A New Look at Multiple Goal Pursuit: the Promise of a Person-Centered Approach

Stephanie Virgine Wormington¹ · Lisa Linnenbrink-Garcia¹


Abstract The current study reviewed and synthesized studies employing a person-centered approach to studying achievement goals. Towards this end, a common labeling scheme was developed for goal profiles. Ten profile types were identified across studies and compared via meta-analytic techniques in terms of academic motivation, social/emotional well-being, engagement, and achievement. Two theoretically relevant profiles—Mastery High and Approach High—were relatively common and adaptive across all outcomes; the Performance/Work Avoidance Low profile was also generally adaptive. The Average All Goals and Low All Goals profiles, conversely, were consistently maladaptive. The pursuit of performance-approach, performance-avoidance, or work-avoidance goals alone was rare and generally maladaptive except with respect to achievement. Supplementary moderator analyses revealed that school level and goal model—but not analytic technique—were important variables to consider regarding both the prevalence and adaptive nature of goal profiles. This research synthesis provides insight into longstanding debates within the achievement goal literature and highlights the potential of person-centered analyses to complement findings from more predominant variable-centered research.

Keywords Achievement goals · Academic motivation · Person-centered · Motivation profiles · Engagement · Achievement · Well-being

Students can be driven to succeed in achievement settings for a myriad of reasons and are often spurred by multiple motives simultaneously. Among several established motivational theories, achievement goal theory remains one of the most widely used frameworks for conceptualizing

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✉ Stephanie Virgine Wormington wormingt@msu.edu

¹ Michigan State University, East Lansing, MI, USA

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achievement motivation (Hulleman and Senko 2010; Kaplan and Maehr 2007; Maehr and Zusho 2009). Despite its prevalence, there remains a longstanding debate over which goal orientations, or combination of goal orientations, are most adaptive (see Senko et al. 2012 for a recent discussion). Most attempts to address this question have relied upon a variable-centered approach such as multiple regression analysis or multivariate analysis of variance (e.g., Barron and Harackiewicz 2001; Hulleman et al. 2010; Linnenbrink 2005; Pintrich 2000a; Harackiewicz et al. 1998, 2002; Midgley et al. 2001 for early discussions on this topic). Variable-centered approaches primarily focus on the association between individual variables and outcomes of interest, while controlling for other related variables; consideration of multiple goal pursuit is typically examined by including interaction terms. This literature has yielded useful information, but has not successfully resolved the controversy. Moreover, it leaves several questions as to the prevalence and benefits or detriments of multiple goal pursuit unanswered. A full consideration of multiple goal pursuit may be the key for allowing goal theorists to finally put this debate to rest and move forward.

In recent years, an alternative approach for considering multiple goal pursuit has gained prominence: a person-centered approach (e.g., Conley 2012; Daniels et al. 2008; Luo et al. 2011; Ng 2006). Alternatively referred to as a profile-centered approach, a person-centered approach focuses on identifying naturally occurring combinations of variables at the level of the individual (Bergman et al. 2003; Bergman and Trost 2006). Employing person-centered methodology in achievement goal theory has the potential to complement variable-centered findings by more accurately representing multiple goal pursuit and expanding the consideration of multiple goals beyond mastery-approach and performance-approach goals alone. As such, it may be particularly useful in addressing unresolved issues at the forefront of the achievement goal literature by providing a more nuanced understanding of how (and how often) students pursue multiple goals and the relation of multiple goal pursuit to key academic outcomes. While there are more than two-dozen studies that employ a person-centered approach to investigate achievement goals in academic settings, this literature is often ignored. The failure to integrate person-centered findings into mainstream achievement goal literature may be due, in large part, to the challenges of comparing seemingly different goal profiles across studies. Synthesis may be further complicated by discrepant findings that arise as a function of goal measurement or sample characteristics.

Accordingly, the aims of the current study were to review and synthesize findings from extant person-centered achievement goal studies. We first provide an overview of achievement goal theory and consider how person-centered analyses may inform open theoretical questions. Next, we synthesize extant person-centered goal studies by identifying common achievement goal profiles that emerge across studies and examining how the different goal profiles relate to key academic outcomes. After considering the implications of these findings for addressing central questions regarding achievement goal pursuit, we explore potential moderators that may impact which profiles emerge and their relation to academic outcomes. We conclude by suggesting promising avenues for future research in achievement goal theory.

Achievement Goal Theory

Since its inception, achievement goal theory has served as a dominant framework for understanding achievement motivation (Ames 1992; Ames and Archer 1988; Dweck and Bempechat 1983; Dweck and Leggett 1988; Maehr and Nicholls 1980; Nicholls 1979, 1984). There are multiple conceptualizations of achievement goals, which differ in the goals
examined and the specificity of goal directed behavior (e.g., goal orientations versus goal standards; for a discussion, see Elliot et al. 2011; Maehr and Zusho 2009; Senko et al. 2012). In general, however, goal theorists posit that individuals’ specific goals or general goal orientations shape their subsequent affect, cognition, and achievement-related behavior (Ames 1992; Dweck and Leggett 1988). Two primary goal orientations, mastery (i.e., developing competence) and performance (i.e., demonstrating competence, often relative to others), are thought to underlie engagement and learning in achievement contexts. Some goal theorists further differentiate goal orientations based on approach and avoidance dimensions (Elliot 1999; Elliot and Harackiewicz 1996; Middleton and Midgley 1997; Pintrich 2000a), such that individuals may strive to learn as much as possible (mastery-approach), avoid not learning as much as possible or avoid losing skills they once had (mastery-avoidance), demonstrate their competence (performance-approach), or avoid demonstrating incompetence (performance-avoidance). Work-avoidance goals, although not considered an achievement goal by all goal theorists, were also part of Nicholls’ original conceptualization and are at times measured alongside mastery and performance goals (Nicholls et al. 1985; Niemivirta 2002). Work-avoidance goals represent a desire to reduce the amount of effort expended in a given situation (Elliot and Harackiewicz 1996; Nicholls et al. 1985, 1989; Skaalvik 1997; Thorkildsen 1988; Thorkildsen and Nicholls 1998). In the current study, we consider these five goals—mastery-approach, mastery-avoidance, performance-approach, performance-avoidance, and work-avoidance—to reflect current mainstream conceptualizations of achievement goals.

The Controversy Over Performance-Approach Goals

Experimental and classroom-based research has consistently identified performance-avoidance goals as maladaptive, particularly with respect to engagement, affect, and achievement (Huang 2011; Hulleman et al. 2010; Linnenbrink-Garcia et al. 2008; Maehr and Zusho 2009; Middleton and Midgley 1997; Pintrich 2000b; Senko et al. 2012). Mastery-approach goals are generally considered adaptive, displaying consistent positive associations with interest and self-efficacy, behavioral and cognitive engagement, and social and emotional well-being (Huang 2011; Hulleman et al. 2010; Maehr and Zusho 2009; Midgley et al. 2001), although they are often only weakly correlated with or unrelated to achievement (Anderman and Wolters 2006; Hulleman et al. 2010). In contrast to the relatively straightforward associations of mastery-approach and performance-avoidance goals to academic outcomes, considerable disagreement surrounds performance-approach goals and whether endorsing them may be beneficial. Research suggests a positive, although relatively small, association of performance-approach goals to desirable outcomes such as achievement and interest, and also a positive correlation with maladaptive outcomes such as test anxiety and avoidance of help seeking (Barron and Harackiewicz 2001; Elliot and Church 1997; Elliot and McGregor 1999; Elliot et al. 1999; Huang 2011; Hulleman et al. 2010; Karabenick 2004; Linnenbrink 2005; Senko and Harackiewicz 2005; Skaalvik 1997; Skaalvik and Skaalvik 2005; Tas and Tekkaya 2010; Wolters et al. 1996).

One key component of this debate is the suggestion that performance-approach goals may be differentially adaptive depending on which other goals are also endorsed (Harackiewicz et al. 2002; Midgley et al. 2001; Pintrich 2000a). There is a longstanding divide between proponents of the mastery goal perspective, in which pursuit of mastery goals alone is considered optimal (Kaplan and Middleton 2002; Midgley et al. 2001), and supporters of the multiple goal perspective, in which pursuing performance-approach goals alongside
mastery-approach goals is argued to incur greater benefits (Barron and Harackiewicz 2001; Harackiewicz et al. 1998, 2002; Senko et al. 2012).\textsuperscript{1} Importantly, both sides of the debate either implicitly or explicitly highlight the importance of considering the overall pattern of goal pursuit. That is, the mastery goal perspective specifically argues that mastery goals should be encouraged, and that there is a potential cost to simultaneously endorsing both mastery and performance-approach goals. This perspective suggests a combination of high mastery goals and low performance goals is most adaptive. The multiple goal perspective also highlights the importance of considering mastery and performance goal endorsement simultaneously, but instead notes that the most beneficial pattern of educational outcomes should emerge when students endorse both mastery-approach and performance-approach goals. Performance-avoidance, mastery-avoidance, and work-avoidance goals are typically not mentioned in the debate, as both sides agree they are detrimental. However, researchers have recently raised concerns about the possibility of simultaneous endorsement of performance-approach and performance-avoidance goals and the implications of pursuing both performance-approach and performance-avoidance goals for a variety of academic outcomes (Law et al. 2012; Linnenbrink-Garcia et al. 2012; Murayama and Elliot 2009). Thus, it is clear that much of the ongoing debate between the mastery and multiple goal perspectives is anchored in the simultaneous endorsement of multiple achievement goals.

Despite the importance of examining multiple goals simultaneously, the majority of variable-centered research used to inform the debate has not fully considered multiple goal endorsement. Variable-centered statistical techniques examine how one type of goal relates to an outcome of interest across all individuals in a given sample and partition out overlapping variance explained by two or more predictor variables (Bergman and Trost 2006). The statistical inferences made by variable-centered analyses assume that individual goal orientations function similarly for each individual, thereby limiting its capacity to explore multiple goal pursuit. For instance, Hulleman et al.’s (2010) comprehensive meta-analysis examined the correlations of goal orientations with interest and performance. While their analysis provided a number of key insights into the debate, by design it could not consider the issue of students pursuing multiple goals simultaneously.

