs how they should be
25 assessed. Second, to apply this alternative portrayal of the components and investigate achievement
26 goals and their relationship to academic achievement. Using a sample comprised of sport and exercise

1 sciences and psychology students, our findings are applicable within the pedagogical context of sport
2 and exercise psychology education.

3

4 *1.1 Traditional Theoretical Understanding of Achievement Goals*

5 Achievement goals (also referred to as goal orientations; Pintrich et al., 2003) were originally
6 conceptualised as the cognitive-dynamic manifestations of an individual's view of success and failure,
7 into aims focused on the demonstration (task or self-oriented), or the development (other-oriented)
8 of competence (Elliot, 1999; Elliot & Church, 1997; Elliot & McGregor, 2001; Elliot & Murayama, 2008;
9 Senko & Tropiano, 2016). Achievement goals conceptualised by both standards (task/self vs. other)
10 and standpoints (development vs. demonstration) of competence were used in the dichotomous and
11 trichotomous models (Elliot, 1999; Elliot & Church, 1997). More recently, the 2x2 (Elliot & McGregor,
12 2001) and 3x2 (Elliot et al., 2011) models have focused solely on the standards of competence; defined
13 by task/self and other (2x2 model) or task, self and other (3x2 model) referents, while Korn and Elliot
14 (2016) have developed the 2x2 standpoints model.

15 The 2x2 model by Elliot and McGregor (2001) combines two achievement goal components,
16 *definition* and *valence* (Elliot & McGregor, 2001; Scheltinga et al., 2017). The definitional component
17 subdivides into *mastery* (e.g., striving to achieve relative to the demands of the task or past
18 performance) and *performance* (e.g., striving to achieve relative to others) achievement goals. The
19 valence component also subdivides based on views of success and failure, or *approach* (achievement
20 by approaching success) and *avoidance* (achievement by avoiding failure; Elliot & McGregor, 2001).
21 The subcomponents are combined to create the four achievement goals in the 2x2 model: mastery-
22 approach, mastery-avoidance, performance-approach and performance-avoidance (Elliot &
23 McGregor, 2001).

24 The 2x2 model was selected for the present study as although recent research has yielded
25 inconsistent results regarding the approach-avoidance distinction (Lower et al., 2014), models that
26 differentiate the valence component continue to be supported (e.g., 3x2 model and 2x2 standpoint

1 model). The 2x2 model focusing on the conceptual standards of competence has been tested by
2 reliable and valid operational items (e.g., the AGQ and AGQ-R; see Hulleman et al., 2010 for a review),
3 on a range of samples relevant to the present study (i.e., university students, in varying degree
4 subjects: Hall et al., 2015, see also Van Yperen, 2006). More recently Korn and Elliot (2016) argue the
5 need for investigation into the neglected 'standpoint' components of AGT, which refer to the
6 demonstration and the development of competence, independent of the standards of competence:
7 task/self or other, creating the 2x2 standpoint model. They argue that the 2x2 standard and
8 standpoint models can be combined to give a holistic representation of students' achievement goals.
9 As such, the 3x2 model (differentiating task-based and self-based components of mastery goals) does
10 not enable direct comparison to the more recent 2x2 standpoint model. Considering this, here we
11 select the 2x2 standards model to (i) draw comparisons to previous work exploring achievement goals
12 of students on other degree courses (examined by 2x2 standards models) and (ii) to facilitate the
13 comparison of data from studies using the 2x2 standpoints model.

14 An additional goal classified as distinct from mastery and performance achievement goals (King &
15 McInerney, 2014), but investigated in higher education alongside the 2x2 model, is work-avoidance
16 (Harackiewicz, et al., 1997; Nicholls, et al., 1989). According to Elliot (1999) work-avoidance is viewed
17 as the absence of striving for achievement, through either the standard (task/self or other) or
18 standpoint (demonstration or development) components of competence. As a result of work-
19 avoidance's distinct classification, this goal has largely been ignored when traditional AGT has been
20 the focus (see King & McInerney, 2014 and Pieper, 2003 for more details). Nevertheless, arguments
21 have been made for the importance of including this goal when trying to holistically understand
22 motivation towards achievement (King & McInerney, 2014), particularly in the endeavour of
23 understanding motivation in academic settings.

24

25 *1.2 Achievement Goals in the Academic Domain; Behavioural consequences*

1 In general, research using the 2x2 model (Elliot & McGregor, 2001), has argued that In general,
2 it would appear goals with an approach component are linked to positive behavioural outcomes such
3 as challenge seeking, enhanced intrinsic motivation and deep learning approaches, while goals with
4 avoidance components are linked to negative behaviours such as challenge avoidance, dysfunctional
5 learning and disorganisation (Barron & Harackiewicz, 2003; Elliot & Murayama, 2008; Hulleman et al.,
6 2010; Mouratidis et al., 2018; Phan, 2010; Roberts et al., 2007).

7 However, attempts to predict behaviours according to the valence of the achievement goal
8 has not always been successful. For example, while performance-approach has been associated with
9 some positive behaviours (e.g., rigorous and persistent study behaviour and enjoyment), it also has
10 associations with shallow learning strategies, such as memorization, which is seen as a negative,
11 maladaptive learning behaviour (Barron & Harackiewicz, 2003; Cury et al., 2006; Harackiewicz et al.,
12 2002). Conversely, associations between work-avoidance and maladaptive behaviours have emerged
13 relatively consistently. Despite not being viewed as a traditional achievement goal, research has
14 demonstrated that adoption of this goal is highly detrimental (Jacob et al., 2019; King & McInerney,
15 2014). Students who adopt this orientation aim to use minimal effort when learning or performing
16 and they aim to avoid work. They may also be academically alienated (Hall et al., 2015), which in turn
17 has been associated with low intrinsic motivation, disinterest in learning and low effort (King &
18 McInerney, 2014). Current evidence indicates that the adoption of specific achievement goals can
19 have profound effects on an individual's attitudes, behaviours and in turn affect the learning
20 environment. Importantly, the psychological and behavioural consequences of adopting achievement
21 goals are also reflected in student attainment, but sometimes in rather unexpected ways.

22

23 *1.3 Achievement goals in the Academic Domain: Performance consequences*

24 Research in both the sport and academic domain has evidenced that the achievement goals
25 individuals adopt can be used to predict performance, such as academic performance as shown in
26 Harackiewicz et al., (2008) (also see Plante et al., 2013; Wigfield & Cambria, 2010). Early speculation

1 was that achievement goals linked to adoption of 'positive' learning behaviours would be indicative
2 of higher academic grades while those goals linked to the adoption of 'negative' learning behaviours
3 would be indicative of lower academic grades (Harackiewicz et al., 2008; Wolters, 2004). However,
4 when achievement goals were examined in the 2x2 model, empirical results were equivocal, indicating
5 the relationship between achievement goals and academic performance is not straightforward
6 (Deshon & Gillespie, 2005; Elliot & Murayama, 2008; Mouratidis et al., 2018; Wolters, 2004). For
7 example, performance-approach (shown in early research to be linked to negative learning
8 behaviours) has been positively related to, (Church et al., 2001; Phan, 2010; Wolters, 2004) and
9 positively predicted, students' academic grade (Barron & Harackiewicz, 2003; Hulleman et al., 2010).
10 On the other hand, students adopting a mastery-approach goal, while demonstrating positive learning
11 behaviours, did not necessarily achieve high academic grades (Hall et al., 2015; for more in-depth
12 reviews see: Hulleman et al., 2010; Hulleman & Senko, 2010). Some studies indicate positive
13 relationships between achievement goals, learning behaviours and academic performance, while
14 others indicate no relationship or a lack of association (Kaplan & Maehr, 2007; Phan, 2010).

