



Big Five personality profiles of context-specific achievement goals



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ABSTRACT

Over the past decade, an increasing body of literature supports the validity and utility of the 2×2 achievement goal framework (Elliot & McGregor, 2001). From this foundation, researchers have begun to investigate the complex antecedents and consequences underlying achievement goal pursuit. In the current studies, we investigated the relations between the Big Five personality traits and context-specific achievement goals in two different contexts (school and work). The results across both studies showed three sets of anticipated, consistent, and specific trait-goal relations. First, conscientiousness was strongly and positively related to mastery-approach goals. Second, agreeableness was positively related to mastery-approach goals and negatively related to performance-approach goals. Third, both avoidance goals and both performance goals were positively related to neuroticism.

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1. Introduction

There is a rich tradition in psychology of the study of achievement motivation, and in particular, achievement goals (for a review, see Elliot, 2005). Over the past decade, most work on achievement goals has centered around the 2×2 framework (Elliot & McGregor, 2001). Explored antecedents of these goals include need for achievement and fear of failure (Conroy, Elliot, & Hofer, 2004; Elliot & Church, 1997), which are common constructs to the motivation domain. However, more holistic constructs from the personality domain, such as the five-factor model of personality (Costa & McCrae, 1992; Goldberg, 1981), have largely been ignored in achievement goal research. The purpose of the present research is to determine the personality trait profiles associated with the pursuit of context-specific achievement goals. In assessing the Big Five personality traits (Costa & McCrae, 1992) and the four goals in the 2×2 achievement goal framework (Elliot & McGregor, 2001), we expected personality traits to reflect the conceptual differences among the different achievement goals. We investigated these trait-goal relations in two different achievement contexts (education and work) and with two different demographic samples in terms of age, nationality, and language. This diversity in context should shed light on the stability and change of the trait-goal relationships across contexts.

1.1. Personality traits: the five-factor model

The five-factor model (FFM) is a central theory to the trait approach to personality (Allport, 1937), and features five orthogonal personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience (Costa & McCrae, 1992; Goldberg, 1981). These traits are the basic dimensions in which people differ, and their subcomponents, or facets, provide the specific dimensions or qualities within each trait (Widiger & Simonson, 2005). The five-factor model (or Big Five) has gained in prominence over the years, with longitudinal and cross-cultural evidence supporting this basic personality structure (McCrae & Costa, 2003; McCrae & John, 1992). While there has been debate about the number of traits (e.g., the HEXACO model, Ashton & Lee, 2009) and which facets comprise each trait (Widiger & Simonson, 2005), the five-factor model serves as a meaningful and robust way to describe the individual as a whole and predicts an array of major life outcomes (Ozer & Benet-Martínez, 2006).

1.2. Achievement goals: the 2×2 framework

The achievement goal construct emerged from decades of research into the different motives people have in achievement settings (Elliot, 2005). Initially, the primary emphasis of achievement goals was on two types of achievement goals: mastery and performance goals (Dweck, 1986; Nicholls, 1984). The fundamental difference in these goal types is how individuals define their competence in a given achievement situation. Specifically, mastery goals use task-referenced and self-referenced competence standards, whereas performance goals are grounded in other-refer-

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enced competence standards. In the past two decades, the achievement goal framework has been expanded to account for goal valence, emphasizing that people strive to approach competence and to avoid incompetence. The two definitions of competence and the two types of valence converged in the current theoretical approach known as the 2×2 achievement goal framework (Elliot & McGregor, 2001). There are four types of goals: mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance.

The four types of achievement goals have distinct patterns of antecedents and consequences (Baranik, Stanley, Bynum, & Lance, 2010; Elliot & McGregor, 2001; Van Yperen, 2006). These patterns can be complex, in part because achievement goals are context-specific. Mastery-approach goals emphasize self-improvement in competence, and they are associated with positive constructs, including intrinsic motivation and task interest (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Van Yperen, 2006), cooperative behavior while working with others (Janssen & Van Yperen, 2004; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2009), and less cheating behavior (Van Yperen, Hamstra, & Van der Klauw, 2011). In the opposite extreme, performance-avoidance goals emphasize avoiding incompetence relative to others and they are related to negative constructs, including anxiety, negative affectivity, amotivation, and lower performance attainment (Elliot & McGregor, 2001; Van Yperen, 2006).

The other two goals, performance-approach and mastery-avoidance, are hybrid goals that have a blend of positive and negative antecedents and consequences that are between the two valence extremes of the other two goals (Elliot & McGregor, 2001). Performance-approach goals emphasize doing well compared to others, and they are related to both positive and negative affect (Van Yperen, 2006) and both approach and avoidance temperament (Elliot & Thrash, 2002). Moreover, they predict better performance (for meta-analysis, Hulleman, Schrage, Bodmann, & Harackiewicz, 2010), but also predict increased cheating (Van Yperen et al., 2011) and competitive behavior (Harackiewicz et al., 2008; Poortvliet et al., 2009). Mastery-avoidance goals emphasize avoiding incompetence relative to oneself, and they generally have produced limited findings. Despite initial findings of positive qualities associated with mastery-avoidance goal pursuit (e.g., higher classroom engagement; Elliot & McGregor, 2001), an increasing body of evidence shows that mastery-avoidance goals tend to be negative (De Lange, Van Yperen, Van der Heijden, & Bal, 2010; Van Yperen & Orehek, in press) and predict lower performance (Baranik et al., 2010; Van Yperen, Elliot, & Anseel, 2009).

Although achievement goals are context-specific, the situation alone is not sufficient to fully explain achievement goal adoption (Elliot, 2006); individual differences also play an important role. The primary individual differences explored in previous research are achievement motives, specifically the need for achievement and fear of failure (Chen, Wu, Kee, Lin, & Shui, 2009; Conroy, Elliot, & Hofer, 2004; Diseth & Kobbeltvedt, 2010; Elliot & McGregor, 1999; Liem, Martin, Porter, & Colmar, 2012; Tanaka & Yamauchi, 2001; Van Yperen, 2006). While these individual differences are clearly important, they represent a narrow conceptual focus. We propose that personality traits offer a more holistic foundation for the antecedents of achievement goals that have largely been unexplored.