Of course, it is possible to test for multiple goal pursuit within a variable-centered approach using interaction terms. However, most studies testing for multiple goal pursuit only consider the two-way interaction between mastery-approach and performance-approach goals (for exceptions, see Durik and Harackiewicz 2003; Harackiewicz et al. 1997). The focus on the interplay between mastery-approach and performance-approach goals reflects the state of the mastery versus multiple goals debate, which revolves around performance-approach goals. Only considering the two-way interactions between approach goals, however, collapses across distinct groups of individuals with disparate levels of performance-avoidance, work-avoidance, or mastery-avoidance goals. Grouping individuals with differing levels of avoidance goals could account for a lack of significant interactions found in numerous prior studies (e.g., Bouffard et al. 1998; Linnenbrink 2005; Ng 2006; Wolters 2004). That is, this practice would fail to distinguish students representing a classic conceptualization of multiple goal pursuit (i.e., high mastery and performance-approach goals without high avoidance goals) from

\textsuperscript{1}The multiple goal perspective also argues that performance-approach goals may have independent, specialized, or selective effects, which do not necessarily require simultaneous goal endorsement (Barron and Harackiewicz 2001). However, our focus here is on simultaneous goal pursuit, which is represented as an interactive effect in Barron and Harackiewicz’s conceptualization of multiple goal pursuit.
students endorsing high mastery and performance-approach goals alongside high avoidance goals, a possibility which has gained recent attention (i.e., Law et al. 2012; Linnenbrink-Garcia et al. 2012; Murayama and Elliot 2009). Additional concerns regarding the use of interactions to explore multiple goal pursuit include the need for larger sample sizes and difficulty interpreting higher-order interactions, the assumption that effects are linear, and the risk of interpreting interactions at levels of variables not commonly endorsed in the sample. This last concern is particularly likely within achievement goal research given that mastery-approach goals are often endorsed to a greater extent than performance goals at the sample level. While some researchers have addressed the issue of unequal sample sizes using techniques such as median or tertile splits (cf. Barron and Harackiewicz 2001; Linnenbrink 2005; Pintrich 2000a), groups identified using these techniques do not necessarily reflect naturally occurring combinations of motivation in a sample (Maxwell and Delaney 1993) and thus do not provide insight into the frequency with which certain combinations of achievement goals are endorsed. Such information could be crucial for both theory and practice. For example, the debate over mastery versus multiple goal pursuit may be void if few individuals simultaneously pursue mastery-approach and performance-approach goals or performance goals in general (Brophy 2005).

Given these noteworthy concerns, it appears that current variable-centered research on achievement goals provides critical information but does not fully explore how all achievement goals combine and which combinations are beneficial. Research within achievement goal theory may benefit from seeking out other analytic techniques, such as person-centered approaches, that can address the limitations outlined above.

Rethinking Multiple-Goal Pursuit: a Person-Centered Approach

A person-centered approach involves a shift in the unit of analysis from the overall sample to the individual. Rather than examining goals in isolation and assuming a similar association between predictors and outcomes across the entire sample, person-centered techniques consider the pattern of goals endorsed by each individual and how specific combinations of goals are synergistically related to outcomes of interest (Bergman 2001; Bergman et al. 2003; Bergman and Trost 2006; Laursen and Hoff 2006; Magnusson 1998). As such, a person-centered approach may be particularly well suited for examining multiple goal pursuit.

With a person-centered approach, individuals who display similar combinations of motivation can be grouped together to identify common patterns of goal endorsement (i.e., goal profiles). Such an approach provides a clearer understanding of which combinations of goals typically emerge in a population and are thus meaningful to study. This is a clear benefit over the use of interaction terms, where there may be very few students falling into a particular range, in that results relate to goal combinations that are actually observed in the sample. Moreover, because goals are examined at the level of the individual, the high correlation between performance-approach and performance-avoidance goals does not present the same difficulty as with variable-centered analyses (Linnenbrink-Garcia et al. 2012); while high correlations between performance goals may result in multi-collinearity for variable-centered analyses, performance-approach and performance-avoidance goals may be present at different levels for different individuals in person-centered analyses. Finally, goal profiles can be compared with one another in terms of educational outcomes to identify adaptive and maladaptive combinations of goal endorsement. This third point would allow goal researchers...
to directly compare the benefits of endorsing different goal profiles (e.g., those representing mastery or multiple goal perspectives) across a variety of outcomes. With these strengths in mind, person-centered studies examining achievement goals have the potential to answer critical questions related to multiple goal pursuit that are not adequately addressed with variable-centered techniques. To be clear, we are not arguing that person-centered analyses are superior to variable-centered analyses. Rather, person-centered analyses are well suited to answer certain types of questions, including several that remain unresolved within the goal theory literature. Just as there are advantages to comparing findings from distinct methodologies (e.g., qualitative and quantitative; Johnson and Onwuegbuzie 2004), researchers could benefit from synthesizing findings from variable-centered and person-centered analyses to inform goal theory.

**Person-Centered Achievement Goal Studies: which Profiles Are Common and Adaptive?**

Throughout the literature, person-centered goal studies typically measure achievement goals using self-report methodology and relate achievement goal profiles to achievement-related outcomes. As an illustrative example, *Jang and Liu (2012)* used hierarchical cluster analysis to identify goal profiles among a sample of nearly 500 middle school students. Based on students’ mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals in mathematics, the authors identified five goal profiles, which they labeled high multiple goals, high mastery-approach with low mastery-avoidance, low multiple goals, high mastery-avoidance, and low performance goals. Across such outcomes as achievement-related emotions, mathematics achievement, and meta-cognitive strategies, students in the profile with high mastery-approach and low mastery-avoidance goals consistently displayed the most adaptive outcomes compared with students in other goal profiles.

In a separate study, *Luo et al. (2011)* examined achievement goal profiles among more than 1700 high school students. Using latent class cluster analysis, the authors identified four profiles based on students’ mastery-approach, performance-approach, and performance-avoidance goals. These profiles were labeled as diffuse (i.e., moderate levels of multiple goals), moderate mastery (with low performance goals), success oriented (i.e., moderate mastery with high performance goals), and approach (i.e., high mastery-approach and performance-approach with low performance-avoidance goals). Students in the approach profile consistently displayed more adaptive results than students in the diffuse or moderate mastery profiles for motivation (e.g., self-efficacy, subjective task value), engagement, emotions (e.g., test anxiety, positive and negative affect), and mathematics performance. Students in the success oriented profile displayed equally adaptive results to those in the approach profile for motivation, self-regulation strategies, and positive affect, but not the other outcome variables assessed. These two studies represent the range of samples, measures, methodologies, and profile labels used among person-centered achievement goal studies.

Though they identified different final solutions, both studies described above indicate that students pursue multiple goals simultaneously. If person-centered approaches are useful for understanding multiple goals that students endorse, why do so few researchers draw from this research when discussing the mastery versus multiple goals debate? One possibility is that—aside from a few early studies (e.g., *Bembenutty 1999; *Meece and Holt 1993)—the majority of this research has been conducted within the last 15 years. Thus, when the mastery versus...
multiple goals debate first began, there were very few studies employing a person-centered approach that could speak to multiple goal pursuit. Yet, many recent discussions related to the debate do not provide an overview of the extant person-centered literature (e.g., Hulleman and Senko 2010; Senko et al. 2012), and those that do review some of the person-centered work do not provide a full synthesis of the current literature (e.g., Linnenbrink-Garcia et al. 2008, 2012).

A major obstacle to synthesizing this literature is the inconsistency in labeling goal profiles across studies, as well as the variation in the use of raw scores versus z scores in forming those profiles. Indeed, the plethora of different labels and seemingly inconsistent profiles across studies (see Supplementary Table 1) limits researchers’ ability to make sense of a potentially useful body of research. Such difficulty may explain why even researchers employing person-centered approaches have been reluctant to generalize across prior person-centered studies, instead opting to highlight several studies or stating that past findings are difficult to summarize (e.g., *Pastor et al. 2007). As a result, conclusions about the most adaptive profiles vary across studies; some researchers espouse the benefits incurred by mastery goal endorsement (e.g., *Bembenutty 1999) while others identify profiles high in mastery-approach and performance-approach goals as equally well adjusted (e.g., *Luo et al. 2011). Thus, there is a clear need for a comprehensive review and synthesis of this literature that addresses concerns regarding inconsistency in profile labels.

**Study Aims**

A primary aim of the present study is to provide a clear and compressive overview of an important, but underutilized, body of research addressing multiple goal pursuit. We focus on three primary questions: (1) what goal profiles emerge across studies?, (2) how frequently are these profiles endorsed?, and (3) how do these commonly occurring profiles relate to educational outcomes? Notably, there have been a number of meta-analytic research syntheses examining achievement goals in relation to achievement or performance (Day et al. 2003; Huang 2012; Hulleman et al. 2010; *Pastor et al. 2007; Utman 1997; Van Yperen, et al. 2014) and emotions (Huang 2011). These meta-analyses have provided important information for the field. However, there are not yet any comprehensive reviews of the person-centered achievement goal literature. Given its centrality to current discussions of multiple goal pursuit in the classroom (Hulleman and Senko 2010; Linnenbrink-Garcia et al. 2012) and its potential to move the field beyond the current debate, a review and synthesis of achievement goal profiles is both timely and necessary.

Given the disparity in the labeling of goal profiles and the difficulty these discrepant labels pose to any clear synthesis of the literature, our first step was to create and apply a consistent set of theoretically based labeling rules to profiles across all person-centered achievement goal studies. This enabled us to identify types of profiles that commonly arose across samples, as well as determine the percentage of participants characterized by these goal profiles. Second, with the understanding that profiles may be adaptive for some types of outcomes but not others, we used a meta-analytic approach to examine how goal profiles related to four different categories of academic outcomes: motivation, social and emotional well-being, engagement, and achievement.

A second barrier to synthesizing person-centered achievement goal literature is the notable heterogeneity in terms of study and sample characteristics. As an illustrative example, the two
studies described above (*Jang and Liu 2012;* Luo et al. 2011) identified goal profiles among two different-aged samples (i.e., middle versus high school students) using different achievement goals (i.e., mastery-approach, performance-approach, and performance-avoidance goals with versus without mastery-avoidance goals) and different analytical techniques (i.e., cluster analysis versus latent class cluster analysis). To supplement primary analyses from the second research question, we conducted a series of ancillary analyses to investigate whether goal profile prevalence or adaptiveness differed as a function of three potential moderator variables: school level, goal model (i.e., which achievement goals are assessed), and analytic technique. These analyses were conducted to acknowledge the considerable variability among person-centered goal studies in terms of samples and methodologies (see Supplementary Table 1). We selected these three moderators based on prior variable-centered research. Specifically, findings from variable-centered work provide some evidence that goals may differentially predict outcomes based on school level (e.g., Huang 2012; Hulleman et al. 2010; Linnenbrink-Garcia et al. 2008).2 Consideration of the goal model employed may be especially important for person-centered analyses, as the observed profiles might vary depending on the variables used to form the goal profiles (Bergman et al. 2003; *Pastor et al. 2007). For instance, findings may vary depending on which avoidance goal is included (e.g., work-avoidance, performance-avoidance, and/or mastery-avoidance). Finally, some researchers have argued that non-model-based approaches (e.g., cluster analysis; Aldenderfer and Blashfield 1984; Bergman et al. 2003; Hair et al. 1998) are less optimal to use than model-based techniques (e.g., latent profile analysis; DiStefano 2012; Vermunt and Magidson 2002) because they are less objective (e.g., *Pastor et al. 2007). However, recent Monte Carlo simulations suggest that $k$-means clustering (a form of cluster analysis) is comparable with model-based techniques for identifying the correct number of underlying groups in a sample (Steinley and Brusco 2011). Thus, the consideration of analytic approach was another important moderator to consider.