15 Nevertheless, one goal which has a robust relationship with academic attainment, consistently
16 predicting negative outcomes (e.g., low academic achievement) is work-avoidance (Hall et al., 2015;
17 Harackiewicz et al., 1997; King & McInerney, 2014; Pieper, 2003). Hall et al., (2015) and Gavaza et al.,
18 (2014) examined work-avoidance alongside the 2x2 achievement goals for academic achievement.
19 Hall et al., (2015) noted work-avoidance was an important negative predictor ($R^2 = .2247$) of
20 final grade as work-avoidance mean scores were significantly higher ($p < .05$) in pharmacy students
21 with low academic performance. Consequently, adoption of this goal appears to result in consistent,
22 detrimental outcomes for students' academic achievement (Gavaza et al., 2014; Hall et al., 2015;
23 Harackiewicz et al., 1997).

24 With limited research on work avoidance, a seemingly important 'achievement goal', and
25 equivocal findings concerning mastery and performance achievement goals, research adopting the
26 2x2 model provides incomplete understanding of achievement motivation and behavioural and

1 performance outcomes (Van Yperen et al., 2014). During a detailed meta-analytic review, Hulleman
2 et al., (2010) argued that the inconsistent findings concerning motivational processes and outcomes
3 could be the result of the ‘inconsistencies in the conceptualisation of mastery and performance goals’
4 (pp. 427). Pintrich et al., (2003) also note how inconsistent conceptualisations could stem from the
5 several different dimensions on which achievement goals have been described: the relationship
6 between ability and effort (Nicholls, 1984), attribution or affect (Akin & Akin, 2014), or beliefs of
7 intelligence (Dweck, 1986). Even research following the 2x2 model, built upon Elliot’s (Elliot & Church,
8 1997) definitions of competence, does not always exclusively define achievement goals in terms of
9 competence. These different conceptualisations lead to different operationalisations, different
10 investigative methodologies, and in turn produce findings on ‘achievement goals’ which are not
11 directly comparable (Elliot et al., 2011; Masciet et al., 2015). The lack of definitional clarity which
12 hinders the translation of research to practise in educational environments, is one possible
13 explanation for the inconsistent results of students that examine the effect of achievement goals on
14 outcomes such as academic performance (Hulleman et al., 2010). With the recent proliferation of
15 studies continuing to exacerbate the variability in conceptualisations and operationalisation of
16 achievement goals (see Korn & Elliot, 2016 for further details), the need for some form of clarity
17 becomes stronger in a field experiencing ‘methodological disarray’ (Deshon & Gillespie, 2005; Kaplan
18 & Maehr, 2007; Hulleman et al., 2010).

19

20 *1.4 The Goal Orientation Construct*

21 In a bid to disentangle AGT, (as in Deshon & Gillespie, 2005), investigations into the definitional
22 dimension of achievement goals uncovered further definitional inconsistencies in a construct named
23 goal orientation: a term used to understand the context of the achievement goals and related
24 behaviour. Five goal orientation categories were established. The two main categories were: *state*
25 *goal orientation* (33% of papers) and *trait goal orientation* (29.5% of papers). *State goal orientation*
26 goals refer to the ‘adoption and pursuit of task specific goals within achievement’ domains for

1 example, a basketball game (sports) or class test (academic) (Deshon & Gillespie, 2005, pp.1097). *Trait*
2 *orientation* goals refer to an individual's personal stable disposition, representing achievement
3 motives for a domain (e.g., motives for the sports domain or academic domain) without being related
4 to a specific task (Cumming et al., 2008). As a result of unclear differentiation between goal types,
5 understanding of the properties and effects of adopting achievement goals, however they are defined,
6 in trait versus state orientations is limited. Therefore, there would appear to be not only differences
7 in the definitions and conceptualisations of achievement goals but also the goal orientations in which
8 they are examined. To address the continuing disarray, we strongly advocate that authors clearly state
9 on which definitional dimension they conceptualise their achievement goals (e.g., competence or
10 theories of intelligence), as well as defining the context in which those goals are examined (e.g., trait
11 or state). As the current research is centred around Elliot's conceptualisation of achievement goals,
12 the organisation of the framework proposed provides a way for achievement goals conceptualised in
13 competence to be consistently and clearly defined and examined.

14

15 *1.5 A unifying conceptualisation of achievement goals based on competence*

16 Within the suggested framework, there is first a need for a term which outlines the context in
17 which the achievement goals are going to be investigated. Here, we propose using *Goal orientation* to
18 discern context. In the model presented within the present research there are two goal orientations
19 for achievement goals: Dispositional (trait) goal orientation and situational (state) goal orientations.
20 Each orientation has distinctive properties for its respective achievement goals, such that dispositional
21 achievement goals are posited to be stable across conditions within a domain (Han, 2016; Xiang et al.,
22 2011) whereas situational achievement goals are posited to be changeable depending on the
23 contextual conditions of a situation (Han, 2016; Kaplan & Maehr, 2007).

24 Though we draw on the 2x2 model for achievement goals (Elliot and McGregor, 2001), the
25 theoretical framework of the achievement goal foundations (the differentiation of dispositional and
26 situational goals) can be applied to any model. This paper merely advocates for clarity in

1 conceptualising and operationalising achievement goal foundations to help maintain consistency with
 2 the recent proliferation of models (Kaplan & Maehr, 2007; Korn & Elliot, 2016). Our chosen approach
 3 clearly defines achievement goals as motivational constructs that affect an individual’s attitude and
 4 initial interpretation of a task and conceptualises them as cognitive dynamic aims (Elliot, 1999; Han,
 5 2016). The achievement goals in this conceptualisation are centred on the standards of competence;
 6 evaluating competence based on task/self or other standards (Elliot & Murayama, 2008; Korn & Elliot,
 7 2016; Senko & Tropiano, 2016) with the additional component of valence (approach and avoidance).
 8 Figure 1 depicts our proposed alternative portrayal of the framework and details how the components
 9 link to one another.