1.3. Theories connecting traits and goals

Traits and goals developed as conceptually and historically independent constructs. Allport (1937) asserted that traits are central to an individual's personality, while Murray (1938) pro-

posed that motives are more fundamental than traits. Although each tradition recognized the importance of the other, these concepts remained largely independent with little effort to connect them. The sole exception was McClelland (1951) who advocated that both traits and goals were important to an individual's personality.

In recent decades, researchers have proposed differing theories to relate traits and goals. Many theories advocate a causal process, in which traits or temperaments cause different types of goal pursuit (McCrae & Costa, 1999; Elliot & Thrash, 2002, 2010; Little, Leci & Watkinson, 1992). Other theories propose that both traits and goals are independent but critical concepts of personality at different levels (Corker, Oswald, & Donnellan, 2012; McAdams, 1995) or the same level (Roberts & Robins, 2000; Roberts & Wood, 2006). Recently, Whole Trait Theory (Fleeson, 2012) integrated the trait and goal concepts together, asserting that manifestations of traits can be used to achieve an individual's goals (McCabe & Fleeson, 2012). Each of these theoretical approaches have merit, and research continues to explore how best to connect the trait and goal concepts.

1.4. Five-factor model and achievement goals

While little research attention has explored the relations between the Big Five traits and context-specific achievement goals (Chen & Zhang, 2011; Corker, Oswald, & Donnellan, 2012), several studies have explored relations between the Big Five traits and achievement orientations. These achievement orientations are conceptually different from achievement goals in their breadth of self-regulation—goals are context-specific while orientations are broad tendencies (DeShon & Gillespie, 2005; Elliot, 2005). Nevertheless, studies on the relations between the Big Five and achievement orientations may be useful in generating predictions. Table 1 contains a summary and meta-analysis of research on the relations between the Big Five traits and achievement orientations and achievement goals.¹ Table 1 also contains our meta-analysis of published work on trait-goal relations, which reflects similar findings of Payne, Youngcourt, and Beaubien (2007). Learning orientation (mastery-approach) had the most positive personality profile, performance-avoidance orientation had the most negative personality profile, and performance-approach orientation had both positive and negative relations with traits. However, with the varying results across the studies in Table 1, these meta-analyses may not fully explain trait-goal relations, especially with the inconsistent findings for performance-approach goals. Moreover, these studies may exaggerate the strength of the relations between traits and achievement motivation because both the traits and the achievement orientations are assessed at the same broad, dispositional level.

The mixed results between the Big Five traits and performance-approach orientation could be illuminated by exploring the underlying facet-goal relations. Facets are highly correlated aspects of a higher-order trait and, as such, facet-goal relations in most cases should be similar to the trait-goal relations. However, fluctuations among the facets are possible, in which performance-approach orientation could be linked to both a negative facet and a positive facet of the same trait. Only looking at the overall trait without

¹ The meta-analysis in this paper only contains published correlations between traits and goals; the correlations may be higher than that might be obtained when including unpublished work. Because mastery-avoidance goals were not included in many achievement orientations studies, there is a limited amount of available findings. As such, no meta-analyses were conducted for mastery-avoidance goals and the Big Five traits.

Table 1
Summary of relations between Big Five traits and achievement motivation.

Reference	Sample	Motivation type	Domain	N	E	O	A	C
<i>Mastery-approach (i.e., Learning)</i>								
Payne et al. (2007) ^a		Goal Orientation	Meta-analysis	-.18*	.29*	.44*	.19*	.32*
Current analysis ^b		Both	Meta-analysis	-.10**	.17**	.27**	.15**	.31**
Bipp, Steinmayr, and Spinath (2008)	160	Goal Orientation	School	-.06	.22**	.40**	.26**	.11
Chen and Zhang (2011)	775	Achievement Goal	School	-.21**	.28**	.39**	.18**	.46**
Corker et al. (2012)	347	Achievement Goal	School	-.14*	.11*	.16*	.20*	.36*
Day, Radosevich, and Chasteen (2003)	384	Goal Orientation	School	-.12*	.11*	.33**	.20**	.23**
<i>VandeWalle scale</i>								
<i>PALS scale</i>								
Fleisher, Edwards, Woehr, and Cullen (2011)	120	Goal Orientation	School	-.17*	.13	.28*	.26*	.40*
<i>Goldberg scale</i>								
<i>IPIP scale</i>								
Freudenthaler, Spinath, and Neubauer (2008)				-.14	.12	.25*	.31*	.36*
Male only	526–545	Goal Orientation	School	-.19*	.14	.30*	.20*	.44*
Female only	779–799	Goal Orientation	School	-.01	.05	.13**	ns	.30**
Hendricks and Payne (2007)		Goal Orientation	School	-.02	-.04	.17**	ns	.24**
Leader Self-Report	100	Goal Orientation	Experiment	-.19	.35**	.27**	.12	.26*
Team observer report ^c	100	Goal Orientation	Experiment	-.06	.36**	.28**	.02	.25*
Klein and Lee (2006)	157	Goal Orientation	School	n/a	n/a	.36**	n/a	.26**
Steinmayr, Bipp, and Spinath (2011)	509–520	Goal Orientation	School	-.01	.07	.25**	.12**	.34**
Wang and Erdheim (2007)	183	Achievement Goal	Work	.04	.19**	.10	.03	-.09
Yamkovenko and Holton (2010)	252	Goal Orientation	Work	-.25*	.41*	.21	n/a	.53*
Zweig and Webster (2004)	786	Goal Orientation	School	-.09**	.21**	.33**	.29**	.38**
<i>Performance-approach (i.e., proving)</i>								
Payne et al. (2007) ^a		Goal Orientation	Meta-analysis	.32*	-.03	.06	-.07	.06
Current analysis ^b		Both	Meta-analysis	.13*	.03	.05**	-.04	.12**
Bipp et al. (2008)	160	Goal Orientation	School	.25**	.09	.06	-.08	.06
Chen and Zhang (2011)	775	Goal Orientation	School	.02	.18**	.09	-.03	.26**
Corker et al. (2012)	347	Achievement Goal	School	-.01	.09	.05	-.08	.17*
Day et al. (2003)	384	Goal Orientation	School	.18**	-.03	.10*	-.08	.07
<i>VandeWalle scale</i>								
<i>PALS scale</i>								
Fleisher et al. (2011)	120	Goal Orientation	School	.20**	.01	.12*	-.02	.10*
<i>Goldberg scale</i>								
<i>IPIP scale</i>								
Freudenthaler et al. (2008)				.15**	-.06	.07	-.14**	.03
Male only	526–545	Goal Orientation	School	.29*	-.06	.03	-.07	-.01
Female only	779–799	Goal Orientation	School	.33*	-.04	.07	-.06	.03
Hendricks and Payne (2007)		Goal Orientation	School	.24*	-.08	-.01	-.08	-.04
Leader self-report	100	Goal Orientation	Experiment	-.04	.00	.08	ns	.08
Team observer report ^c	100	Goal Orientation	Experiment	.07	-.01	.06	ns	.10**
Steinmayr, Bipp, and Spinath (2011)	509–520	Goal Orientation	School	.25*	.09	.19	.05	.03
Wang and Erdheim (2007)	183	Achievement Goal	Work	.28**	-.06	.13	-.20*	.01
Zweig and Webster (2004)	786	Goal Orientation	School	.02	.05	-.01	-.22**	.22**
Performance-Avoidance (i.e., Avoiding)		Goal Orientation	School	.14**	.10	-.10	.04	.05
Payne et al. (2007) ^a		Goal Orientation	Meta-analysis	.37*	-.30*	-.25*	-.19*	-.18*
Current Analysis ^b		Both	Meta-analysis	.25**	-.13**	-.10**	-.06	-.05*
Bipp et al. (2008)	160	Goal Orientation	School	.45**	-.18*	.01	-.02	-.07
Chen and Zhang (2011)	775	Achievement Goal	School	.17**	.04	-.11*	-.15**	.02
Corker et al. (2012)	347	Achievement Goal	School	.20*	.01	-.19*	.08	.05
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<i>Goldberg scale</i>								
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Freudenthaler et al. (2008)				.25**	-.25**	-.19**	-.02	.07
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Female only	779–799	Goal Orientation	School	.35*	-.19*	.14	.07	-.12
Hendricks and Payne (2007)		Goal Orientation	School	.33*	-.20*	.11	.04	-.13
Leader Self-Report	100	Goal Orientation	Experiment	.07	-.08	-.08	ns	-.04
Team observer report ^c	100	Goal Orientation	Experiment	.18**	-.14**	-.04	ns	-.09*
Steinmayr, Bipp, and Spinath (2011)	509–520	Goal Orientation	School	.25*	-.19	-.05	-.09	-.10
Wang and Erdheim (2007)	183	Achievement Goal	Work	.20*	-.30**	-.06	-.17	-.32**
Zweig and Webster (2004)	786	Goal Orientation	School	.31**	-.10*	-.09*	-.21**	.00
<i>Mastery-avoidance</i>								
Chen and Zhang (2011)	775	Achievement Goal	School	.09*	-.09	-.10	-.02	-.13*
Corker et al. (2012)	347	Achievement Goal	School	.37**	-.28**	-.21**	-.15**	-.15**
Chen and Zhang (2011)	775	Achievement Goal	School	.03	.14**	.18**	.02	.22**
Corker et al. (2012)	347	Achievement Goal	School	.24*	-.07	-.12*	-.02	-.09