**Research Synthesis**

To explore profile prevalence and adaptiveness, we adopted a meta-analytic approach. While the steps we follow mirror that of traditional meta-analyses in many ways, there are several points of departure. Most notably, we only considered studies published in peer-reviewed journals. This approach varies from traditional approaches to meta-analysis, where one goal may be to synthesize both published and unpublished research and identify potential “file drawer” studies with non-significant results. We decided to focus only on published studies, however, primarily to align with our goals for this study: to synthesize the extant literature utilizing a person-centered approach so that researchers would be more likely to draw from and utilize these findings when considering the relative benefits of different types of achievement goals. The decision to limit our analysis to published

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2 Other common sample moderators include the gender and ethnic composition of the sample. However, we did not include these variables in our analyses, as there was very little variability in the samples in our study for these variables, little prior evidence to suggest that goals differentially predict outcomes based on differences in the gender and ethnic composition of the sample in prior meta-analyses (e.g., Huang 2012; Hulleman et al. 2010), and we were concerned with testing too many moderators based on the approach we employed (see “Results”). Notably, testing gender and ethnic composition of the sample does not allow one to fully consider whether the variables function differently based on gender or ethnicity as the analysis is based on sample rather than individual characteristics.
studies was also made in light of the somewhat subjective nature of person-centered studies. The literature we are synthesizing requires a great deal of researcher discretion to select and interpret a final profile solution, as there are not strict statistical guidelines to follow in contrast to variable-centered analyses such as multiple regression or correlation. Similarly, the guidelines and procedures for selecting profile solutions vary depending on whether researchers used model-based or non-model-based techniques. Given the complexity of profile analysis and level of researcher discretion required, we limited our analysis to studies that were reviewed and deemed suitable for publication by qualified peer reviewers. By considering only those studies published in peer-review journals, we can assume an overall higher level of rigor and detail in the studies evaluated by peers compared with unpublished manuscripts or conference presentations. With these considerations in mind, our synthesis should be viewed as employing meta-analytic techniques to summarize published studies, rather than a true meta-analysis.

Study Selection

We conducted a comprehensive literature search to identify relevant studies published through June 2015. Specifically, we searched several electronic databases (i.e., PsycINFO, Web of Science, Google Scholar, and Educational Research Information Center) using a set of keywords related to achievement goals (i.e., goal theory, achievement goal, performance, mastery, performance-approach, performance-avoidance, mastery-approach, mastery-avoidance, work-avoidance), specific goal measures (i.e., Patterns of Adaptive Learning Survey, Achievement Goal Questionnaire), and person-centered methodology (i.e., profile, cluster, latent profile analysis, latent class analysis, latent class cluster analysis, cluster analysis, hierarchical cluster analysis, Ward’s linkage, k-means, person-centered). Reference sections of relevant articles were then examined. Finally, articles citing relevant articles were searched.

Inclusion Criteria

Several inclusion criteria were used to narrow down the final sample retained for analyses. First, unpublished studies and those appearing in non-peer-reviewed outlets (e.g., conference presentations, dissertations) were excluded. Second, studies that measured achievement goals outside of the academic domain were excluded (Cuevas et al. 2013; Gómez-López et al. 2014; Méndez-Giménez et al. 2013; Méndez-Giménez 2014; Martinez 2012; Wang et al. 2002, 2007). This decision was made partially to mirror variable-centered work in achievement motivation, especially with respect to the current debates related to performance-approach goals. In addition, we limited the scope of our analyses because it is possible that goal profiles would be differentially adaptive depending on the achievement domain (e.g., academic versus sports or workplace domain). Third, studies that did not use achievement goals as the basis for forming profiles or did not create profiles using a person-centered approach were dropped from the sample. This encompassed studies using a median-centered or mean-centered approaches to creating groups (e.g., Pintrich 2000a) and profiles formed using qualitative methodologies (Levy et al. 2004). While these studies allow for the consideration of multiple goal pursuit, they do not identify naturally occurring, quantitatively-derived goal profiles, which was one of the primary goals of our research.
Fourth, studies were required to measure at least mastery-approach goals, performance-approach goals, and one form of avoidance goals to be retained for analysis; those that did not were dropped from the final sample (Rosa and Bernardo 2013; Peetsma and van der Veen 2013; Seifert and O’Keefe 2001). This decision was made in light of current conceptualizations of achievement goals, which not only differentiate between mastery and performance foci but also consider an approach-avoidance dimension to goal pursuit. Because widely used goal scales may measure either performance-avoidance or work-avoidance goals given their theoretical underpinnings, we considered both in our current synthesis. Studies, however, did not have to include measures of all types of achievement goals to be included (i.e., mastery-approach, mastery-avoidance, performance-approach, performance-avoidance, and work-avoidance).

Finally, studies were required to use an achievement goal scale that measured goal-relevant behavior. With this inclusion criterion in mind, we chose to exclude scales solely focusing on affective components of achievement goals (Hayamizu and Weiner 1991; Nicholls et al. 1985) or scales confounding goals with other motivational constructs such as intrinsic motivation (Motivated Strategies for Learning Questionnaire-original version; Pintrich et al. 1993). This criterion resulted in several person-centered studies being excluded (Dull et al. 2015; Tello et al. 2012; Inglés et al. 2015; Schwinger and Wild 2012; Valle et al. 2003). Our decision to exclude studies utilizing these scales is consistent with past achievement goal meta-analyses (e.g., Hulleman et al. 2010).

Finally, we excluded studies that formed profiles using additional, non-achievement goal variables. These excluded studies created profiles using achievement goals along with variables such as other motivational constructs (e.g., cost, task value, and self-efficacy; Conley 2012), social achievement goals (Shim and Finch 2014), or non-motivational variables (e.g., math ability, math self-concept, attitudes towards math, and test anxiety; Dina and Efklides 2009). Overall, eight studies were excluded from analyses because profiles were formed using additional variables (Conley 2012; Dina and Efklides 2009; Korpershoek et al. 2014; Moreira et al. 2013; Nelson et al. 2015; Shell and Soh 2013; Shim and Finch 2014; Stoeger et al. 2014). Although these studies met all other inclusion criteria, the presence of additional variables fundamentally changes the nature of profiles that emerge and, potentially, their overall adaptiveness.

**Final Sample**

Articles that fulfilled all of the inclusion criteria outlined above were retained for final analysis in the current study. The final sample consisted of 22 articles, which included data from 24 unique samples with a total of more than 15,000 unique participants (see Supplementary Table 1). Final profile solutions ranged from three to six profiles, with profile sizes varying from 11 to 1413 participants. Goals were measured in a variety of academic subjects—including science, mathematics, and psychology—or at the general academic level. Measures of mastery-approach and performance-approach goals were included in all studies, with a sizable number of studies also measuring performance-avoidance goals (n = 16) and/or work-avoidance goals (n = 14). Mirroring variable-centered work, very few studies included a measure of mastery-avoidance goals (n = 4). It should also be noted that a sixth goal—mastery-extrinsic goals—was measured in six studies. Like mastery-approach goals, mastery-extrinsic goals represent a student’s focus on developing competence; however, students who endorse
mastery-extrinsic goals rely on external criteria (e.g., grades, feedback) to evaluate their success in developing competence (Niemivirta 2002; *Tuominen-Soini et al. 2012). Mastery-extrinsic goals are not included in the classical conceptualizations of achievement goal theory, and studies measuring this goal all utilized the same achievement goal scale (Niemivirta 2002). In addition, in the studies for which it was measured, mastery-extrinsic goal endorsement closely mirrored mastery-intrinsic goal endorsement for all profiles identified. Accordingly, we retained studies clustering using mastery-extrinsic goals but do not report the average levels of this goal in analyses.

Each article reported findings from a single sample except for two studies: one with separate samples of high school students (*Tuominen-Soini et al. 2011) and one with separate samples of college students (*Pastor et al. 2007). In the former study, profile analyses were conducted separately on each sample; thus, samples are listed separately in Supplementary Table 1. In the latter study, the purpose of the second sample was to validate the profile solution from the first sample; as such, we list the aggregated total of both samples. In addition, three studies reported profile membership at two time points for a single sample (Pulkka and Niemivirta 2013a; *Tuominen-Soini et al. 2011, 2012). In all cases, the profile solution was formed using responses from both time points (i-states as object analysis; Bergman and El-Khoury 1999). As such, we report profile membership at each time point for profiles in these studies. When calculating profile prevalence, participants from these studies were included only once—in other words, we averaged the number of participants at both time points for a given profile to calculate the size of that profile. When examining profile adaptiveness, profile size was determined based on the original analyses (e.g., using profile size for time one if analyses used time one profile as the predictor variable). Given this approach, our analyses were based on 23 unique samples from 22 articles.

Relabeling Profiles

The first step we took to identify commonly occurring profile types involved systematically labeling goal profiles. Person-centered analyses are concerned not only with the absolute quantity of goals endorsed, but also the ratio of goals to one another; accordingly, both aspects were taken into account when developing labels for profiles.

To facilitate comparison across samples, we assigned profile labels on the basis of raw cluster centroids (i.e., average value of each achievement goal for participants in a given profile). Although standardized scores are often presented in person-centered articles, they are by definition specific to the sample and thus may be misleading when trying to synthesize findings across a body of research. For example, consider two profiles from different samples with a value of 4 on a 5-point scale for mastery-approach goals. The standardized score for mastery-approach goals may be positive and large in one sample if students in the other profiles in that sample have low endorsement of mastery-approach goals but may be negative in the other sample if students in other profiles have higher levels of mastery-approach goals. Considering goal endorsement in terms of raw scores provides a consistent metric regardless of values for other profiles in the sample, which aids in consistent naming of profiles and facilitates comparisons across samples. Thus, we transformed values for profiles that were originally presented in terms of standardized scores into raw scores. In two samples (*Brdar et al. 2006; *Kolíc-Vehovec et al. 2008), there was insufficient information provided to convert standardized scores to raw scores (i.e., standard deviation or standard error was not reported for
each specific goal); we created profile labels based on standardized scores using similar naming rules for these samples only.\(^3\)

Mimicking the process in person-centered analyses, our method for labeling profiles began as a bottom-up approach. The two authors examined values on all goals for profiles across samples and independently assigned each profile a label. We then compared profile labels and resolved disagreements, which were minimal, through discussion. This continued in an iterative process until both authors agreed on names for all profiles. The first author then created a set of naming rules to reflect the emergent profile labels, which served as the final labels used in the present study.

The first naming rule involved identifying goals that were considered high or low in a given profile. We labeled the most prominent goals for a profile as high or low if they were closer to the endpoint than midpoint of the scale (e.g., above 4 or below 2 on a 5-point scale). Subsequent goals were considered to also be high or low if their values were closer to the value for the most prominent goal than to the midpoint of the scale—in other words, goals with values less than 4 or greater than 2 were labeled high or low, respectively, if they were closer in value to the most prominent goal than to the midpoint of the scale. For example, if a profile had a mean level of 4.1 on mastery-approach and 3.9 on performance-approach, the profile would be labeled as high on both mastery-approach and performance-approach goals even though performance-approach goals would not meet the cutoff for high goal endorsement on their own. This second rule was implemented, rather than requiring that all goals meet the same criteria for identifying high and low goal endorsement, to acknowledge the importance person-centered analyses place on goals’ relations to one another. We labeled all goals that were not characterized as either high or low, given the criteria above, as average goal endorsement.

Once all goals in a profile had been identified as high, low, or average, we examined the pattern of goal endorsement within profiles. Profiles with goals that met the criteria for high-endorsed goals were labeled as high on those goals (e.g., performance-avoidance high). Conversely, profiles with goals that met the criteria to be considered low-endorsed goals and did not contain any high-endorsed goals were labeled as low on those goals (e.g., mastery-avoidance low). Profiles that did not contain any high or low goals were labeled as average on all goals.