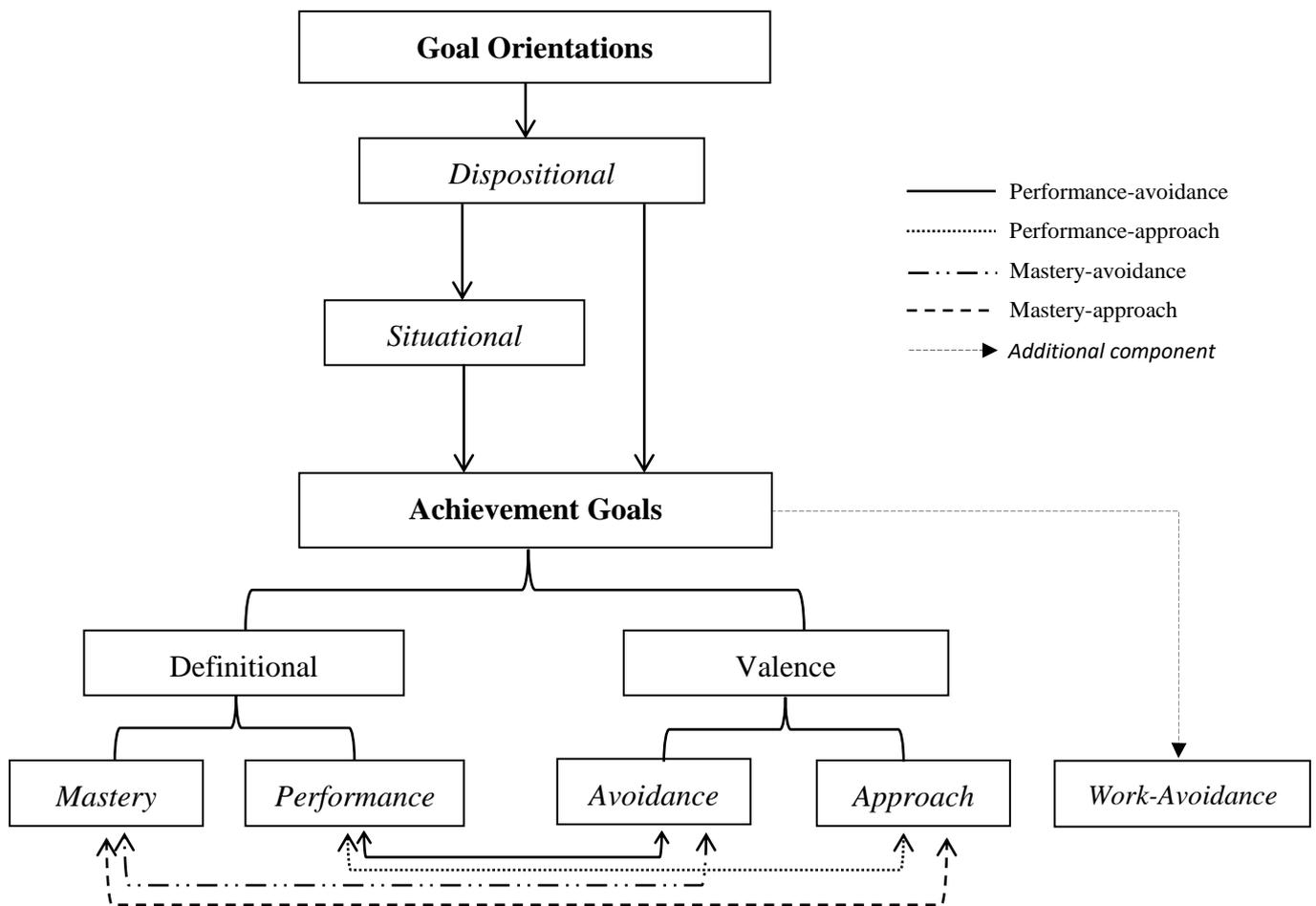


Figure 1: Achievement goal theory framework depicting goal orientation and achievement goal component relationships including the additional goal, work-avoidance.

1 Figure 1 illustrates there is a hierarchical relationship between dispositional and situational
2 goal orientations. Research proposes that dispositional achievement goals can have an influential
3 effect on the state goals an individual adopts (Elliot & Church, 1997; Fryer & Elliot, 2007; Roberts et
4 al., 2007; Spray et al., 2006). Specifically, dispositional achievement goals act as antecedents to
5 situationally specific state goals (Bipp & van Dam, 2014). Despite being posited to have an influential
6 effect on situationally specific goals, dispositional orientation achievement goals have lacked clear
7 methodological differentiation from situational orientation achievement goals within the AGT
8 literature. Consequently, understanding of the properties and effects of adopting dispositional
9 orientation achievement goals is limited.

11 *1.6 Unravelling Dispositional Orientation Achievement Goals: Dominant Goals*

12 Within the dispositional goal orientation, achievement goals are posited to be independent to one
13 another or 'orthogonal' (Da Costa, 2015; Elliot & McGregor, 2001; Harackiewicz et al., 2002; Kaplan &
14 Maehr, 2007; Pintrich et al., 2003; Roberts et al., 2007; Smith et al., 2009). The orthogonality of goals
15 implies 'individuals could have varying levels of commitment to many different achievement goals at
16 the same time' (Han, 2016, pp. 1000), suggesting that goals are independent but not mutually
17 exclusive. For example, Gavaza et al. (2014) demonstrated pharmacy students hold multiple
18 achievement goals in a dispositional orientation when students scored highly on all four achievement
19 goals. However, Van Yperen (2006) proposed that while holding multiple goals, individuals hold one
20 goal more dominantly than the others. In fact, using *The Dominant Achievement Goal Approach*
21 questionnaire, Van Yperen (2006) and Scheltinga et al., (2017) found 85% of university students held
22 a dominant achievement goal.

23 Individuals with different dominant goals have also been found to have distinct profiles, aligned
24 with extant empirical data concerning the traditional achievement goal approach (Scheltinga et al.,
25 2017; Van Yperen, 2006). For example, Van Yperen (2006) and Van Yperen and Orehek (2013) found
26 that persons with a dominant performance-approach goal also pursued mastery-approach, mastery-

1 avoidance and performance-avoidance goals, the scores of which create their independent
2 dispositional profile (Scheltinga et al., 2017). To date five studies have utilised the Dominant
3 Achievement Goal Approach: Van Yperen (2006), Van Yperen and Orehek (2013), Van Yperen et al.,
4 (2011), Scheltinga, et al., (2015) and Scheltinga et al., (2017). However, only two of these examined
5 dominant achievement goals in relation to academic performance and the others did not explicitly
6 state they were testing achievement goals of a dispositional nature and therefore cannot be said to
7 truly represent dispositional achievement goal profiles (e.g., multiple goals with a dominant goal).

8

9 *1.7 Current research*

10 The current research is interested in examining the dominant achievement goal construct in the
11 dispositional goal orientation relating to academic achievement. By understanding the relationship
12 between dominant dispositional achievement goals and academic performance, we hope to provide
13 insight concerning how teachers can enhance students' achievement in the academic domain. The
14 research aim was therefore two-fold. First, to tender an alternative portrayal of the interacting
15 relationships between AGT components which aids in identifying the distinction between the types of
16 goal orientations and how they should be assessed. This was conducted by developing a method of
17 calculating a dominant dispositional achievement goal (DDAG). The construct symbolises preference
18 for one achievement goal while simultaneously representing conceptual validation that multiple
19 achievement goals can be valued in a dispositional orientation. We anticipated that this approach
20 would demonstrate comparable sensitivity to Van Yperen (2006) and Scheltinga et al., (2017),
21 identifying dominant achievement goal profiles in approximately 85% of the student population.