Note: Sample = number of participants, N = Neuroticism, E = Extraversion, O = Openness to Experience, A = Agreeableness, C = Conscientiousness, n/a = Not applicable (not measured), ns = not significant, correlation not reported.

^a Values taken from estimated true mean correlations, with significance determined by confidence intervals. Sample size omitted due to large variance for each correlation.

^b More details of current meta-analysis can be found in Appendix A.

^c Correlations from aggregate individual results from entire team of four people.

* $p < .05$.

** $p < .01$.

Table 2
Achievement goal descriptive statistics Study 1.

Goal	α	M	SD	1	2	3
<i>Time 1</i>						
1. MAp	.80	4.20	0.67	–		
2. MAv	.79	3.52	0.91	.50**	–	
3. PAp	.91	3.63	0.90	.16**	.21**	–
4. PAv	.91	3.48	0.96	.13*	.37**	.76**
<i>Time 2</i>						
1. MAp	.84	4.13	0.72	–		
2. MAv	.87	3.61	0.96	.51**	–	
3. PAp	.92	3.60	1.03	.06	.13*	–
4. PAv	.93	3.47	1.05	-.03	.29**	.80**
<i>Time 3</i>						
1. MAp	.87	4.08	0.75	–		
2. MAv	.87	3.56	0.96	.50**	–	
3. PAp	.95	3.42	1.14	.05	.16**	–
4. PAv	.95	3.27	1.15	.05	.34**	.81**
<i>Aggregate</i>						
1. MAp		4.14	0.63	–		
2. MAv		3.56	0.81	.55**	–	
3. PAp		3.55	0.92	.07	.16**	–
4. PAv		3.41	0.93	.04	.37**	.84**

Note: MAp = Mastery-approach goals; PAp = Performance-approach goals; MAv = Mastery-avoidance goals; PAv = Performance-avoidance goals.

* $p < .05$.

** $p < .01$.

recourse to facets may mask the more intricate nature of trait-orientation relations.

1.5. Present research

Our studies extend this previous work by assessing context-specific achievement goals rather than achievement orientations, by examining trait-goal relations in two different achievement contexts (education and work) and in two different western countries (the US and the Netherlands), by assessing achievement goals across multiple exams (Study 1), and by investigating the full NEO-PI-R to acquire a comprehensive portrait of trait-goal and facet-goal relations in the workplace (Study 2). With regard to the facet-goal relations, we generally expect these relations to reflect the trait-goal relations. However, the present work will allow us (1) to discern whether the trait-goal relations are reflected in a few key facets or across all facets, and (2) to determine which facet-goal relations have a reversed valence with the omnibus trait-goal relations. Based on the definitions of the achievement goals and the empirical trends in Table 1, we expect the following patterns:

H₁. Mastery-approach goals have an overall positively-valenced trait and facet profile, comprising positive relations with extraversion, openness to experience, agreeableness, and conscientiousness.

H₂. Performance-avoidance goals have an overall negatively-valenced trait and facet profile, comprising a positive relation with neuroticism and a negative relation with conscientiousness.

H₃. Performance-approach goals have an overall mixed valence trait and facet profile, comprising positive relations with neuroticism and conscientiousness and a negative relation with agreeableness.

H₄. Mastery-avoidance goals have a primarily negatively-valenced trait and facet profile, comprising a positive relation with neuroticism and a negative relation with conscientiousness.