To illustrate our procedure, we describe the naming rules for two profiles from *Meece and Holt (1993)* study. In this study, the author measured mastery-approach, performance-approach, and work-avoidance goals on a 4-point scale; for the purposes of labeling, the values were converted to a 5-point scale and are presented below using the 5-point scale. In the first profile, students reported an average mastery-approach goal of 4.35, performance-approach goal of 2.35, and work-avoidance goal of 1.85. The naming process would begin by identifying the most prominent goal—in this case, mastery-approach. Mastery-approach goals for this profile meet the criteria of being labeled as high, as they were endorsed above 4 on a 5-point scale. Work-avoidance goals also meet the criteria of being labeled as low, as they were endorsed below 2 on a 5-point scale. Performance-approach goals were not endorsed below 2 on a 5-point scale but were still labeled as low because they were closer in value to work-

\(^3\) Standard errors are based on standard deviations and sample sizes; thus, the inclusion of potentially biased standard error estimates from these studies could potentially compromise the validity of our findings. We conducted a parallel set of primary analyses with these samples omitted and found analogous results. We report on findings including these samples in the interest of being as inclusive as possible.
avoidance goals than to the midpoint of the scale—in other words, the value of performance-approach goal endorsement (2.35) was closer to the value of work-avoidance goal endorsement (1.85) than the midpoint (3). This profile was categorized as Mastery High/Performance and Work-Avoidance low, and according to the naming rules outlined above would be labeled as Mastery High. The second profile, originally labeled combined mastery-ego, had an average endorsement of mastery-approach goals at 4.20, performance-approach at 3.78, and work-avoidance at 2.42. Both mastery-approach and performance-approach goals met the criteria to be considered high goals, as the value for mastery-approach goals was greater than 4 on a 5-point scale and performance-approach goals were closer in value to mastery-approach goals than to the midpoint of the scale. Work-avoidance goals did not meet the cutoff to be considered a high or low goal. Thus, the final label for this profile was Approach High.

Once all individual profiles had been relabeled, we identified the final overarching profile types to explore profile prevalence and adaptiveness. Given the similarly negative outcomes observed for performance-avoidance and work-avoidance goals, and the fact that all samples measured either one or both avoidance goals, we collapsed these two goals into a combined performance-avoidance/work-avoidance category. Both the label from the original study and our revised label based on the procedures described above are presented in Supplementary Table 1. As is evident in Supplementary Table 1, the original naming of profiles varied considerably from study to study. This heterogeneity in original profile labels highlights the importance of relabeling all profiles for this meta-analysis according to a set of consistent labeling rules.

Academic Outcomes and Correlates

The academic outcomes assessed for each study are presented in Supplementary Table 1. Within the final sample of samples, we categorized academic outcomes and correlates of the profiles into four overarching categories: motivation (e.g., interest, school value, perceived competence, perceived cost), social and emotional well-being (e.g., positive affect, self-esteem, test anxiety, negative affect), engagement (e.g., learning strategy use, homework engagement, meta-cognitive self-regulation strategies), and achievement (e.g., grade-point average, course grade, standardized test scores). These four categories represent important indicators of academic success or adjustment. Aside from those subsumed within the achievement category, most indicators were assessed via self-report measures. Additionally, the majority of correlates were assessed either concurrently or shortly following the achievement goal measures.

To facilitate comparison across samples, means and standard deviations for outcomes were converted to a 100-point scale for all four categories. For the very few samples that did not report the profile-specific standard deviation on an outcome of interest (*Brdar et al. 2006; *Kolic-Vehovec et al. 2008), the overall standard deviation for that variable, specific to the study, was used (see footnote 3). Negatively valenced items (e.g., depression symptoms, academic disengagement) were reverse-coded such that higher values reflected more adaptive functioning (e.g., lower levels of depression symptoms).

4 Correlates that did not fit into one of these four indicated categories were not included in analyses and are not listed in Supplementary Table 1. The majority of excluded correlates assessed some aspect of intelligence/aptitude (e.g., numerical reasoning, nonverbal intelligence, IQ, mathematics ability) or assessments of the instructor or classroom environment (e.g., teacher's competence, quality of teaching methods, satisfaction with course, quality of pedagogical material).
Moderator Variables

The first author and a trained graduate student assistant coded each separate sample for moderator variables and additional information about the study from which the sample was drawn (i.e., last name of primary author, year of study, domain or subject area, ethnic and gender make up of sample, final number of profiles, name of final profiles, size of final profiles), resulting in perfect agreement. For school level, samples were coded as elementary school (n = 3), middle school (n = 3), high school (n = 7), or college and adult-aged (n = 10). For goal model, samples were coded as utilizing the trichotomous model (i.e., mastery-approach, performance-approach, performance-avoidance; n = 4), the 2 × 2 model (i.e., mastery-approach, mastery-avoidance, performance-approach, performance-avoidance; n = 4), approach goals with work-avoidance (i.e., mastery-approach, performance-approach, performance-avoidance, and work-avoidance; n = 6), and the trichotomous model with work-avoidance (i.e., mastery-approach, performance-approach, performance-avoidance, and work-avoidance; n = 9). Finally, for analytic technique samples were coded as employing a model-based approach (latent profile analysis: n = 6; latent class cluster analysis: n = 5) or a non-model-based approach (wards only: n = 4; k-means only: n = 5; both wards and k-means or unspecified combination of hierarchical and nonhierarchical procedures: n = 3).

Results

Profile Descriptions and Prevalence

We applied the naming rules and collapsing procedure described in the previous section to identify distinct profile types. A final breakdown of the percentage of the total sample categorized by each profile type is presented in Table 1. We identified ten profile types, five characterized by high pursuit of one or more goals (Mastery High, Approach High, High All Goals, Performance-Approach High, and Work-Avoidance High), four characterized by low...
pursuit of one or more goals (Performance Low, Low All Goals, Performance-Approach Low, and Performance/Work-Avoidance Low), and one characterized by average pursuit of all goals (Average All Goals).

**High Goal Pursuit Profiles**

All together, the high goal profiles accounted for more than 40% of participants from the entire sample. One of the more common of the identified profile types was **Mastery High**, which characterized 13.02% of the total sample and was identified in 15 independent samples (14 of the 22 studies). The Mastery High category included students who strongly endorsed mastery-approach goals, with average or low endorsement of performance and work-avoidance goals. Notably, mastery-avoidance goals were only included in one study with a profile identified as Mastery High; thus it reasonable to describe the Mastery High profile as consisting of students who strongly endorse mastery-approach goals and moderately or weakly endorse the other types of goals. The Mastery High profile type represents what has been referred to in variable-centered achievement goal research as mastery goal pursuit.

Another common profile type among the high goal profiles was the **Approach High** profile, with 14.29% of the students in the full sample of studies in this profile. Approach High profiles, which were present in 12 independent samples (from 11 studies), were characterized by high endorsement of mastery-approach and performance-approach goals, with average or low endorsement of avoidance goals. This profile is consistent with what is traditionally labeled as a multiple goal approach within variable-centered research. We also identified a **High All Goals** profile, with strong endorsement of all achievement goals, including avoidance goals. Overall, 10.07% of the total participants across all studies were members of the High All Goals profile. High All Goals profiles were identified in 11 unique samples drawn from 11 studies.

Significantly less common were two profile types characterized by high performance goals coupled with average or low mastery goals. We identified a **Performance-Approach High** category (i.e., high-performance-approach goals; 3.28% of total sample; three samples from three studies) and a **Performance/Work-Avoidance High** category (i.e., high work-avoidance or performance-avoidance goals, average or low mastery and performance-approach goals; 0.58% of total sample; three samples from three studies). Notably, the three samples that were included in this latter category all assessed work-avoidance rather than performance-avoidance goals. As such, we relabeled this profile **Work-Avoidance High**.

**Low Goal Pursuit Profiles**

A smaller, but still meaningful, proportion of total participants (approximately 20%) fell into a profile characterized by low pursuit of one or more goals, with average levels of the other goals. Among these low goal pursuit profiles, the **Performance Low** profile was the most common. Participants in the Performance Low profile reported low endorsement of performance-approach, performance-avoidance, and work-avoidance goals along with average mastery goal endorsement. The Performance Low profile was identified in eight samples from eight studies and represented 8.97% of the total sample of participants. While performance-avoidance goals were measured in all but one sample where the performance low profile emerged, work-avoidance goals were also measured in five samples. The **Performance-Approach Low** profile was also relatively common, being identified in five samples (from

[47x600]pursuit of one or more goals (Performance Low, Low All Goals, Performance-Approach Low, and Performance/Work-Avoidance Low), and one characterized by average pursuit of all goals (Average All Goals).

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five studies) and subsuming 7.34% of the total sample. Participants in this profile reported low levels of performance-approach goals but average levels of mastery, performance-avoidance, and/or work-avoidance goals.

The remaining two low goal pursuit profiles, labeled Low All Goals and Performance/Work-Avoidance Low, were notably less common. The Low All Goals profile, which consisted of students reporting low endorsement of all types of achievement goals, was identified in three studies (four independent samples) and represented 1.95% of total participants. Finally, the Performance/Work-Avoidance Low profile, consisting of students with low work-avoidance and/or performance-avoidance goals but average mastery and performance-approach goals, was identified in three samples from three studies and represented 3.39% of the total sample of participants.

**Average Goal Pursuit Profile**

The profile types identified above describe students with patterns of meaningfully high or low goal endorsement. However, a group characterized by average goal endorsement was not initially expected. This Average All Goals profile was most common across all samples included in our synthesis. It appeared in 18 individual samples from 17 of the 22 studies, and 37.12% of the total participants fell into this category. Students in the Average All Goals profile reported average endorsement of all goals, with no goals meeting the criteria to be labeled as high or low.

**Relation of Profiles to Educational Outcomes**

Next, we compared the profile types to examine their association with key educational outcomes. To capture a general pattern of results across all samples, we employed a meta-analytic approach. A meta-analytic approach allows for a comprehensive synthesis of research across related studies in order to provide generalizable conclusions about a research question (Cooper et al. 2009). We conducted four separate analyses for the four types of academic outcomes (motivation, social/emotional well-being, engagement, and achievement) coded in our samples. All analyses were conducted using comprehensive meta-analysis (CMA; Borenstein et al. 2005). Because we were interested in comparing mean levels of different academic outcomes across the profile types, we used the means, standard deviations, and sample size procedure to examine differences among profiles. We used goal profile type as the moderator variable to determine whether profile types were differentially related to motivation, social and emotional well-being, engagement, and achievement.