22 The second research aim was to empirically investigate dispositional achievement goals and their
23 relationship to academic achievement in university students with a focus on SEP and psychology
24 students. This line of investigation generates two hypotheses. When examining mastery-based,
25 performance-based and work-avoidance achievement goals for the previous academic year, we
26 hypothesised, that as in previous works (e.g., Hall et al., 2014), work-avoidance scores would be lower

1 than mastery-based and performance-based achievement goal scores. The second hypothesis
2 investigated achievement goal relationships to academic achievement through correlational analysis.
3 This hypothesis has three parts. First, we hypothesised that mastery-based and performance-based
4 achievement goals would be significant positively related to academic performance. We add to this
5 by predicting that when differentiated by valence, avoidance-based goals would be negatively related
6 whereas approach-based goals would be positively related, to academic grade. Second, we generate
7 hypotheses about the work-avoidance goal. We hypothesised that work-avoidance would be
8 significantly negatively related to academic performance and, through regression analysis, would add
9 to the predictive value of achievement goal models used to predict academic grade. Finally based on
10 previous findings that students with higher goal orientation goals on either mastery or performance
11 orientations had significantly better grades than those scoring high on multiple goals (Mattern, 2005),
12 we predicted positive relationships between unidimensional DDAG scores and academic grade.

13

14 **2. Method**

15 *2.1 Sampling Method*

16 The study received ethical approval from Departmental and University Research Ethics
17 Committees. Participants were sampled from the student population via opportunistic sampling. To
18 be included students had to be second year or above of undergraduate study or a postgraduate
19 student. The retrospective questionnaire was completed online at the beginning of the academic year.
20 A link was distributed via email and social media pages and students gave online informed consent
21 and psychology students were awarded with participant credit for their participation.

22

23 *2.3 Participants*

24 165 students initially submitted a response. Three were removed due to repeat submission,
25 four were excluded for incomplete questionnaires, and one was removed for not meeting inclusion
26 criteria. The final sample consisted of 157 (125 female and 32 male) student responses. Students'

1 mean age was 20.41 years ($SD = 2.15$; range = 18-31 years). Most respondents (93%) were taking
2 undergraduate courses (meaning 67.8% of respondents answered the questionnaire reflecting on
3 their first year, 19.2% second year, 11.6% third year and 1.35% fourth year) and the rest (7%) were
4 taking postgraduate courses in the previous year . 60% of participants were taking a sport and exercise
5 or psychology degree course.

6

7 2.4 Measures

8 2.4.1 Demographic Questionnaire

9 The questionnaire gathered general and academic information: gender, age, academic year
10 the previous year (e.g., second year reporting on first-year) course (e.g., psychology), final academic
11 grade for the previous year (e.g., First or 2:1), grade percentage (e.g., 65%).

12

13 2.4.2 Achievement Goals

14 Achievement goals were measured using the Achievement Goal Questionnaire – Revised
15 (AGQ-R; Elliot & Murayama, 2008). The questionnaire is comprised of 12 items with 3 items for each
16 achievement goal in the 2x2 model. Mastery-approach (e.g., “completely master material”), mastery-
17 avoidance (“avoid learning less than I possibly could”), performance-approach (“perform well relative
18 to others”) and performance-avoidance (“avoid doing worse than others”). Participants responded to
19 all the items on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Scores corresponding to each
20 item were averaged to give scores for the four achievement goal scores. Students were asked to
21 complete the questionnaire thinking retrospectively to the 2016-2017 academic year via a statement
22 at the beginning of the questionnaire: ‘Please give a response that best suits the aims you had during
23 your course for the academic year.’ Questions in the original questionnaire with specific relevance to
24 a class were rephrased to focus on participants’ general degree course, for example: ‘my aim was to
25 completely master the material presented in *my course*’. Four questions (Hall et al., 2015; Pieper,

1 2003) assessing work avoidance were added to the AGQ-R. These were answered on the same five-
 2 point scale as the AGQ-R.

3

4 3. Results

5 Achievement goal scores from the AGQ-R were analysed in three ways according to their use
 6 in investigating dominant dispositional achievement goals and achievement goals' relationship to
 7 academic performance. All score variations include different uses of the 2x2 achievement goal scores,
 8 descriptive statistics and Cronbach alphas can be seen in Table 1.

9

10 **Table 1: 2x2 achievement goal descriptive statistics, N = 157 participants**

	Mastery		Performance	
	Approach	Avoidance	Approach	Avoidance
Mean	3.70	2.99	3.64	3.49
SD	.847	.811	.943	.959
Alpha (α)	.80	.64	.85	.74

11

12

13 To examine dispositional orientation N = 157 raw scores were used. This generated performance
 14 orientation scores (POS, $M = 19.17$, $SD = 3.49$) including performance-approach and performance-
 15 avoidance, and mastery orientation scores (MOS, $M = 23.58$, $SD = 3.35$) including mastery-approach
 16 and mastery-avoidance. The average of these scores generated average mastery orientation scores
 17 (aMOS; $M = 3.56$, $SD = .845$) and average performance orientation score (aPOS; $M = 3.40$, $SD = .673$)
 18 additionally the average work avoidance score (aWAS; $M = 2.54$, $SD = .612$) was the average of the
 19 four work-avoidance statements. The average scores were used to examine achievement goal
 20 differences and relationships to academic grade as part of the second research aim.

21

22

1 *First Research Aim: Proposing an Alternative Relationship Framework*

2 *3.1 Creating the Dominant Dispositional Achievement Goal*

3 POS and MOS scores were used to determine individuals' DDAG using the following formula:

4

$$5 \text{ Performance Dominance} = (\text{Performance Orientation score} - \text{Mastery Orientation Score})$$

6

7 The formula generated scores on a continuum from 13 to -14, ($M = .96$, $SD = 4.828$). Positive scores
 8 represented those with a Performance Dominant (PD) orientation ($n = 84$; $M = 4.42$, $SD = 2.95$) and
 9 negative scores represented those with a Mastery Dominant (MD) orientation, ($n = 55$; $M = -4.00$, SD
 10 $= 3.162$) scores of zero represented those with an Equal Dominant (ED) orientation ($n = 18$). A total of
 11 89% of participants had a dominant achievement goal. The histogram in Figure 2 shows the
 12 distribution of DDAG scores assessed via Shapiro-Wilks ($p = .052$) suggesting a normal distribution with
 13 weak negative skewness $-.294$, $SE = .194$, kurtosis $= .644$, $SE = .385$.