2. Study 1 Method

2.1. Participants

Participants ($N = 276$) were students from the U.S. who were taking an introductory level psychology course.² Only participants who completed all questionnaires were used in these analyses (83% of participants). The sample had more women than men (67% women). The participants' were on average 19 years old. Most participants were in their second year of university (45%), followed by first year (34%), third year (12%), and fourth year or above (9%). The sample's ethnic background was predominantly Caucasian (67%), followed by Asian (22%), with African Americans, Hispanics, and other ethnicities making up the rest of the sample (11%).

2.2. Procedure

Participants were informed about the study at the beginning of the semester. They were aware that participation was voluntary and would not influence their grade in the course. In the initial assessment, participants completed a series of questionnaires, including a measure of personality traits. In the following weeks, participants completed an achievement goal measure regarding their goals for their upcoming exams (during the 6th, 11th, and 15th weeks).³

2.3. Measures

2.3.1. Personality traits

Participants completed the NEO-FFI (NEO-Five Factor Inventory; Costa & McCrae, 1989) to measure the Big Five traits. Participants answered 60 items on a five-point scale from "strongly disagree" to "strongly agree." The Cronbach's alpha values are in the acceptable range (see Table 3).

2.3.2. Achievement goals

Participants completed the 12-item Achievement Goal Questionnaire-Revised (AGQ-R; Elliot & Murayama, 2008) to measure achievement goals. Participants were asked about their goals for their upcoming exam, in which they reflected on their own competence (e.g., "My goal is to learn as much as possible.") and their performance relative to other students (e.g., "My goal is to perform better than other students."). Participants responded on a 5-point scale from "none of the time" to "all of the time." The Cronbach's alpha values are in the acceptable range (see Table 2).

3. Study 1 Results

3.1. Descriptive statistics

The descriptive statistics for the achievement goals are presented in Table 2. Across all time points, we found similar patterns as reported in past research (e.g., Elliot & McGregor, 2001; Hull-eman et al., 2010), with the exceptions of low correlations between the two approach goals and quite high correlations between the two performance goals.

² The data for this study were collected in the context of a larger project (Elliot, Murayama, & Pekrun, 2011, Study 2; Murayama, Elliot, & Yamagata, 2011, Study 2; see also Elliot & Thrash, 2010, Study 3). None of the results reported in the present research have been reported in prior work.

³ We also examined correlations between the Big Five and a newer achievement goal measure (Elliot et al., 2011) in preliminary analyses. The correlations were similar to the AGQ-R results presented in this study, but only the AGQ-R results were used in multilevel analyses. Only participants who completed all measures at all points of the study were included in the analyses.

Table 3
Bivariate relationships between traits and achievement goals in Study 1.

NEO-PI-R	α	MAP	PAV	PAP	MAV
Neuroticism	.80	-.02	.21**	.14**	.15**
<i>t</i>		-0.39	4.12	2.68	3.00
SE		0.05	0.05	0.05	0.05
Intercept-Slope <i>r</i>		-.02	-.02	-.02	-.02
Extraversion	.83	.16**	.07	.07	.13**
<i>t</i>		3.02	1.27	1.30	2.65
SE		0.05	0.05	0.05	0.05
Intercept-Slope <i>r</i>		0.02	0.02	0.02	0.02
Openness to experience	.68	.08	-.16**	-.19**	-.10
<i>t</i>		1.56	-3.03	-3.62	-1.87
SE		0.05	0.05	0.05	0.05
Intercept-Slope <i>r</i>		0.02	0.02	0.02	0.02
Agreeableness	.79	.14**	-.11*	-.10	-.04
<i>t</i>		2.64	-2.12	-1.91	-0.87
SE		0.05	0.05	0.05	0.05
Intercept-Slope <i>r</i>		-.01	-.01	-.01	-.01
Conscientiousness	.97	.32**	.03	.13**	.11*
<i>t</i>		6.55	0.52	2.55	2.19
SE		0.05	0.05	0.05	0.05
Intercept-Slope <i>r</i>		-.02	-.02	-.02	-.02

Note: MAP = Mastery-approach goals; PAP = Performance-approach goals; MAV = Mastery-avoidance goals; PAV = Performance-avoidance goals, α = Cronbach's alpha, *t* = *t*-statistic of each fixed effect parameter, SE = Standard Error for each fixed effect parameter, Intercept-Slope = covariance between the intercept and slope. Prior to analyses, all trait and goal variables were standardized, so these bivariate relationships can be interpreted similar to correlations although the analyses were done in multilevel modeling.

* $p < .05$.

** $p < .01$.

3.2. Trait-goal bivariate relations

Multilevel modeling was used to test whether a trait predicted achievement goal adoption for each exam. By using multilevel models, we were able to control for the variance across exams to determine the specific trait-goal relations for each participant. Each model had one personality trait (Level 2) as the predictor variable and the achievement goal (Level 1) as the outcome variable. In other words, we had a personality trait predict the specific exam goal (e.g., neuroticism predicting mastery-avoidance goals across all three exams). Prior to the analyses, we standardized the values for both the traits and the goals because the values and scales for the NEO-FFI and the AGQ-R are not the same. An additional benefit to this standardization is that the results (Table 3) can be interpreted like correlation coefficients between traits and goals.

Mastery-approach goals had the most positive trait-goal relations, with positive relations with extraversion ($\beta = .16, p = .001$), agreeableness ($\beta = .14, p = .008$), and conscientiousness ($\beta = .32, p < .001$). However, the hypothesized relation with openness to experience was not significant ($\beta = .08, ns$). These results mostly support *Hypothesis 1*.

Performance-avoidance goals had a strong, positive relation with neuroticism ($\beta = .21, p < .001$), but the expected negative relation with conscientiousness ($\beta = .03, ns$) was not found. These findings give partial support for *Hypothesis 2*. Furthermore, the hypothesized negatively-valenced profile was further supported with negative relations with openness to experience ($\beta = -.16, p = .001$) and agreeableness ($\beta = -.11, p = .04$).

Performance-approach goals had the anticipated mixed-valence personality profile. Specifically, performance-approach goals had a positive relation with neuroticism ($\beta = .15, p < .003$) and conscientiousness ($\beta = .13, p = .009$), and a (marginal) negative relation with agreeableness ($\beta = -.10, p = .057$), so *Hypothesis 3* was supported. Unexpectedly, we found, in comparison to the other relations, a rather strong negative relation with openness to experience ($\beta = -.19, p < .001$).