Consistent with past research, a shifting unit of analysis approach was adopted (Cooper 1998; cf. Patall et al. 2008). Using this approach, each profile within a study contributed a single effect size, regardless of the number of outcomes measured. To determine whether profile type served as a significant moderator, homogeneity analyses examining the $Q_b$ statistic were conducted. A significant $Q_b$ statistic indicates that variance in the effect size is greater than expected by sampling error alone, suggesting that moderator variables should be considered. Fixed- and random-effects models of error were both examined; however, we report results from the random-effects model here due to the inherent heterogeneity across the samples examined and because a random-effects model provides a much more stringent test of moderator effects (Field 2001; Hedges and Vevea 1998; Hunter and Schmidt 2000). Results from the random-effects models for each separate analysis are presented in Table 2. Post hoc
Table 2  Results of random effects model for profile types across outcomes

<table>
<thead>
<tr>
<th></th>
<th>Mastery High</th>
<th>Approach High</th>
<th>High All Goals</th>
<th>Performance Approach High</th>
<th>Work Avoidance High</th>
<th>Average All Goals</th>
<th>Performance Low</th>
<th>Low All Goals</th>
<th>Performance Approach Low</th>
<th>Performance Work Avoidance Low</th>
<th>Overall $Q_b$ ($df = 9$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>$k$</td>
<td>Mean (SD)</td>
<td>$k$</td>
<td>Mean (SD)</td>
<td>$k$</td>
<td>Mean (SD)</td>
<td>$k$</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>79.24a</td>
<td>23</td>
<td>76.58ab</td>
<td>29</td>
<td>72.33bc</td>
<td>18</td>
<td>70.97bc</td>
<td>4</td>
<td>67.02bc</td>
<td>70.02bc</td>
<td>40.41***</td>
</tr>
<tr>
<td></td>
<td>(1.38)</td>
<td></td>
<td>(2.27)</td>
<td></td>
<td>(2.55)</td>
<td></td>
<td>(2.34)</td>
<td></td>
<td>(8.08)</td>
<td>(2.50)</td>
<td></td>
</tr>
<tr>
<td>Well-being</td>
<td>62.52a</td>
<td>30</td>
<td>58.51ab</td>
<td>33</td>
<td>53.52abc</td>
<td>15</td>
<td>55.40abc</td>
<td>2</td>
<td>38.42c</td>
<td>50.76bc</td>
<td>49.85***</td>
</tr>
<tr>
<td></td>
<td>(2.26)</td>
<td></td>
<td>(2.66)</td>
<td></td>
<td>(4.34)</td>
<td></td>
<td>(4.78)</td>
<td></td>
<td>(2.93)</td>
<td>(1.99)</td>
<td></td>
</tr>
<tr>
<td>Engagement</td>
<td>69.54a</td>
<td>24</td>
<td>67.01ab</td>
<td>22</td>
<td>67.52ab</td>
<td>20</td>
<td>49.20abc</td>
<td>3</td>
<td>59.14abc</td>
<td>59.51c</td>
<td>33.76***</td>
</tr>
<tr>
<td></td>
<td>(1.88)</td>
<td></td>
<td>(2.73)</td>
<td></td>
<td>(2.37)</td>
<td></td>
<td>(9.53)</td>
<td></td>
<td>(12.41)</td>
<td>(1.52)</td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>73.03ab</td>
<td>10</td>
<td>76.10ab</td>
<td>12</td>
<td>75.21ab</td>
<td>7</td>
<td>72.55b</td>
<td>3</td>
<td>66.16c</td>
<td>67.86bc</td>
<td>165.37***</td>
</tr>
<tr>
<td></td>
<td>(2.64)</td>
<td></td>
<td>(3.30)</td>
<td></td>
<td>(5.38)</td>
<td></td>
<td>(0.61)</td>
<td></td>
<td>(3.73)</td>
<td>(6.41)</td>
<td></td>
</tr>
</tbody>
</table>

Note: means in same row with different lowercase letters are significantly different, $p < .05$. All means are presented on a 100-point scale, with higher values representing more positive outcomes.

*p < .05; **p < .01; ***p < .0001 for $Q$ statistics
analyses were conducted for all analyses with statistically significant heterogeneity across samples, as indicated by the $Q_b$ statistic.

**Motivation**

A statistically significant omnibus test indicated that there were differences in motivation endorsement by profile type. As displayed in Table 2, students in the Mastery High profile reported the highest overall level of motivation. Students in the Average All Goals, Low All Goals, and Performance-Approach Low profiles, conversely, had the lowest overall levels of motivation, indicating that students in these profiles were less likely to hold adaptive motivational beliefs such as high academic self-efficacy and high task value. Mean values for the High All Goals, Performance-Approach High, Work-Avoidance High, and Performance Low profiles were significantly lower than the Mastery High profile but did not differ significantly from the least adaptive profiles. Finally, students in the Approach High and Performance/Work-Avoidance Low profiles did not report significantly lower motivation than the Mastery High profile; however, they also did not differ in terms of motivation from students in several of the less adaptive profiles.

**Social and Emotional Well-Being**

There was statistically significant heterogeneity in the results for social and emotional well-being outcomes. Once again, students in the Mastery High profile reported the highest overall levels of well-being (see Table 2). Students in the Low All Goals profile reported equally high levels of well-being, indicating that these two profiles were associated with the greatest endorsement of positive indicators such as self-esteem and positive affect. Students in the Work-Avoidance High and Performance-Approach Low profiles, on the other hand, reported the lowest overall levels of well-being. Mean values of well-being for the Approach High and Performance Low profiles did not differ significantly from the most adaptive profiles but were significantly higher than the least adaptive profiles, with the opposite pattern of findings emerging for the Low All Goals profile (i.e., significantly lower than the most adaptive profiles but did not differ from the least adaptive profiles). Finally, the High All Goals, Performance-Approach High, and Performance/Work-Avoidance Low profiles did not differ significantly from any other profiles in terms of well-being.

**Engagement**

The $Q_b$ value was statistically significant, indicating significant differences across profile types in self-reported levels of academic engagement. As shown in Table 2, students in the Mastery High profile once again reported the highest overall levels of engagement, along with students in the Performance/Work-Avoidance Low profile. Thus, students characterized as Mastery High or Performance/Work-Avoidance Low were more likely to indicate that they used adaptive learning strategies and were engaged in academic tasks such as homework. Students in the Average All Goals and Low All Goals profiles reported the lowest levels of engagement, with students in the Performance-Approach Low profile indicating similarly low levels of engagement. Students in the Approach High and High All Goals profiles had equally high levels of engagement as the most adaptive profiles and significantly higher engagement than the least adaptive profiles. Finally, students in the Performance-Approach High, Work-
Avoidance High, and Performance Low profiles did not differ from any other profiles with respect to engagement.

Achievement

Omnibus tests of significance, indicated by a significant $Q_b$ statistic, revealed statistically significant heterogeneity among the profile types for achievement (Table 2). With respect to indicators such as standardized test scores and grade point average, students in the Performance-Approach Low and Performance/Work-Avoidance Low profiles reported the most adaptive outcomes. Students in the Mastery High, Approach High, and High All Goals profiles did not differ significantly from the most adaptive profiles in terms of achievement. Overall, the Average All Goals and Low All Goals profiles reported the lowest average levels of achievement. Students in the Performance-Approach High profile reported lower achievement than the two most adaptive profiles but did not differ from other adaptive profiles (i.e., Mastery High, Approach High, and High All Goals). Finally, students in the Performance Low profile did not report greater achievement than the least adaptive profiles but also did not differ from any but the two most adaptive profiles.

Moderator Analyses

Profile Prevalence

The primary focus of our moderator analyses was to examine whether the profiles that emerged, as well as the relations of profile types to academic outcomes, differed as a function of school level, goal model, or analytic technique. We began by exploring whether the profiles identified varied as a function of moderator variables. Because most cell sizes contained fewer than five profiles, we were unable to empirically test for differences using chi-square analyses. Instead, we provide a frequency table of profiles across levels of each moderator variables (Table 3). A descriptive account of profile prevalence may provide insights into which profiles are most likely to emerge in samples examining students at different school levels, measuring different goals, or using different analytic techniques to identify profiles.

Several observations regarding profile prevalence warrant discussion. Regarding school level, the High All Goals profile was identified more frequently among elementary-aged samples than samples of middle school, high school, or college students. Additionally, there were no profiles characterized by low goal endorsement (i.e., Performance Low, Low All Goals, Performance-Approach Low, and Performance/Work-Avoidance Low) identified among elementary school samples. Together, findings suggest that elementary-aged students’ goal endorsement may differ most from students at later stages of school.

Several intriguing findings also emerged with respect to goal model. The Approach High profile was more often identified in samples using a trichotomous goal model, while a High All Goals profile most often emerged in samples using a $2 \times 2$ goal model. Interestingly, the Performance-Approach High profile was only identified in samples adopting an approach with work-avoidance goal model, which may be due to the high observed correlation between performance-approach and performance-avoidance across numerous studies (see Linnenbrink-Garcia et al. 2012). Samples adopting a trichotomous goal model were less likely to identify profiles characterized by low goal endorsement, with only two Performance Low profiles
### Table 3  Number of profiles and percentage of studies containing each profile type by moderator variable categories

<table>
<thead>
<tr>
<th>School level</th>
<th>Mastery high</th>
<th>Approach high</th>
<th>High all goals</th>
<th>Performance-approach high</th>
<th>Work-avoidance high</th>
<th>Average all goals</th>
<th>Performance low</th>
<th>Low all goals</th>
<th>Performance-approach low</th>
<th>Performance/ work-avoidance low</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>k</td>
<td>%</td>
<td>k</td>
<td>%</td>
<td>k</td>
<td>%</td>
<td>k</td>
<td>%</td>
<td>k</td>
<td>%</td>
</tr>
<tr>
<td>Elementary school</td>
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<td>22</td>
<td>1</td>
<td>11</td>
<td>3</td>
<td>33</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Middle school</td>
<td>2</td>
<td>17</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td>17</td>
<td>1</td>
<td>8</td>
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<tr>
<td>High school</td>
<td>7</td>
<td>26</td>
<td>4</td>
<td>15</td>
<td>3</td>
<td>11</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>College/adult learners</td>
<td>6</td>
<td>15</td>
<td>7</td>
<td>18</td>
<td>4</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Goal model</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Trichotomous</td>
<td>3</td>
<td>20</td>
<td>4</td>
<td>27</td>
<td>2</td>
<td>13</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>2 × 2</td>
<td>3</td>
<td>16</td>
<td>2</td>
<td>11</td>
<td>5</td>
<td>26</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Approach with work avoidance</td>
<td>3</td>
<td>14</td>
<td>3</td>
<td>14</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>14</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Trichotomous with work avoidance</td>
<td>8</td>
<td>25</td>
<td>4</td>
<td>13</td>
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*Note: k represents the number of total profiles drawn from samples within a given moderator category that contributed to each profile type; “%” represents the percentage contributed by each profile type to the total number of profiles across the profile types. Total row percentages may not add up to 100% due to rounding.*
identified across samples. Thus, the goal model a study adopts may influence which profiles are likely to emerge.

We also considered analytic technique as a potential moderator, given conflicting arguments concerning the validity of non-model-based person-centered approaches. Several researchers have suggested that model-based techniques are more objective than—and, consequently, superior to—non-model-based approaches (*Pastor et al. 2007). However, Monte Carlo simulations suggest no differences in the potential for model-based and non-model-based clustering approaches to identify underlying profiles (Steinley and Brusco 2011). Our findings support the latter assertion. There was a striking similarity between profiles identified using model-based and non-model-based techniques, with no notable points of departure between the two.