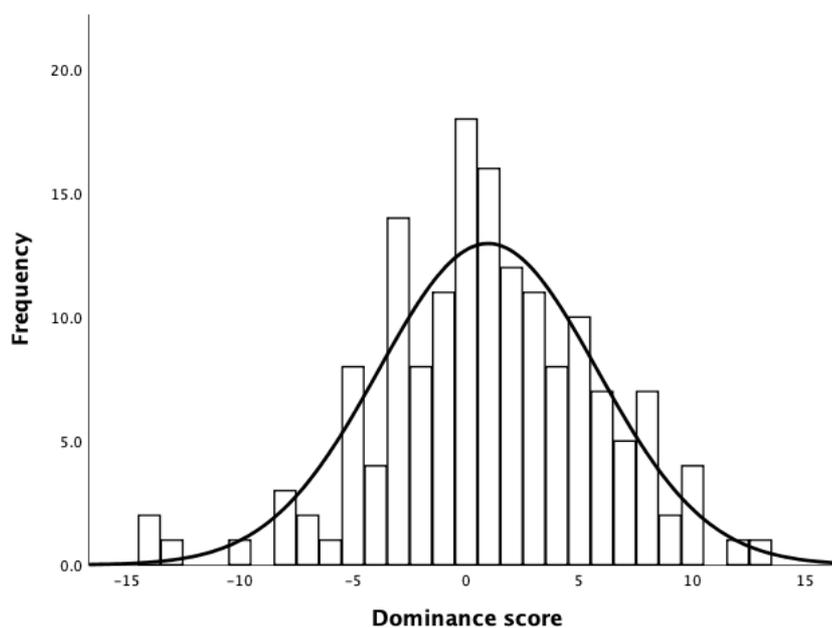


Figure 2: Histogram of Dominant Dispositional Achievement Goal (DDAG) score distribution, $N = 157$ students

14

15 *3.1.1 Validation of Goal Dominance*

1 The dominance categories were assigned on the premise that an individual's MOS and POS's
2 were significantly different. To check the validity of this processing method, a paired samples *t*-test
3 was conducted between the MOSs and the POSs for the three dominance groups. For the PD group
4 results confirmed significant differences, $t(83) = -13.72, p < .001$, where POS ($M = 23.58, SD = 3.35$)
5 was significantly higher than MOS ($M = 19.17, SD = 3.49$). For the MD group results also confirmed
6 significant differences, $t(54) = 9.38, p < .001$, where MOS ($M = 22.29, SD = 3.54$) was significantly higher
7 than POS ($M = 18.29, SD = 3.45$). As expected, there were no differences for the equal dominance
8 group.

9

10 3.2 Achievement Goals

11 *Hypothesis 1: Mastery, Performance and Work-avoidance*

12 Average achievement orientation scores were examined by paired-samples *t* tests with
13 Bonferroni correction. Average POS ($M = 3.56, SD = .845$) was significantly higher than aWAS ($M =$
14 $2.54, SD = .612; t_{(156)} = 11.288, p < .001, d = 1.39$) and aMOS ($M = 3.40, SD = .673; t_{(156)} = -2.685, p =$
15 $.014, d = .21$). Average MOS was significantly higher than aWAS ($t_{(156)} = 10.03, p < .001, d = 1.34$) for
16 the previous academic year.

17

18 3.2.1 2x2 Achievement Goals Score

19 One-way ANOVA comparing mean scores on mastery-approach (MAp), mastery-avoidance
20 (MAv), performance-approach (PAp) and performance-avoidance (PAv) achievement goals, revealed
21 a significant main effect: $F(3) = 25.014, p < .001, \eta_p^2 = .107$. Multiple comparisons showed students
22 had significantly higher MAp scores ($M = 3.82$) compared to both MAv ($M = 2.99, p < .001$) and PAv
23 ($M = 3.49, p = .014$). Participants' scores for MAv were significantly lower compared to the other three
24 orientations ($p < .001$). There was no significant difference between MAp ($M = 3.70$) and PAp scores
25 ($M = 3.64, p = .370$), or between PAp ($M = 3.64$) and PAv ($M = 3.49, p = .522$) orientation scores.

26

1 3.2.2 Academic Grade

2 An academic grade percentage was provided by 131 students; one extreme outlier with 39%
3 grade average was identified and removed from further analysis. The grades of the remaining 130
4 students ranged from 47% – 90% ($M = 67.16\%$, $SD = 6.29$). Students' grades were normally distributed
5 ($-.191$ skewness, $SE = .212$; 1.362 kurtosis, $SE = .422$).

6

7 *Hypothesis 2: Relationships between Academic Grade and Achievement Goal Variations*

8 *Hypothesis 2.1: Achievement Orientation and 2x2 Achievement Goals*

9 Pearson's bivariate correlations were used for all correlational analysis. Significant positive
10 correlations were found for academic grade and aMOS ($r = .346$, $n = 130$, $p < .001$), and aPOS ($r = .280$,
11 $n = 130$, $p = .001$). Four further correlations were used to assess goals when differentiated by valence
12 (e.g., 2x2 achievement goals). Significant positive correlations were found for all four goals: mastery-
13 approach ($r = .387$, $n = 130$, $p < .001$), mastery-avoidance ($r = .172$, $n = 130$, $p = .05$), performance-
14 approach ($r = .173$, $n = 130$, $p = .049$) and performance-avoidance ($r = .329$, $n = 130$, $p < .001$).

15 Multiple regression analysis then tested the which combination of achievement goals best
16 predicted academic grade. The results of the regression models can be seen in Table 2. The models
17 demonstrate the two definitional goals explained 16.2% of the variance of academic grade , however
18 only aMOS was significant predictor. The four 2x2 goals explained 21.4% of the variance of academic
19 grade with MAp and PAp as significant predictors ($p = .001$ and $p = 0.37$ respectively) while MAv ($p =$
20 $.751$) and PAv ($p = .393$) were not significant predictors.

21

22

23

24

1 *Table 2: Regression models for achievement goal variations and academic grade*

Predictor variables	t	p	Beta (β)	F	d.f	p	R ²
Definitional Goals							
Overall model				11.946	2, 124	.000	.162
aMOS	3.544	.001	.329				
aPOS	1.327	.187	.123				
2x2 Achievement Goals							
Overall model				8.393	4, 123	.000	.214
MAp,	3.360	.001	.332				
MAv	-.318	.751	-.029				
PAp	2.114	.037	.245				
PAv	-.894	.373	-.095				
Models with the addition of the Work-Avoidance goal							
Definitional Goals							
Overall Model				10.932	3, 123	.001	.211
aMOS	2.249	.026	.222				
aPOS	1.497	.137	.136				
aWAS	-2.762	.007	-.244				
2x2 Achievement Goals							
Overall model				7.102	5, 122	.000	.225
MAp	2.384	.019	.264				
MAv	-.301	.764	-.027				
PAp	2.014	.046	.233				
PAv	-.707	.481	-.075				
aWAS	-1.317	.190	-.126				

1 *Hypothesis 2.2: The Addition of Work-avoidance*

2 There was a significant negative correlation for academic grade and aWAS; $r = -.299$, $n = 130$,
3 $p = .001$. To determine the predictive value of aWAS for academic grade, the variable was added to
4 the achievement goal regression models; the results can be seen in Table 2. When added to the
5 definitional goals, the new model explained 21.2% of the variance with aWAS and aMOS as significant
6 predictors of academic grade. When added to the 2x2 achievement goals, the new model explained
7 22.5% of variance however only MAp and PAp remained significant predictors.