Finally, we found the predicted positive relation between mastery-avoidance goals and neuroticism ($\beta = .15, p < .01$), but the link with conscientiousness was positive ($\beta = .11, p < .05$) rather than negative, so that *Hypothesis 4* was only partially supported. Furthermore, we found an unexpected positive relation with extraversion ($\beta = .13, p = .002$). Like the performance-approach goals, the valence of the trait profile of mastery-avoidance goals is in between the two extremes of mastery-approach goals and performance-avoidance goals.

4. Study 2

Study 1 showed that personality traits had relations with context-specific achievement goals across multiple exams, and the results were generally consistent with our hypotheses. In Study 2, we retained the same hypotheses as Study 1; however, Study 2 differs from Study 1 in three important ways. First, participants lived in a different country (the Netherlands rather than the United States). Second, participants rated their achievement goals in a different achievement context, specifically, the workplace. Third, participants completed the full NEO-PI-R, which affords examination of facet-goal relations in addition to trait-goal relations. These facet relations were exploratory, and designed to detect how many facet-goal relations are reflected in the omnibus trait-goal relations. In addition, we were interested in whether some facet-goal relations would have a reversed valence relative to the omnibus trait-goal relations.

5. Study 2 Method

5.1. Participants

Participants ($N = 276$) were clients from a Dutch national health care institute that specializes in diagnosing and treating people with work-related psychological problems.⁴ The sample had more men than women (56% men). The participants' were on average 43 years old. The participants' education level was as follows: 44% had a Bachelor's degree or higher, 48% had completed high school, technical training, or vocational training, and 8% had some technical or vocational training.

5.2. Procedure

As a part of standard intake procedures for the institute, all participants were routinely subjected to a standardized semi-structured clinical interview: the Mini-International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). The MINI was used to determine the nature of work-related psychological complaints in terms of DSM-IV classification(s).

During intake, participants were informed about the study. They were informed that participation was completely voluntary and that their data would be kept confidential and anonymous. Most clients were willing to participate (91%). Before the second visit, all participants completed and returned a signed informed consent form with all questionnaires.

5.3. Measures

5.3.1. Personality traits

Participants completed the full version of the Dutch NEO-PI-R (Hoekstra, Ormel, & De Fruyt, 1996) to assess all Big Five traits

⁴ The data for this study were collected in the context of a larger project (Van Yperen, Verbraak, & Spoor, 2011). None of the results reported in the present research have been reported in prior work.

and their respective facets. Participants answered the 240 items on a five-point scale from “strongly disagree” to “strongly agree.” Cronbach’s alphas for most traits were acceptable ($\alpha > .70$), with the exception of agreeableness ($\alpha = .66$).

5.3.2. Achievement goals

Participants completed a Dutch version of the 12-item Achievement Goal Questionnaire (AGQ; Elliot & McGregor, 2001) to measure achievement goals. The items were modified similar to the method in Heidemeier and Bittner (2012), in which participants were asked to reflect on their goals for their work (e.g., “I want to learn as much as possible in my work.”) and compared themselves to their colleagues (e.g., “It is important for me to do better than my colleagues.”). Participants responded on a 7-point scale from “none of the time” to “all of the time.” Cronbach’s alphas for most goals were high ($\alpha > .70$), with the exception of mastery-avoidance goals ($\alpha = .59$).

6. Study 2 Results

6.1. Descriptive statistics

The descriptive statistics for the achievement goals in Table 4 are comparable to other achievement goal studies (Elliot & McGregor, 2001). All of the achievement goals are modestly correlated with each other, and they are similar to the patterns found in past research, except for a modest correlation between performance-avoidance goals and mastery-approach goals.

The levels of the Big Five traits are also within normative standards when compared to the Dutch NEO-PI-R manual (Hoekstra et al., 1996). A possible concern with this sample data is that the participants, who reported work-related problems, may not reflect the same trait-goal relationships as a general population. We checked this generalizability concern by comparing the neuroticism levels of our participants to norms from a Dutch in-patient clinical sample (Egger, De Mey, Derksen, & van der Staak, 2003) and norms presented in the Dutch NEO-PI-R manual (Hoekstra et al., 1996). Neuroticism was used because it is the trait with the strongest relation to psychopathology (Ozer & Benet-Martínez, 2006). Levels of neuroticism were much lower in our sample ($M = 141.68$, $SD = 21.53$) than in the in-patient sample ($M = 160.50$, $SD = 25.60$; $t = -8.80$ (653), $p < .001$, $d = -0.80$), and slightly higher than the norms presented in the NEO-PI-R manual ($M = 138.4$, $SD = 21.5$; $t = 2.30$ (1579), $p = .02$, $d = .15$). These t -statistics and effect size values suggest that the present sample is very close to the normal population and very different from the in-patient sample.

6.2. Trait-goal bivariate relations

Table 5 contains the correlations between the four achievement goals and all traits and facets on the NEO-PI-R. First, we will discuss each of the goal profiles at the broad, trait level,⁵ and then we will discuss each of the goal profiles at the specific, facet level.

Mastery-approach goals had the most positive trait-goal relations, with expected positive correlations with agreeableness ($r = .13$, $p < .05$) and conscientiousness ($r = .27$, $p < .01$). However,

⁵ With this dataset, we only analyzed the measures reported. We also tested the trait-goal relationships concurrently to address multicollinearity concerns. We ran a path analysis correlating all traits and goals, and allowing for intercorrelation among the goals and traits. The values were nearly identical to the correlations presented in this manuscript (see Appendix A). This model suggests that distinct patterns of trait-goal relations could be discerned even when controlling for other traits simultaneously. Rather than presenting the nearly identical values for the path analysis, we present the zero-order correlations in Table 5.

Table 4
Achievement goal descriptive statistics Study 2.

Goal	M	SD	1	2	3
1. MAp	5.28	1.13	–		
2. MAv	3.44	1.45	.31**	–	
3. PAp	3.70	1.47	.27**	.51**	–
4. PAv	4.26	1.27	.37**	.50**	.50**

Note: MAp = Mastery-approach goals; PAp = Performance-approach goals; MAv = Mastery-avoidance goals; PAv = Performance-avoidance goals.
** $p < .01$.

there was no relation with extraversion ($r = -.04$, ns) or openness to experience ($r = .10$, ns). These results are generally consistent with Study 1, and Hypothesis 1 was mostly supported.