Profile Adaptiveness

We also examined whether the relation of profiles to academic outcomes differed based on moderator variables. Profile type already functioned as a moderator variable in our prior analyses testing for differences between profiles in terms of motivation, well-being, engagement, and achievement. Thus, we examined moderator effects within each individual profile for each type of outcome; for example, one analysis tested for school level differences in engagement within the High All Goals profile. As displayed in Table 4, this approach resulted in a large number (120) of potential moderator analyses. Additionally, the number of effects to be examined in each moderator analysis was quite small in many cases. In light of these concerns, we opted to limit our moderator analyses to profile types that were identified in five or more separate samples (i.e., Mastery High, Approach High, High All Goals, Average All Goals, Performance Low, and Performance-Approach Low). Additionally, we only interpreted effects where there were at least two outcomes for each moderator contributing to the analysis; any levels of moderators with only one $k^5$ were not interpreted. This approach resulted in a total of 63 moderator analyses. To protect against type 1 errors when conducting such a large number of analyses, we employed a Bonferroni correction and thus only interpreted findings that were significant at $p < .0008$.

Moderator effects were statistically significant for ten of the 63 (15.87 %) tested moderator variables (see Table 4). No significant moderator analyses were observed for well-being, with similar percentages of significant moderator effects for motivation (23.55 %, 4/17), engagement (17.65 %, 3/17), and achievement (21.43 %, 3/14). Interestingly, all moderator effects identified for engagement involved goal model. The majority of moderator effects for achievement also involved goal model, while most moderator effects for motivation related to school level. Thus, there is some indication that engagement and achievement findings may differ as a function of goal model, but motivation differs depending on school level. Important to note is that analytic technique did not emerge as a significant moderator for any analyses. A lack of significant findings suggests that choice of a model-based or non-model-based procedure may not matter as much as some researchers have hypothesized.

Below, we report the results of moderator analyses individually for each profile type. We present the $k$ for each group alongside means and standard deviations for each statistically significant moderator analysis to enable readers to judge the robustness of the findings for themselves.

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5 Note that, contrary to moderator analyses assessing profile prevalence (Table 3), $k$ refers to the number of outcomes rather than the number of studies contributing to a given analysis.
For the Mastery High profile, only one out of 12 potential moderator analyses emerged as significant. Results indicated that motivation differed as a function of school level for Mastery High students. Specifically, middle school (\(k=2; M=83.92, SD=0.91\)) and high school students (\(k=7; M=87.05, SD=0.39\)) reported significantly greater motivation than elementary school (\(k=2; M=75.56, SD=3.86\)) and college-aged students (\(k=12; M=73.61, SD=3.05\)). Together, results suggest that the Mastery High profile is adaptive regardless of moderators and may be particularly beneficial for adolescents’ motivation.

**Approach High Profile**

We tested for moderator effects on the Approach High profile in 12 analyses, and they were statistically significant for three of these. The first significant finding once again involved school level differences in motivation; high school students (\(k=9; M=85.82, SD=2.06\)) reported greater motivation than college-aged students (\(k=20; M=72.40, SD=0.91\)). Differences among elementary and middle school students could not be evaluated due to the low number of samples contributing to these cells. The other two significant effects involved...
goal model. With respect to engagement, students measured with a trichotomous goal model ($k=6; M=77.59, SD=2.09$) reported higher engagement than students measured with either the approach and work-avoidance model ($k=7; M=63.49, SD=5.36$) or the trichotomous plus work-avoidance goal model ($k=9; M=62.77, SD=3.63$). For achievement, samples utilizing a $2 \times 2$ goal model ($k=2; M=90.91, SD=0.52$) reported higher achievement for Approach High students than samples employing an approach with work-avoidance ($k=4; M=70.33, SD=5.39$) or trichotomous with work-avoidance model ($k=5; M=75.94, SD=3.44$). Regarding goal model, it appears that students in an Approach High profile reported higher engagement and achievement when work-avoidance goals were not used to form profiles; in other words, it appears critical for performance-avoidance goals—rather than work-avoidance goals—to be endorsed at an average or low level to be adaptive with respect to engagement and achievement. The presence of multiple moderator effects suggests that the adaptive nature of the Approach High profile may depend in part on sample and study characteristics.

**High All Goals Profile**

Like the Approach High profile, one quarter of the moderator effects involving the High All Goals profile were statistically significant. The first two analyses involved school level. For motivation, elementary school ($k=2; M=80.14, SD=1.88$), middle school ($k=4; M=77.74, SD=4.52$), and high school students ($k=3; M=81.63, SD=0.77$) reported higher motivation than college students ($k=9; M=64.87, SD=1.69$). Recall that school level also emerged as a significant moderator of motivation for the Mastery High and Approach High profiles. For all three analyses, college students reported the lowest motivation. With respect to achievement outcomes, the opposite pattern emerged for High All Goals students. Specifically, college students ($k=3; M=83.87, SD=4.69$) displayed higher achievement than high school students ($k=2; M=60.11, SD=1.35$) in the same profile. Together, these findings suggest a potential trade off to endorsing high levels of all goals for motivation versus achievement among college students. Goal model was also a significant moderator with respect to motivation within the High All Goals profile. In that case, students assessed with the trichotomous ($k=4; M=82.37, SD=0.97$) or trichotomous with work-avoidance goal models ($k=3; M=82.41, SD=0.65$) indicated greater motivation than students assessed with a $2 \times 2$ goal model ($k=11; M=65.97, SD=1.70$).

**Average All Goals Profile**

Only one significant effect emerged for the Average All Goals profile; there were significant differences in achievement as a function of goal model for students in the Average All Goals profile. Specifically, when goals were measured with the $2 \times 2$ model ($k=2; M=86.12, SD=3.12$), students reported higher achievement than when goals were measured using the trichotomous ($k=2; M=70.99, SD=9.25$) or approach with work-avoidance goal model ($k=4; M=66.82, SD=6.97$), which were in turn higher than when goals were measured using the trichotomous with work-avoidance goal model ($k=7; M=58.32, SD=2.35$). These findings are consistent with those for the Approach High profile, in that students from samples measured using the $2 \times 2$ goal model reported high achievement. The lack of other significant moderator effects, however, suggests that endorsing average level of goals is relatively maladaptive regardless of school level, goal model, or analytic technique.
Performance Low Profile

Like the Mastery High and Average All Goals profiles, only one moderator effect was statistically significant for participants in the Performance Low profile. Students measured with an approach and work-avoidance model \((k=2; \text{M}=77.17, \text{SD}=2.76)\) reported higher engagement than students measured with a trichotomous \((k=5; \text{M}=69.61, \text{SD}=1.95)\) or trichotomous with work-avoidance model \((k=10; \text{M}=64.87, \text{SD}=2.51)\); students measured with these goal models, in turn, reported higher engagement than students assessed with a \(2 \times 2\) goal model \((k=7; \text{M}=55.21, \text{SD}=5.16)\).

Performance-Approach Low Profile

Moderator effects for the Performance-Approach Low profile could only be calculated for four effects, and was statistically significant in one of those cases. Again, engagement levels differed as a function of goal model. Similar to results for the Performance Low profile, Performance-Approach Low students measured with an approach with work-avoidance model \((k=2; \text{M}=79.78, \text{SD}=3.20)\) self-reported greater engagement than students assessed with a \(2 \times 2\) goal model \((k=7; \text{M}=55.51, \text{SD}=4.47)\).

Discussion

To date, researchers have been reluctant to summarize across person-centered achievement goal studies. By applying a consistent set of labels to name profiles, we were able to provide evidence as to which goal profiles are common or uncommon in academic settings. Moreover, we were able to compare profile types on a range of academic outcomes. Our synthesis of person-centered studies provides new insight on the question of multiple goal pursuit within goal theory. In general, findings suggest that goal theorists may need to shift their focus given the prevalence (or lack of prevalence) of goal profiles and their relations to academic outcomes.

New Insights on Old Debates

Perhaps the most notable contribution of person-centered research to achievement goal theory is the insight it can provide regarding multiple goal pursuit. By considering combinations of achievement goals and addressing heterogeneity of goal endorsement within samples, a person-centered approach is uniquely positioned to shed light on longstanding controversies within the achievement goal literature regarding (1) the role of performance-approach goals and (2) the consideration of avoidance goals.

Mastery Versus Multiple Goal Pursuit

One of the most prevalent debates in goal theory concerns the benefits or drawbacks of endorsing performance-approach goals, especially when endorsed alongside mastery goals, and how this pattern of goal pursuit compares with pursuing mastery goals alone. Primarily, this dispute has been considered by comparing two groups of students: those with high mastery-approach goals but not high performance-approach goals.
(mastery goal pursuit) and students with high mastery-approach and performance-approach goals (multiple goal pursuit). Findings from the present study suggest that there are two fairly sizable groups of students who represent these two traditional perspectives: Mastery High and Approach High profile types. There were approximately equal numbers of students represented in these two profiles, and the profiles did not differ significantly on any of the outcomes investigated. Findings from the Mastery High and Approach High profiles suggest that both profiles are adaptive and commonly endorsed by students in achievement settings, though engagement and achievement results for the Approach High profile differed based on goal model.

Two other profiles may provide additional insight into the debate: the Performance Low and Performance/Work-Avoidance Low profiles. Though endorsing lower overall levels of motivation than the Mastery High and Approach High profiles, the Performance Low and Performance/Work-Avoidance Low profiles hold similar levels of mastery-approach goals but differing levels of performance-approach goals. Thus, they represent an analogous comparison of the mastery (Performance Low profile) and multiple goal perspectives (Performance/Work-Avoidance Low profile). However, greater caution is needed in interpreting these profiles as fewer than 1% of the sample fell into the Performance Low and Performance/Work-Avoidance Low profile. For all outcomes except achievement, the Performance Low and Performance/Work-Avoidance Low profiles did not differ from one another. Students in the Performance/Work-Avoidance Low profile, however, reported higher achievement than their counterparts in the Performance Low profile. These findings for profiles with moderate levels of mastery goals alongside moderate or low performance goals generally support the pattern observed for high goal pursuit, although there does appear to be some benefit for endorsing moderate levels of mastery and performance-approach goals together.