8

9 *Hypothesis 2.3: Dominant Dispositional Achievement Goal and Academic Grade*

10 Dominance scores were also examined in relation to academic grade. Pearson's bivariate
11 correlation showed no significant relationship between dominance scores and academic grade for
12 either the MD ($r = .244$, $n = 46$, $p = .103$) or the PD group ($r = .105$, $n = 69$, $p = .393$).

13

14 **4. Discussion**

15 In this study we examined university students' dispositional orientation achievement goals,
16 and their relationship to academic attainment, drawing on the 2x2 achievement goal model (Elliot &
17 McGregor, 2001) and Van Yperen's Dominant Dispositional Achievement goal approach (Van Yperen,
18 2006). We aimed to provide some clarity on the equivocal findings concerning mastery and
19 performance achievement goals by consistently operationalising goals in alignment with their
20 conceptualisation. To do this, we first developed a variable that, through its embodiment of the
21 concept of multiple goal adoption in dispositional orientations, can be used to represent dispositional
22 goal dominance: the DDAG. Additionally, we tested the importance of achievement goals including
23 work-avoidance when assessing achievement goals, because work avoidance is the only goal
24 associated with consistently negative academic outcomes (Hall et al., 2015; Pieper, 2003).

25

26 *4.1 Validity of the Dominant Dispositional Achievement Goal*

1 The DDAG construct assigned a single numerical value creating distinct independent
2 dispositional profiles: mastery, performance or equal dominance. Participants' DDAG scores support
3 the perspective that dispositional achievement goals can be held simultaneously, with varying levels
4 of commitment (Han, 2016) in other words, the orthogonality of dispositional achievement goals (Da
5 Costa, 2015; Roberts et al., 2007; Smith et al., 2009). To our knowledge this is the first classification
6 approach which represents multiple dispositional achievement goal adoption simultaneously with
7 dominant achievement goal alignment. The distribution of DDAG scores was normal with a mode of
8 zero. Interestingly the skewness was also low, indicating that mastery and performance dominance
9 was roughly evenly distributed in our undergraduate sample, when one might expect to see a greater
10 number of mastery dominant participants in a sample drawn from a HE population (Martin et al.,
11 2008). The classification of dominance groups via the DDAG also demonstrated comparable sensitivity
12 to the prevalence of individuals holding dominant goals observed by Van Yperen (2006) and Scheltinga
13 et al., (2017) in 89% of participants had a DDAG that was numerically different from zero . However,
14 it is not clear how to establish what a psychologically meaningful numerical difference in the
15 DDAG might be. One possibility is to classify anyone falling outside two standard deviations
16 of the mean as having dominant dispositional goal. By this measure this would only be 10-
17 15% of the sample which might explain the lack predictive power.

18

19 *4.2 Consequences of achievement goal adoption: Relationship to Academic grade*

20 Our second aim was to examine achievement goals and their relationship to academic grade.
21 We clearly defined the achievement goals in terms of competence (Elliot & Church, 1997) and
22 operationalised them using the competence-based AGQ-R (Elliot & Murayama, 2008) for the
23 dispositional goal orientation. As such the results reflect students' domain general goals (degree
24 course) and its relationship to students' final grade for the year. When achievement goals were
25 collapsed across valence and examined based on definitional components both mastery and

1 performance goals were positively related to academic grade. Interestingly, multiple regression
2 analysis indicated that the mastery achievement goal positively predicted academic achievement and
3 performance achievement goal was a positive but non-significant predictor.

4 On the other hand, work-avoidance was found to be negatively related to academic
5 performance; the higher the work-avoidance score, the lower the academic grade. When added to
6 the predictive model with the definitional-based mastery and performance goals, work-avoidance was
7 a significant negative predictor of academic achievement that increased the predictive value of the
8 model. These results suggest that, in-line with previous research (e.g., Hall et al., 2015), the more
9 work-avoidant a student is, the worse their academic performance outcomes. However, as our
10 regression model of 2x2 goals and work-avoidance suggests, the specific drivers of academic
11 motivation may be better understood when goals are differentiated by valence, as earlier work on the
12 2x2 model suggests (Elliot & McGregor, 2001; Elliot & Murayama, 2008).

13 Previous investigations found that avoidance-based goals were associated with lower
14 academic grades (Elliot & McGregor, 2001; Van Yperen et al., 2014; Wolters, 2004), which was
15 attributed to the adoption of maladaptive behaviours and negative emotions (Harackiewicz et al.,
16 2002; Mouratidis et al., 2018; Putwain & Sander, 2016; Roberts et al., 2007). Alrakaf et al., (2014),
17 found mastery-avoidance to be the strongest predictor of low academic performance in pharmacy
18 students as did Hall et al., (2015) while Elliot and McGregor (2001) found performance-avoidance
19 negatively predicted academic outcomes. However, the present results differ from these previous
20 findings. Specifically, while mastery-avoidance and performance-avoidance positively correlated with
21 academic performance, neither significantly predicted academic performance when included in a
22 fuller model. One possibility for these differences in results may be the use of AGQ. As Hulleman et
23 al., (2010) note, Elliot and Murayama (2008) updated the AGQ (Elliot & McGregor, 2001) to remove
24 negative affectivity so the avoidance components were more in line with the theoretical constructs;
25 creating the AGQ-R. Consequently previous studies using the AGQ, such as Alrakaf et al., (2014), Hall
26 et al., (2015) and Elliot and McGregor (2001), are arguably examining theoretically different constructs

1 to the achievement goals investigated in the current study which uses the AGQ-R. As such, different
2 constructs could account for the diverse findings between here and other studies.

3 The positive links found between avoidance-based goals and academic grade in the current
4 study suggest striving for achievement by avoiding failure may have positive outcomes. For example,
5 performance-avoidance is based on not doing worse than others. For some, this may be perceived as
6 the ultimate desired outcome and therefore mitigate some negative behaviours, (e.g., challenge
7 avoidance; Mouratidis et al., 2018) associated with this goal resulting in higher academic achievement
8 (Van Yperen et al., 2014).

9 Congruent with previous findings (e.g., Mouratidis et al., 2018; Phan, 2010, 2013; Wolters,
10 2004), performance-approach goals were found to positively predict academic grade. However,
11 inconsistencies arose when mastery-approach was examined. The current study found mastery-
12 approach positively predicted academic achievement. This differs from Hall et al., (2015) who found
13 mastery-approach did not coincide with high academic achievement. The lack of association could be
14 the result of the sample being comprised of more third- and fourth-year students; year groups Alrakaf
15 et al., (2014) found were not as strongly mastery-approach oriented as first-years. While the present
16 study did not examine goal differences between year groups, first-year students did constitute the
17 largest percentage of the sample. Therefore, the differences to Hall et al., (2015) could be the
18 consequence of the larger sample percentage of first-year students, and subsequently greater
19 variability in mastery goals reported. On another note in their review, Hulleman et al., (2010) found
20 differences in the scales used to assess mastery-approach (e.g., AGQ, AGQ-R or PALS) were associated
21 with outcome variances. Consequently, it is possible, differences in findings are the result of the
22 measures used. It is also worth noting that future studies may wish to further investigate the
23 comparable differences of achievement goals between subjects, year groups and countries
24 (Remedios, Kiseleva & Elliot, 2008).