Performance-avoidance goals had the hypothesized negative trait-goal relations, with a strong positive correlation with neuroticism ($r = .42$, $p < .01$), although the relation with conscientiousness was not significant ($r = -.06$, ns). These results are generally consistent with Study 1, and Hypothesis 2 was partly supported. In addition, there was a negative correlation with extraversion ($r = -.17$, $p < .01$).

Performance-approach goals mostly exhibited negative trait-goal relations. Like in Study 1, they had the expected positive correlation with neuroticism ($r = .22$, $p < .01$) and a negative correlation with agreeableness ($r = -.25$, $p < .01$); however,

Table 5
Big Five Traits and Facets Correlated with Achievement Goals in Study 2.

NEO-PI-R	α	MAp	PAv	PAp	MAv
Neuroticism (N)	.84	.10	.42**	.22**	.44**
Extraversion (E)	.76	-.04	-.17**	.05	-.26**
Openness to experience (O)	.72	.10	-.06	.09	.03
Agreeableness (A)	.70	.13*	.00	-.25**	.01
Conscientiousness (C)	.76	.27**	-.06	.01	-.17**
N1: Anxiety	.85	.10	.38**	.18**	.39**
N2: Hostility	.69	.00	.20**	.09	.15*
N3: Depression	.83	.03	.36**	.18**	.42**
N4: Self-Consciousness	.81	.19**	.42**	.23**	.47**
N5: Impulsiveness	.65	.09	.18**	.16**	.12
N6: Vulnerability to Stress	.84	.00	.26**	.11	.35**
E1: Warmth	.73	.03	-.18**	-.07	-.18**
E2: Gregariousness	.80	-.06	-.08	-.01	-.19**
E3: Assertiveness	.82	-.11	-.24**	.09	-.25**
E4: Activity	.72	.02	-.06	.08	-.15*
E5: Excitement Seeking	.69	-.06	.03	.13*	-.07
E6: Positive Emotion	.81	.01	-.15*	.00	-.20**
O1: Fantasy	.82	-.01	-.05	.05	.03
O2: Aesthetics	.78	.10	-.01	.03	.08
O3: Feelings	.74	.12*	.07	.04	.06
O4: Actions	.64	-.06	-.15*	-.01	-.14*
O5: Ideas	.71	.15*	-.02	.13*	.05
O6: Values	.55	.11	-.08	.10	.00
A1: Trust	.79	-.08	-.25**	-.20**	-.16**
A2: Straightforwardness	.71	.20**	-.01	-.16**	.01
A3: Altruism	.68	.21**	.10	-.06	.02
A4: Compliance	.71	.06	.01	-.13*	.06
A5: Modesty	.75	.05	.08	-.27**	.01
A6: Tendermindedness	.62	.07	.10	-.08	.14*
C1: Competence	.74	.16**	-.15*	-.02	-.29**
C2: Order	.71	.15*	-.08	-.03	-.10
C3: Dutifulness	.64	.26**	.15*	.01	.05
C4: Achievement Striving	.74	.25**	.11	.21**	.00
C5: Self-Discipline	.77	.11	-.25**	-.12*	-.30**
C6: Deliberation	.74	.17**	.04	-.00	-.04

Note: MAp = Mastery-approach goals; PAp = Performance-approach goals; MAv = Mastery-avoidance goals; PAv = Performance-avoidance goals, α = Cronbach’s alpha.

* $p < .05$.

** $p < .01$.

performance-approach goals did not have the expected positive correlation with conscientiousness ($r = .01$, *ns*). *Hypothesis 3* was mostly supported.

Mastery-avoidance goals also had negative trait-goal relations. Like Study 1, we found the predicted positive correlation with neuroticism ($r = .44$, $p < .01$). Moreover, in Study 2, we also found the predicted negative correlation with conscientiousness ($r = -.17$, $p = .05$), so that in Study 2, *Hypothesis 4* was fully supported. In addition, and consistent with the negative profile, we found a negative relation with extraversion ($r = -.26$, $p < .01$).

6.3. Facet-goal bivariate relations

6.3.1. Mastery-approach goals

Mastery-approach goal pursuit had a strong positive personality profile at the facet level. Specifically, five out of the six conscientiousness facets were significantly related to mastery-approach goals. Similarly, two agreeableness facets were related to mastery-approach goals—straightforwardness and altruism. Unlike the null trait level results for openness to experience, there were two significant facet-goal relations: feelings ($r = .12$, $p < .05$) and ideas ($r = .15$, $p < .05$). However, like the trait level, no facet-goal relations with extraversion were found. Thus, the facet-goal relations mostly support *Hypothesis 1*.

6.3.2. Performance-avoidance goals

Consistent with the mostly negative personality profile at the broad trait level, all six neuroticism facets were related to performance-avoidance goals. Interestingly, there was a mixed valence profile for the facet-goal relations of conscientiousness. There were two negative correlations—competence ($r = -.15$, $p < .05$) and self-discipline ($r = -.25$, $p < .01$)—and surprisingly, we found one positive facet-goal correlation—dutifulness ($r = .15$, $p < .05$). Generally, the facet-goal relations strongly support *Hypothesis 2*.

6.3.3. Performance-approach goals

Performance-approach goal pursuit had a mostly negative personality profile at the trait level; however, the facet level had a more complex pattern, a mixture between positive and negative facet-goal relations. The expected negative relation with agreeableness and performance-approach goals was reflected in four agreeableness facets. Likewise, four neuroticism facets were related to performance-approach goals. As for our expected positive relation with conscientiousness, we found a positive relation with achievement striving ($r = .21$, $p < .01$), but unexpectedly, we found a negative relation with self-discipline ($r = -.12$, $p < .05$). Thus, the facet evidence mostly supports *Hypothesis 3*.

6.3.4. Mastery-avoidance goals

Mastery-avoidance goal pursuit had a very negative personality profile. The expected relation with neuroticism was reflected in five of its facets. The negative correlation between mastery-avoidance goals and conscientiousness was reflected in two facets—competence ($r = -.29$, $p < .01$) and self-discipline ($r = -.30$, $p < .01$). Thus, *Hypothesis 4* was supported. Moreover, the facet level showed additional negative facet-goal relations, including negative correlations with five extraversion facets.