Taken together, these findings suggest that performance-approach goals are equally adaptive as mastery-approach goals when they are pursued alongside mastery goals, a key claim of the multiple goal perspective (Barron and Harackiewicz 2001; Harackiewicz et al. 1998, 2002). However, proponents of a multiple goal perspective also advocate for the benefits of pursuing mastery and performance-approach goals over solitary pursuit of mastery goals (Barron and Harackiewicz 2001; Senko et al. 2012). Yet, we found no clear evidence that simultaneously pursing performance-approach and mastery-approach goals together was better than mastery goal pursuit alone. In fact, the pursuit of mastery goals alone (Mastery High) was significantly higher than many other profiles, whereas the simultaneous pursuit of mastery and performance-approach goals (Approach High) often did not vary from other moderately adaptive profiles and differed more often as a function of moderator variables (i.e., school level for motivation, goal model for engagement and achievement). Moreover, our findings did not support the assertion that performance-approach goals may have unique benefits for students above and beyond mastery goals. For example, the pursuit of performance-approach goals alone (i.e., Performance-Approach High profile) was associated with some of the lowest levels of motivation and was equally beneficial for achievement as mastery goals alone or mastery goals with performance-approach goals. Interestingly, the most adaptive profile with respect to achievement (i.e., Performance-Approach Low) endorsed among the lowest overall level of performance-approach goals. We urge caution in evaluating these last several statements, however, given the relatively infrequent occurrence of Performance-Approach High and Performance-Approach Low profiles across samples.
Consideration of Avoidance Goals

Multiple goal pursuit has traditionally been conceptualized in terms of mastery-approach and performance-approach goal endorsement. However, concerns have been raised about the possibility that performance-approach goals co-occur with or give rise to performance-avoidance goals (Linnenbrink-Garcia et al. 2012; Midgley et al. 2001). Our findings revealed three profiles where performance-approach goals and performance-avoidance goals are independently pursued (Approach High, Performance-Approach Low, Performance/Work-Avoidance Low), which represent 25.02% of the sample. However, similar levels of these two forms of performance goals were endorsed in five profiles (Mastery High, High All Goals, Average All Goals, Performance Low, Low All Goals) representing 71.12% of the sample. Performance-avoidance goals were not measured along performance-approach goals for the two remaining profiles (Performance-Approach High, Work-Avoidance High). This pattern of results suggests that, although performance-approach goals are primarily endorsed alongside performance-avoidance goals, each form of performance goal can be endorsed independently. This is a pattern that is occluded in variable-centered literature, which can only highlight the substantial correlation between the two forms of performance goals (Law et al. 2012; Linnenbrink-Garcia et al. 2012). The conflating of performance-approach and performance-avoidance goals should be of particular interest to goal theorists, as one of the central debates within goal theory (mastery versus multiple goal pursuit) implicitly assumes that multiple goal pursuit represents high performance-approach but not performance-avoidance goals.

Moreover, our research synthesis sheds light on the relative benefits or detriments of strongly endorsing performance-approach and performance-avoidance or work-avoidance goals simultaneously. This pattern of goal pursuit was observed in the High All Goals profile. In this profile, students strongly endorsed avoidance goals (primarily performance-avoidance or work-avoidance, but also mastery-avoidance when it was measured) alongside mastery-approach and performance-approach goals. Students in the High All Goals profile had a less beneficial pattern with respect to academic motivation (especially among college students) and, to a lesser extent, well-being compared with students in the Mastery High profile; however, they did not significantly differ from those in the other multiple goal profile (Approach High). Surprisingly, the level of engagement and achievement for students in the High All Goals profile was not significantly lower than that of students in the Mastery High or Approach High profiles. A similar comparison could be made between the Performance/Work-Avoidance Low and Average All Goals profiles, as students from both profiles endorsed average levels of mastery and performance-approach goals but differing levels of avoidance goals. In this case, the disadvantage of endorsing avoidance goals is clear: students in the Performance/Work-Avoidance Low profile reported higher levels of all outcomes, with significantly higher levels of engagement and achievement. Overall, the general pattern of findings suggests that there may be some disadvantage to endorsing avoidance goals alongside approach goals; however, this pattern was not as pronounced as we expected, especially when examining high goal pursuit. The advantage of approach over avoidance goals was clear, however, for profiles with moderate rather than high endorsement of approach goals, but must be considered cautiously given the very small number of samples that fell into the Performance/Work-Avoidance Low profile.

Where does this leave us concerning the debate over performance-approach goals? With respect to the dual pursuit of mastery and performance-approach goals, our conclusions are very similar to those that Pintrich (2000a) drew 15 years ago:
The most important generalization from normative goal theory that a mastery goal orientation is the most adaptive is still accurate. That is, the implication that students should be encouraged to adopt a mastery goal orientation and that classrooms should be structured to facilitate and foster a general mastery orientation is still a valid conclusion. However, a revised perspective on approach performance goals also was supported with implications for classroom practice. That is, if mastery goal students also adopt an approach performance orientation, there seems to be little cost in terms of motivation, affect, cognition, or achievement. (p. 553).

However, now rather than drawing from one empirical study, we can have more confidence in these claims because they are based on a much larger body of work. Moreover, we have provided clear documentation that there are a number of students who do not simply focus on approach goals—and, as might be expected, there may be some costs to endorsing avoidance goals, especially when approach goals are only moderately endorsed. Finally, as the mastery goal perspective has emphatically stated, there is a cost to focusing on performance goals alone; students endorsing profiles with high performance-approach goals but low or average mastery goals (i.e., Performance-Approach High) reported relatively less adaptive outcomes. Thus, the benefits that are typically observed for performance-approach goals likely occur because they are frequently endorsed alongside mastery-approach goals and rarely pursued alone. This has important implications for practice. Because there are no added benefits and some potential drawbacks to endorsing performance goals, educators should work to enhance mastery goals.

A Shift in Perspective: Refining Old Controversies

In addition to providing perspective on established debates within the literature, results from the current study suggest a need to shift researchers’ attention in some respects.

The Prevalence of Performance Goal Endorsement

For one, findings support a refocus of issues surrounding performance goal endorsement. Drawing on variable-centered literature, an argument that students rarely endorse performance goals and that research should focus instead on other more common forms of motivation has been made (Brophy 2005). Findings from the present research synthesis, however, suggest that this statement is not entirely accurate. In fact, 27.64% of participants from the person-centered samples examined belonged to profiles characterized by high performance goals (i.e., High All Goals, Approach High, and Performance-Approach High). With the procedure we used to label profiles across samples, these profiles represent what we consider meaningfully high pursuit of performance goals. Thus, it appears that individuals do cite performance goals as a common motivating factor.

A more accurate statement, given results from person-centered goal studies, is that surprisingly few individuals endorse performance goals alone. The Performance-Approach High profile was one of the least common profiles identified, representing fewer than 4% of the overall participants across samples. Compare this with the 13% of the sample that strongly endorses mastery goals alone. This number is also noteworthy when examining the relative levels of mastery and performance goals within a profile. Nearly 33% of participants were represented by profiles endorsing higher mastery goals relative to performance goals (Mastery Educational Psychology Review 2010).
High, Performance Low, Performance-Approach Low, and Performance/Work-Avoidance Low profiles), whereas fewer than 4% of the participants endorsed higher performance goals than mastery goals (Performance-Approach High). Notably, there were no profiles including moderate performance goal endorsement and low mastery goals.

The fact that performance goals are rarely endorsed alone is an intriguing finding that has received little empirical or theoretical consideration. Is it possible that there is something about performance goals that makes them difficult to sustain without high accompanying levels of mastery goals? Similarly, are profiles characterized solely by high performance goals more likely to emerge in certain environments or within a certain group of individuals? Future work may wish to further investigate circumstances and students who pursue performance goals without accompanying high levels of mastery goals. In summary, Brophy’s (2005) suggestion to abandon performance goals entirely may not fit with findings from person-centered goal studies. However, the sentiment of his argument is echoed in the infrequency of profiles characterized solely by performance goal pursuit. It is possible, then, that researchers’ concern with the sole pursuit of performance-approach goals may be overstated given its relatively infrequent occurrence.

### Expanding the Scope Beyond High Goal Pursuit

Generally, there has been a bias in variable-centered research towards examining students with high levels of goal endorsement; the performance-approach goal debate, for example, focuses on the endorsement of high mastery goals versus high mastery and performance-approach goals. Findings from the current study, however, suggest that less than half of students belong to profiles characterized by high goal endorsement. For example, more than one third of students from all of the person-centered samples we examined reported average levels of goal endorsement (i.e., all goals endorsed between 2 and 4 on a 5-point scale). Despite receiving virtually no attention in variable-centered research or theoretical work within goal theory, the Average All Goals group was consistently ranked as one of the least adaptive profile across all types of outcomes. Although the prevalence of individuals characterized by average goal endorsement is partially an artifact of the naming rules used to label profiles, these labels were formulated to reflect substantively meaningful levels of goals. Results, then, suggest that researchers might gain from paying more attention to students with average goal endorsement, a commonly observed and generally maladaptive profile. It may also be worth considering what this pattern of goal endorsement, characterized by neither high nor low goal pursuit, represents. Several studies have adopted the term “indifferent” to characterize students who do not display a clear orientation towards mastery or performance goals (*Tuominen-Soini et al. 2008, 2011, 2012). Could students’ average goal endorsement represent indifference? Are these students, which represent a sizable portion of the sample we examined, driven by goals besides mastery, performance, or work-avoidance? Future research, both quantitative and qualitative, may be able to shed insight into the nature and origins of average goal pursuit.

Another set of profiles observed across the person-centered studies we examined, but rarely considered by goal theorists in general, are profiles characterized by low goal endorsement (i.e., Performance Low, Low All Goals, Performance-Approach Low, and Performance/Work-Avoidance Low profiles). The low goal profiles collectively represented more than one fifth of the profiles observed, suggesting that future work may wish to consider the experiences of students who do not strongly endorse a particular type of achievement goal or are generally amotivated across all goals. In particular, examining low goal pursuit could potentially further
inform the debate concerning performance-approach goals. For example, students characterized by low performance goal pursuit and average mastery goal pursuit appear to be better off than students endorsing average levels of all goals. Similarly, the Performance/Work-Avoidance Low profile was among one of the most adaptive profiles, not differing from adaptive groups such as Mastery High or Approach High profiles across all outcomes and reporting the highest achievement among all profile types examined. Although these results should be interpreted cautiously in light of small sample sizes, our findings highlight students with low goal pursuit as an understudied but important subset of students to acknowledge.

Beyond concerns of inclusivity, there are practical concerns for considering students with average and low goal pursuit. Most importantly, students with average and low goal pursuit appear more likely to be at risk for academic failure. Of the high goal pursuit profiles, only the two much less common profiles (Performance-Approach High, Work-Avoidance High) were consistently maladaptive. Compare this with average and low goal pursuit profiles, which include the two most consistently maladaptive profiles across outcomes (Average All Goals, Low All Goals). Thus, traditional goal debates, based in variable-centered literature, may be privileging adaptive profiles and neglecting the students who arguably require the most attention from educators and policy makers. Our results suggest a shift in attention from discussing highly motivated students to also considering students with average or low goal pursuit.

Quantity and Ratio of Goal Endorsement

By considering students with average or low levels of achievement goals, researchers may glean additional insights into multiple goal pursuit. In particular, we assert that a given profile’s adaptiveness can be determined as a function of its overall quantity of goal pursuit and ratio of goals to one another. As evidence, consider the three most consistently adaptive profiles across all samples: Mastery High, Approach High, and Performance/Work-Avoidance Low. A common characteristic of these three profiles is a positive ratio of mastery goals to performance-avoidance or work-avoidance goals (and for Mastery High, performance-approach goals). In addition, the first two profiles (Mastery High, Approach High) contained a high quantity of goal endorsement overall. Though the Performance/Work-Avoidance Low profile was relatively uncommon and should be interpreted cautiously given substantial variability, the former two profiles were common and consistently adaptive.