25 While the current findings may add to the equivocality of research concerning traditional
26 achievement goals, the results for work-avoidance are clear. By demonstrating association between

1 the pursuit of work-avoidance and lower academic grade (as in Gavaza et al., 2014; Hall et al., 2015;
2 King & McInerney, 2014), current findings show that the negative association between work-
3 avoidance and academic performance generalises beyond pharmacy students. This result confirms
4 that work-avoidance is an important goal to consider when assessing achievement goals and academic
5 performance (King & McInerney, 2014). However, further empirical work is needed to discern the
6 antecedents and consequences, both behaviourally and emotionally, of work-avoidance.

7

8 *4.3 Recommendations for those working in sport and exercise psychology*

9 Researchers who have investigated work-avoidance found positive correlations with
10 behavioural and emotional disaffection (King & McInerney, 2014). As a behavioural strategy,
11 disaffection, in tandem with attitudes of “getting through”, “bearing with” (Elliot, 1999) and “get one
12 over on teacher” (Nicholls et al., 1989), along with emotional withdrawal and disinterest, can
13 outwardly manifest as academic alienation and disruptive, pernicious classroom attitudes (e.g., not
14 listening, withdrawal). But what causes the adoption of these negative behaviours? Gavaza et al.,
15 (2014) found work-avoidance was more prevalent in second-year students. The authors attributed
16 this to a rise in students’ stress levels due to the increase in workload and course demands compared
17 to first year. These findings indicate the importance of encouraging sport and exercise psychology
18 educators, particularly those responsible for strategic decision making such as programme directors, to
19 consider the impact of factors such as changing the frequency and nature of assessments on students’
20 achievement goal adoption.

21 Course directors play a key role in developing assessments at both the module and
22 programme level. Decision making about the type and frequency of assessment is influenced by
23 numerous factors, including individual lecturers’ personal pedagogical beliefs, programme learning
24 outcome requirements, structural constraints such as teaching efficiency and institutional habits etc.
25 However, the effect of different modes of assessment on achievement goals is rarely explicitly
26 considered. For example, in many institutions the transition from first year to second year is

1 associated with a transition from multiple-choice questions (MCQ) to essay-based or other forms of
2 assessment. This transition is necessary for pedagogical and practical reasons, as essays assess many
3 types of learning that MCQ do not. However, in order to prepare students for these new assessments
4 it also necessary to add new formative assessments which considerably increases the student's
5 workload and may encourage the adoption of work-avoidance goals which we have shown are
6 associated with poor outcomes. Thus, while such changes in assessment structure may satisfy
7 institutional needs, it can have unintentional costs for students. Given the centrality of achievement
8 goal theories in sport and exercise psychology and the clear evidence of the importance of goals in
9 attainment, it is our view that sport and exercise educators should be encouraged for consider the
10 impact of programme change on students' achievement goals when engaging in curriculum
11 development. The fundamental motivations instilled by sport and exercise psychology educators
12 should appeal to a range of motivational profiles, directing students to learn as much as possible
13 (mastery-approach) as well as demonstrating their competence by doing better than others
14 (performance-approach). Simultaneously, educators should seek to reduce structural and
15 organisational factors that encourage students to become work-avoidant.

16

17 *4.4 Recommendations for researchers: Challenging conceptual clarity*

18 The current discrepancies within AGT literature, both conceptually and methodologically,
19 means comparing and generating reliably comparative findings of the consequences of achievement
20 goal adoption on performance outcomes is challenging. Here we propose, apply, and recommend one
21 step to address this: clear definitions of the conceptualisation of achievement goals under
22 investigation. For example, first, define the dimension on which achievement goals are defined (e.g.,
23 definitions of competence, Elliot & Church, 1997). Then, as illustrated in the current paper, define the
24 goal orientation in which the achievement goals are examined (i.e., is the research focused on
25 dispositional or situational goal orientations). These conceptualisations then inform the methodology
26 which should be used to examine the achievement goals (Hulleman et al., 2010). For example,

1 examining competence-based goals limits which questionnaires are appropriate and only
2 questionnaires based on competence dimensions (e.g., the standards or standpoints) such as Elliot &
3 Murayama's (2008) AGQ-R, should be used. Knowledge of the goal orientation then allows for
4 alterations to be made to the questionnaire. For example, questions for dispositional achievement
5 goals should have a domain general focus whereas situational goals should be made task specific.
6 Identifying these specifications during theoretical introductions will greatly help ease the ambiguity
7 and classification of empirical papers for future comparisons and ultimately the unification of the
8 literature with AGT.

9 Moreover, consistent use of conceptualisations will also allow variation in research findings
10 as a result of discrepancies in analytic strategies (Harackiewicz et al., 1997) to be addressed, as more
11 reliable and clearer patterns of achievement goal effects on academic grades and other performance
12 outcomes would be identified (Hulleman et al., 2010). Nevertheless, it is important to note, with the
13 consideration of the alternative relationship framework, we do not suggest researchers have to
14 adhere to these specific concepts or the framework itself. However, we do implore future researchers
15 to be clear in the terms, conceptualisations and methods they do choose to investigate achievement
16 goals and to be consistent throughout their work.

17

18 **5. Conclusion**

19 This research offers two main contributions to AGT literature. It provides some theoretical
20 clarity of distinction between dispositional and situational goal orientation achievement goals. The
21 dominant dispositional achievement goal construct provides a new way to represent, in a single value,
22 the relative degree to which multiple achievement goals are adopted in a dispositional orientation.
23 From an applied perspective we confirm and extend existing research on 'avoidance' motivation,
24 demonstrating that work-avoidance is a powerful predictor of poor academic attainment in university
25 students. It is concluded that those working in sport and exercise psychology education and other
26 high-performance contexts should consider implementing methods to help identify and alter

1 structural factors that encourage work-avoidant attitudes in order to promote the approach-based
 2 goals associated with positive outcomes. This relatively reliable and low-cost route to enhancing
 3 performance could be facilitated by determining achievement goal profiles and altering learning
 4 environments accordingly.