7. General discussion

Across two different samples in terms of culture, language, age, and context, we found generally consistent relations between personality traits and achievement goals, and the patterns of these relations are unique for each achievement goal. The trait-goal relations indicated that mastery-approach goals are clearly positive

and performance-avoidance goals are clearly negative, while both performance-approach and mastery-avoidance goals showed a hybrid of positive and negative qualities in their trait-goal relations. Moreover, facet-goal relations showed the specific aspects relevant to the broad trait-goal relations, either in a few specific facets or several facets across the whole trait. Taken together, these findings suggest complexity in the relations between holistic personality traits and context-specific achievement goals, which may serve to explain differences in achievement goal processes and outcomes.

7.1. Trait-goal relations and achievement outcomes

There are three anticipated, consistent, and specific sets of trait-goal relations to note from these studies. First, conscientiousness is strongly and positively related to mastery-approach goals across all facets. Second, agreeableness is positively related to mastery-approach goals and negatively related to performance-approach goals. Third, both avoidance goals and both performance goals are positively related to neuroticism, which is reflected across most of its facets. These key relations could serve as a foundation for developing more complex models of achievement motivation, in which achievement goals may serve as possible mediators between personality traits and various behavioral outcomes.

For example, conscientiousness is a strong predictor of both mastery-approach goals (see Study 1 and 2) and performance attainment (e.g., Nofle & Robins, 2007; Robins, Nofle, Trzesniewski, & Roberts, 2005), which suggests that mastery-approach goals may mediate the link between conscientiousness and performance. Conscientiousness and several of its facets predicted mastery-approach goals, suggesting a stronger and more elaborate process. Recent work (Corker et al., 2012) showed that conscientiousness strongly related to mastery-approach goals, which indirectly predicted exam performance. Performance-approach goals had a mixed relation with conscientiousness at the facet level, suggesting that mechanisms leading to task performance for this goal may be more complex. Future work should explore this relation within other achievement contexts and the different trajectories of these approach goals.

Similarly, the relations between agreeableness and both approach goals could help explain their different achievement outcomes. Across both studies, agreeableness was positively related to mastery-approach goals and was negatively related to performance-approach goals. Hence, this trait may explain why people choose to adopt either mastery-approach goals (i.e., individuals high in agreeableness) or performance-approach goals (i.e., individuals low in agreeableness), or explain how it is manifested in related behavior. In previous research, mastery-approach goals led to more cooperative and help-seeking behavior, while performance-approach goals led to more competitive behavior and a greater proneness to engage in cheating behavior (Baranik et al., 2010; Janssen & Van Yperen, 2004; Poortvliet et al., 2009; Van Yperen et al., 2011). By extension, agreeableness could be fundamental in explaining how people act socially in achievement contexts, and future research should explore this process.

The third key finding of these studies is that neuroticism is not only related to avoidance goals, but also both of the performance goals. Neuroticism-goal relations have been explored previously, principally in work on approach and avoidance temperament (Elliot & Thrash, 2002, 2010). As part of the avoidance system, neuroticism predicted avoidance goal pursuit, but neuroticism also predicted both performance goals. The results from both studies showed these same trends, particularly on the facet level of neuroticism.

Furthermore, in line with previous findings, extraversion was related positively to mastery-approach goals in Study 1, but sur-

prisingly, it was unrelated to mastery-approach goals in Study 2. While these findings may be an artifact of our Study 2 sample, it may also suggest that extraversion may only be important in certain situations (i.e., useful in school rather than work). Based on other work related to extraversion and goal pursuit (McCabe & Fleeson, 2012), social goals and hedonistic goals were related to momentary changes in self-reported extraversion and unrelated to the goal of “to get things done.” While this latter goal is an unclear achievement goal within the 2 × 2 framework, this finding may suggest that there could be limits on how extraversion relates to mastery-approach goals, or rather, other traits are more relevant to the pursuit of mastery-approach goals (e.g., conscientiousness and agreeableness).

7.2. The role of achievement context

The role of achievement context was emphasized in this study as a critical advancement from previous research. We noted that personality traits and achievement orientations were assessed at a broad, dispositional level in past research (Payne et al., 2007), which could exaggerate the relations between these two concepts. Rather than finding trait-goal relations across all traits as in past achievement orientations research, we found that only a few key personality traits were related to each achievement goal. Our results also showed a more complex picture than the meta-analyses presented in Table 1, which were either strongly positive (mastery-approach), strongly negative (performance-avoidance), or weak positive to null (performance-approach; Payne et al., 2007). In particular, performance-approach goals had a more mixed profile at the trait and facet level, which may explain the null findings when aggregated. Achievement orientations lack the ability to detect the fluctuations in strategies across different situations.

The importance of context begs the question of how to define the scope of context. There is general agreement that achievement orientations are more trait-like, while achievement goals are more momentary or state-like to a specific achievement domain, such as work, school, and sports (Hulleman et al., 2010). However, as in our studies herein, the specificity of the context can vary. Participants evaluated goals for a specific class on specific exams in Study 1, while participants in Study 2 evaluated goals across their work tasks in general. The breadth of the goals in Study 2 was unavoidable, as participants had a wide array of professions with differing tasks and competence evaluations. This difference in scope may make it difficult to compare these goals across contexts. Similarly, the difference between the work context and the school context may be linked to different consequences. Performing better than other people may have different consequences in a work context than a school context, particularly as peer groups may stay the same for over a decade in a work environment and change frequently across semesters or academic years in a school environment. As such, the consequences of the different contexts may impact which goals are adopted and how the goals are related to personality. However, the consistencies between trait-goal relations in Study 1 and Study 2 showed that there still is common ground between domains. More research should make comparisons across contexts (Van Yperen et al., 2011), especially as research in context-specific achievement goals is primarily limited to educational domains (Hulleman et al., 2010).

The role of achievement context is an important theoretical question, but is also important in interpreting the fluctuations in results from Study 1 to Study 2. Specifically, the relations between mastery-avoidance goals and the traits of extraversion and conscientiousness switched from a positive valence in Study 1 to a negative valence in Study 2. While these results may appear puzzling, this fluctuation is entirely plausible based on the findings from past research. De Lange et al. (2010) found that mastery-avoidance

goals are more common in older working adults, and mastery-avoidance goal adoption reflected lower work engagement and personal meaning in work, which could be exacerbated by our sample (i.e., participants with work-related problems). The age range and mean of the work sample in Study 2 varied greatly relative to the college sample in Study 1. However, it is difficult to discern the exact processes operative in each of these samples, and future research should explore these curious findings.