By contrast, the Average All Goals and Low All Goals profiles were consistently maladaptive across outcomes. The Performance-Approach Low profile was also maladaptive for all outcomes aside from achievement. Two common characteristics of these profiles are lower overall levels of goal endorsement and equal ratios of goals to one another (with the last profile reporting equivalent levels of mastery and performance-avoidance and/or work-avoidance goals). Presenting an inverse pattern as students from the most adaptive profiles, students in the least adaptive profiles endorsed goals overall at low levels and did not endorse mastery goals more than performance and/or work-avoidance goals. A notable exception to this pattern was high reports of well-being among the Low All Goals students. It is feasible that these students, who neither endorse a desire to develop competence or demonstrate competence to others, may not be invested in school and subsequently do not experience negative effects to their well-being as a function of academic difficulties. Future research should consider this possibility and attempt to replicate the results.
Evidence from the remaining four profiles with mixed patterns of findings also supports our assertion. Students in the High All Goals profile report high overall quantity of goal pursuit but equal ratios of mastery and avoidance goals; as a result, they report lower levels of motivation but equivalent levels of well-being, engagement, and achievement to more adaptive profiles. Conversely, students from the Performance Low profile maintain a positive ratio of mastery to performance and/or work-avoidance goals but lower overall goal endorsement; while they maintained high levels of well-being and engagement, their motivation and achievement was lower than other adaptive profiles. Finally, students in the Performance-Approach High and Work-Avoidance High profiles reported higher than average overall goal pursuit but negative ratios of mastery to performance or work-avoidance goals. Overall, students in these two profiles tended to fall in the mid-range with respect to academic outcomes, although those in the Work-Avoidance High profile had the lowest well-being and those in the Performance-Approach High profile had the lowest engagement. Again, we urge caution in interpreting findings from these relatively uncommon profile types.

All together, our pattern of findings suggests that both the quantity of goal endorsement and the ratio of mastery to performance or avoidance goals—particularly performance-avoidance or work-avoidance goals—should be taken into account when predicting outcomes of multiple goal pursuit. This is an observation that could not be garnered from synthesizing variable-centered analyses alone, speaking to the importance of considering person-centered findings alongside variable-centered results in achievement goal theory.

The Road Ahead: Limitations and Suggestions for Person-Centered Achievement Goal Research

Students rarely endorse one type of motivation alone in the classroom. As such, it is critical to consider motivation constructs in concert when attempting to understand factors that support academic success. In this article, we aimed to advance both research and practice by identifying common patterns of achievement goals that likely exist in achievement settings and by characterizing how adaptive these combinations are for different academic outcomes. Our hope is that this overview will not only provide a much-needed synthesis of the extant research on achievement goals using a person-centered approach, but also help to guide the field moving forward. With this goal in mind, we have several recommendations for researchers in terms of conducting person-centered analyses and directions for future research in this area.

Conducting Person-Centered Research

First, we encourage researchers to label their profiles in a manner that reflects overall levels of goal endorsement within the sample; labeling a profile as high on performance-approach and mastery-approach goals, rather than calling those students highly motivated, facilitates readers’ ability to interpret the nature of students’ motivation. We further suggest that researchers consider and report both the z scores and raw scores for their profiles. While z scores provide useful information concerning how profiles compare with one another within a sample, raw scores provide a consistent metric across studies. Thus, including raw values of goal endorsement within profiles allows for other research teams to compare profiles found in their own sample with those from other studies. By following these recommendations, researchers can make interpretation of their findings much more straightforward for readers, which should aid greater utilization of person-centered findings by a broader audience.
Second, a cautionary note about the application of person-centered techniques seems warranted. There is an inherently qualitative aspect of a person-centered approach that differs from most variable-centered analyses. Even with model-based person-centered techniques, such as latent class analysis, researcher discretion is involved in selecting and interpreting a final profile solution. As such, great care should be taken when implementing person-centered techniques in research. When used appropriately, a person-centered approach has the potential to reveal important findings that can benefit diverse areas of research. However, results from person-centered work may be misleading when executed incorrectly or applied to a research question that is not well suited to a person-centered perspective. Interested readers are encouraged to consult overviews of the person-centered approach (e.g., Bergman et al. 2003; Cairns et al. 1998; Hair et al. 1998) and consider issues such as stability and replicability when selecting a final solution (e.g., double-split cross-validation procedure; Breckenridge 2000).

Limitations and Areas for Future Research

As with any synthesis of research, our findings are limited both by the decisions we made regarding inclusion and exclusion criteria and the state of the extant literature. Here, we note several limitations to both our approach and the extant literature. We use these limitations to highlight promising areas for future research.

First and foremost, the studies included in our review were primarily limited to single time point designs (but see Pulkka and Niemivirta 2013a; Tuominen-Soini et al. 2011, 2012). Future research should include more longitudinal investigations of profile membership. Without longitudinal data, conclusions regarding adaptiveness are limited to short-term rather than sustained benefits of profile membership; for example, endorsing High All Goals could enable students to perform well on a final exam but may give rise to lower motivation towards school across time. It is also unclear from cross-sectional designs whether profile membership remains stable across time, a key consideration when providing advice to educators. Longitudinal person-centered studies could also help to address additional theoretical questions. For instance, one claim made by some researchers aligned with the mastery goal perspective is that performance-approach goals give rise to performance-avoidance goals (Midgley et al. 2001). Longitudinal data could investigate whether students in profiles with high performance-approach goals (e.g., Approach High, Performance-Approach High) are more likely than chance to shift into profiles with accompanying high performance-avoidance goals (e.g., High All Goals). As additional longitudinal research becomes available, it will be important to conduct more research syntheses to consider issues related to the longer-term effects of these profiles on key academic outcomes, as well as to identify common and uncommon shifts between profiles.

A second limitation to the claims made here regarding the relation of the profiles to academic outcomes is that, with the exception of achievement measures, the majority of outcomes were assessed using self-report measures. Thus, another important direction for person-centered research on achievement goals will be to expand the approach for measuring academic outcomes to include behavioral or observational indicators. This seems especially important for dealing with shared-method variance. For instance, when only self-report measures are included, it is difficult to ascertain whether students in the High All Goals profile just strongly agree to many different types of items or whether this profile is actually associated with relatively high levels of engagement.
Third, researchers should also consider the role of moderator variables when interpreting their findings. An important limitation of the person-centered achievement goal studies we reviewed is they rarely consider the role of sample and study characteristics in their findings. Our results suggest that findings primarily vary based on school level and goal model but not analytic technique. Of note, these are the primary moderators identified in prior variable-centered research (Huang 2011, 2012; Hulleman et al. 2010). Based on variable-centered research and theoretical debates, we view these preliminary analyses as illuminating in terms of highlighting the complexity of identifying adaptive and maladaptive goal profiles. However, one must exercise caution in interpreting findings given smaller samples sizes and potential confounds among moderator variables. For example, goal model is highly conflated with achievement goal scale and differences between goal models could be a function of item wording or focus. Some measures of achievement goals assess students’ general orientations towards achievement tasks (i.e., goal orientations), while others assess students’ goals on a specific task or assignment (goal standards; see Senko et al. 2012). Despite limitations, our results clearly suggest that future studies should consider moderator analyses when interpreting and discussing the generalizability of their findings. More importantly, researchers could empirically test for moderator effects within the same study. This goal could be accomplished by employing cross-sectional designs, using multiple goal scales, varying the goals used to create profiles, or utilizing both non-model-based and model-based analyses to identify final profile solutions.

Fourth, our descriptive account of the prevalence of profiles and their relation to academic outcomes does not consider the specific mechanisms involved in multiple goal pursuit. Some goal theorists have posited that students who endorse multiple goals may draw from different goals depending on the demands of the task (Barron and Harackiewicz 2001; Pintrich 2000a). For instance, students may intentionally activate a particular goal to meet task demands (e.g., adopting mastery goals when reading a text but performance goals to prepare for an exam, Harackiewicz et al. 2002). Another possibility is that students may have multiple underlying goal schemas that are readily activated depending on the particular demands of the context (see Linnenbrink and Pintrich 2001). In this way, if a particular classroom includes components that emphasize both mastery and performance elements, both goals would be activated at various times within that classroom context, leading students to report endorsing both goals. Alternatively, students who report endorsing multiple goals may actually pursue both goals simultaneously. For instance, an undergraduate student may engage in reading a complex new article on paleontology both to develop his or her competence in the field and to impress his or her professor. Thus, future research on achievement goals needs to investigate the specific mechanisms for multiple goal pursuit in the classroom, including a more careful consideration of what multiple goal endorsement looks like and whether there is individual variation in how students pursue multiple goals.

Finally, researchers may wish to extend our findings by including studies not considered in the current review. In the interest of clarity, we limited our synthesis to academic achievement goal studies that has undergone the peer review process.

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6 The trichotomous goal model included studies that used either the PALS (Midgley et al. 2000) or a scale by Vandewalle (1997). The 2 × 2 model was only measured using the AGQ (Elliot et al. 1999). The approach with work-avoidance goals model included studies that used one of several versions of Niemivirta’s (1996b, 1998) and Järvelä and Niemivirta’s (2001) scales or a scale developed by Meece et al. (1988). The trichotomous with work-avoidance model included studies employing either scales developed by Niemivirta (2002) or Skaalvik (1997).
measured at least one type of avoidance goal, and assessed goal-relevant behavior. It could be fruitful to determine whether our findings hold true with studies measuring achievement goals in different achievement domains (e.g., sports) or those assessing goals using different achievement goal measures. In particular, we suggest researchers consider studies creating profiles with both achievement goals and other motivational or achievement-related variables (i.e., integrative profiles). Given convincing arguments for the benefit of investigating integrative motivational profiles (e.g., Conley 2012), such information could be illuminating not only with respect to goal theory but motivational theory more generally.

Conclusions

For the past decade, goal theory has found itself at a standstill regarding the debate over performance-approach goals. The variable-centered goal literature has provided important insights into the debate but has not been able to fully conceptualize multiple goal pursuit. With its unique ability to identify and compare combinations of goals endorsed at the level of the individual, a person-centered approach can speak effectively to which goal combinations are most beneficial. Our overview, including a quantitative synthesis of findings with more than 15,000 participants, brings much-needed insights to the debate and other contentious issues within goal theory. For example, our results suggest a compensatory relation between the quantity and ratio of students’ goal pursuit with respect to academic success. Summarized findings also allow us to provide clearer suggestions to educators. Specifically, our results suggest that pursuing mastery goals alone is equally beneficial as simultaneously pursuing both mastery and performance-approach goals. Based on this pattern of results, we strongly encourage educators to create educational environments that foster mastery goals. While we acknowledge that educators do not need to actively discourage performance-approach goals if mastery goals are being supported, we would not encourage educators to create educational contexts designed to enhance performance-approach goals; the endorsement of performance-approach goals only appears to be beneficial when mastery goals are also endorsed and there appears to be nothing additional gained from simultaneously pursuing both goals over mastery goal pursuit alone.

Results also shed light on questions of prevalence, suggesting that researchers and practitioners shift their attention from a relatively small group of students focused solely on performance goals to a prevalent and at-risk group of students endorsing average or low levels of all goals. Overall, this research synthesis highlights the need for goal theory to move beyond a sole reliance on variable-centered approaches, which provide critical information about how variables uniquely contribute to engagement and learning but cannot fully describe how various forms of motivation function together within students. It is our hope that, by integrating knowledge garnered from person-centered studies with more mainstream variable-centered goal work, researchers can resolve, revise, and reconceptualize discussions around students’ goal pursuit.

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