5

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1 **Figure Captions**

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3 *Figure 1: Achievement goal theory framework depicting goal orientation and achievement goal*
 4 *component relationships*

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6 *Figure 2: Histogram of DDAG score distribution, N - 157 participant*

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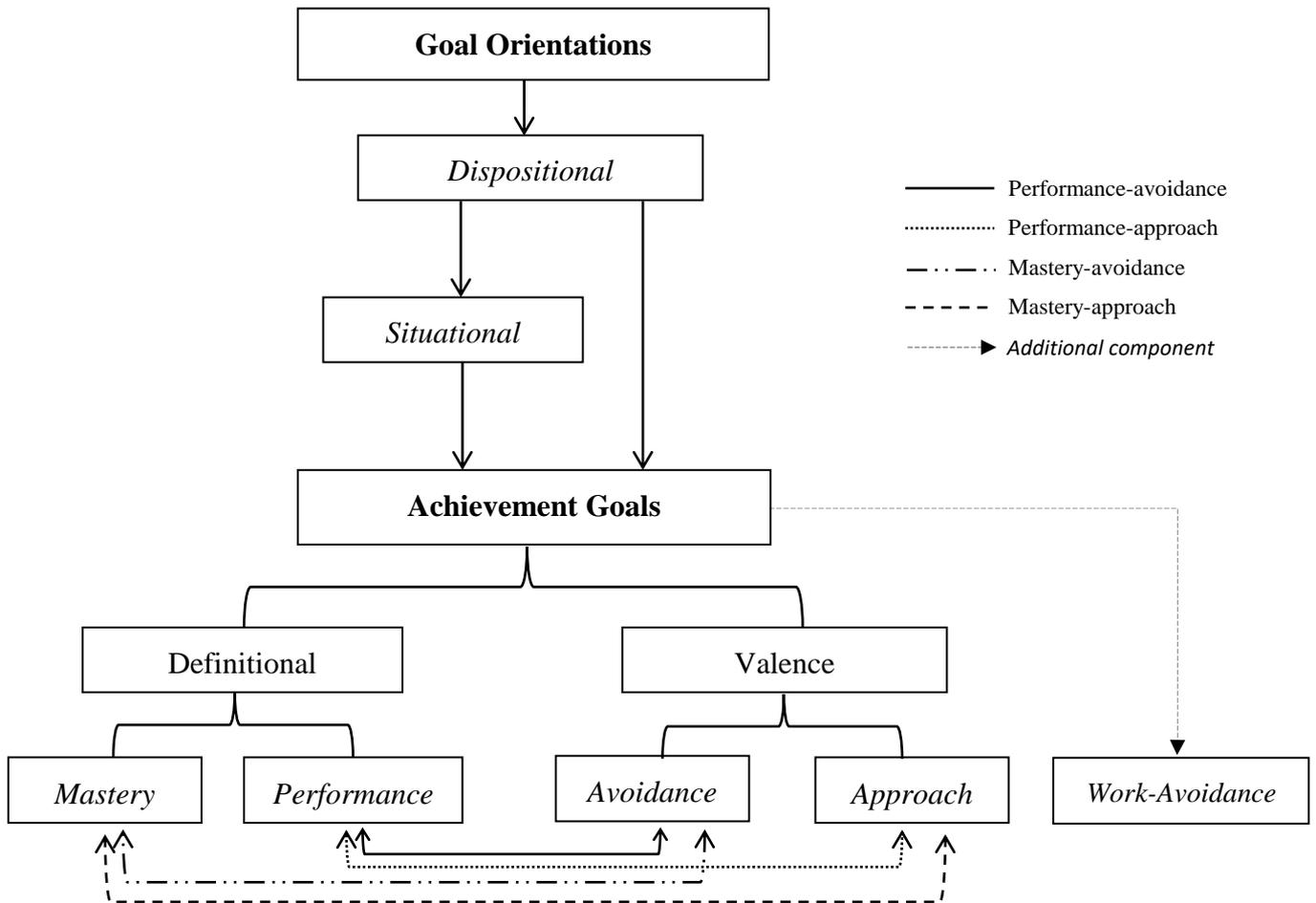


Figure 2: Achievement goal theory framework depicting goal orientation and achievement goal component relationships including the additional goal, work-avoidance.

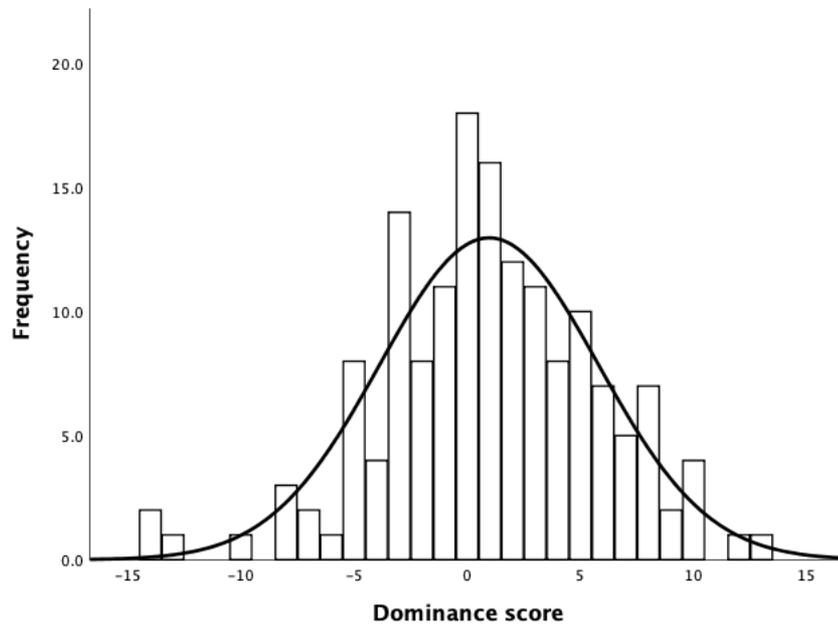
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Figure 2: Histogram of Dominant Dispositional Achievement Goal (DDAG) score distribution, $N = 157$ students

1 **Table Captions**

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3 *Table 1: AGQ-R 2x2 achievement goal descriptive statistics, N = 157 participants*

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5 *Table 2: Regression models for achievement goals variations and academic grade*

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9 *Table 3: 2x2 achievement goal descriptive statistics, N = 157 participants*

	Mastery		Performance	
	Approach	Avoidance	Approach	Avoidance
Mean	3.70	2.99	3.64	3.49
SD	.847	.811	.943	.959
Alpha (α)	.80	.64	.85	.74

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1 *Table 4: Regression models for achievement goal variations and academic grade*

Predictor variables	t	p	Beta (β)	F	d.f	p	R ²
Definitional Goals							
Overall model				11.946	2, 124	.000	.162
aMOS	3.544	.001	.329				
aPOS	1.327	.187	.123				
2x2 Achievement Goals							
Overall model				8.393	4, 123	.000	.214
MAp,	3.360	.001	.332				
MAv	-.318	.751	-.029				
PAp	2.114	.037	.245				
PAv	-.894	.373	-.095				
Models with the addition of the Work-Avoidance goal							
Definitional Goals							
Overall Model				10.932	3, 123	.001	.211
aMOS	2.249	.026	.222				
aPOS	1.497	.137	.136				
aWAS	-2.762	.007	-.244				
2x2 Achievement Goals							
Overall model				7.102	5, 122	.000	.225
MAp	2.384	.019	.264				
MAv	-.301	.764	-.027				
PAp	2.014	.046	.233				
PAv	-.707	.481	-.075				
aWAS	-1.317	.190	-.126				