7.3. Strengths and limitations

There are several strengths to the present research. First, these studies use two very different samples in terms of achievement domain, age, language, and culture. The consistencies between broad personality traits and context-specific achievement goals indicate that there are potentially common elements in achievement goal processes. Relatedly, it shows that these trait-goal relationships may differ in our assessment of two western samples compared to past work conducted in eastern cultures (Chen & Zhang, 2011). Second, Study 1 utilized multiple assessments of achievement goals to gain a more accurate assessment of these trait-goal relations. While the consistency and variability of achievement goals is still being researched (Fryer & Elliot, 2007), the multiple assessments of goals in Study 1 allows for controlling the variance that may account for fluctuation in the trait-goal relations. Third, Study 2 is the only study thus far to assess the relations of achievement goals with both personality traits and their facets, which provides a more detailed picture of how personality traits and achievement goals are related.

There are also some limitations to these studies. First, both of these studies are correlational, so no causation can be inferred.

Table A1
Meta-analysis of achievement goals and personality traits.

Variables	r_w	95% CI	k	Sample	Z	Q_w
MAp-N	-.10	-.15, -.05	12	4923	-3.62**	35.09**
MAp-E	.17	.09, .25	12	4923	10.43**	81.40**1
MAp-O	.27	.20, .33	13	5080	8.35**	55.06**
MAp-A	.15	.08, .22	11	4671	4.10**	56.03**
MAp-C	.31	.23, .39	13	5080	7.56**	94.02**
PAp-N	.13	.04, .21	11	4,671	3.00**	78.46
PAp-E	.03	-.02, .09	11	4671	1.16	30.65**
PAp-O	.05	.02, .08	11	4,671	3.27**	10.35
PAp-A	-.04	-.09, .01	11	4671	-1.60	27.68**
PAp-C	.12	.07, .17	11	4671	4.52**	28.48**
PAv-N	.25	.18, .33	11	4,671	6.69**	59.17**
PAv-E	-.13	-.20, .06	11	4671	-3.50**	57.93**
PAv-O	-.10	-.15, .05	11	4671	-3.89**	27.79**
PAv-A	-.06	-.12, .00	11	4671	-1.95	37.53**
PAv-C	-.05	-.09, .00	11	4671	-2.01*	21.34*

Note: r_w = correlation coefficients, CI = confidence intervals, k = number of effect sizes.

Sample = number of participants, Z = z-score, Q_w = within-class goodness-of-fit statistics. MAp = mastery-approach, PAp = performance-approach, PAv = performance-avoidance. N = neuroticism, E = extraversion, O = openness to experience, A = agreeableness, C = conscientiousness.

* $p < .05$.

** $p < .01$.

Table A2
Achievement goal correlations over time.

	T1 to T2	T1 to T3	T2 to T3
Mastery-approach	.68**	.58**	.70**
Mastery-avoidance	.62**	.54**	.66**
Performance-approach	.69**	.67**	.75**
Performance-avoidance	.64**	.60**	.75**

** $p < .01$.

Table A3
Path analysis correlations (hypothesized paths only).

NEO-PI-R	MAp	PAv	PAP	MAv
Neuroticism (N)	–	.33**	.22**	.38**
Extraversion (E)	.03	-.15**	–	-.23**
Openness to experience (O)	.10	–	–	–
Agreeableness (A)	.14*	–	-.25**	–
Conscientiousness (C)	.31**	-.02	.01	-.17**

Notes: MAp = mastery-approach, PAP = performance-approach, PAv = performance-avoidance. The path analysis was conducted to test all hypothesized paths simultaneously. In this model, only the significant paths that were hypothesized and the correlations that were also significant were tested. All goals and traits were allowed to co-vary in this model. The model generally had good fit $\chi^2(7) = 10.25, p = .17, GFI = .99, NFI = .98, RMSEA = .04$.

* $p < .05$.

** $p < .01$.

Theoretically, we assume that personality traits cause people to adopt different achievement goals rather than the reverse. However, we cannot exclude the possibility that adoption of different achievement goals can change one's personality traits over a lengthy period of time. In fact, recent research on major life goals has shown this dynamic relationship between personality traits and goal pursuit (Bleidorn, 2009). Future work should address the specific processes involved. Second, we used a very specific sample in Study 2, which was comprised of workers who had work-related problems. While the present sample appeared to be very close to the normal population, and very different from in-patient samples, the achievement goal ratings might reflect the characteristics of this sample, and we recommend caution in generalizing from these trait-goal profiles in a work-related context.

Finally, we used two different versions of achievement goal measures, the AGQ-R (Elliot & Murayama, 2008) in Study 1 and an adapted AGQ (Elliot & McGregor, 2001) for Study 2. This comparison presents two concerns. The first concern is that the AGQ-R updated and modified items to remove affective elements from the items. As such, the trait-goal relations may be stronger for Study 2 (which used the original AGQ) compared to Study 1. A second concern is the scope of the "context" for each domain. Study 1 assessed a specific task (i.e., exams) rather than the broad context (i.e., my work) in Study 2. The broad scope was a necessity for Study 2, as participants had a wide variety of different occupations and tasks in different companies. A better one-to-one comparison would be to assess a specific project within a specific organization. Work on context-specific achievement goals in the work domain is very limited, and future research should be conducted to make better comparisons with existing educational research.

8. Conclusions and future directions

The key findings from our studies are that there are three consistent sets of relations between personality traits and achievement goals, revealing that holistic personality can be used to explain achievement goal pursuit. Interestingly, it is not merely one's level of conscientiousness that predicts all achievement goals—rather different traits are relevant for different types of goals. We believe that these trait-goal relationships can provide an exciting first step to a new line of achievement goal research. As researchers venture away from single-goal processes and focus on multiple-goal processes (Barron & Harackiewicz, 2001; Pintrich, 2000; Van Yperen, in press), an understanding of the broad individual differences that are relevant to these processes is critical. Approach temperament and avoidance temperament may provide an underlying baseline in the achievement goal process (Elliot &

Thrash, 2002, 2010), but greater detail can be afforded by utilizing the Big Five traits and facets in further research.

Appendix A.

See Tables A1–A3.

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