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Trait Goal Orientation, Self-Regulation, and Performance: A Meta-Analysis

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Abstract
Purpose The purpose of this paper is to meta-analytically examine trait goal orientation constructs and their relationships with the self-regulation variables of self-monitoring, self-evaluations, self-reactions, and self-efficacy as well as task performance across a range of contexts.
Design, Methodology, Approach Data were gathered from published and unpublished research examining the goal orientation construct and self-regulation and/or task performance. Effect sizes from 102 research reports involving over 16,000 participants were included.
Findings In general the mastery-approach goal orientation construct was positively related to the self-regulation and performance variables. Conversely, negative relationships were found between the performance-avoid goal orientation and those variables. Relationships between goal orientation and self-regulation tended to be higher compared to those found for goal orientation and performance. Overall, the findings support the discriminant validity of the three factors of goal orientation (mastery-approach, performance-approach, performance-avoid).
Practical Implications Practitioners and researchers will benefit from learning that mastery-approach goal orientation consistently relates to self-regulation and task performance. The findings indicate that a mastery-approach goal orientation could serve as a meaningful predictor in selection processes or as an explanatory variable of motivation.
Originality/Value The present study updates and expands upon past research by focusing on relationships of trait goal orientation across a variety of contexts. The results extend meta-analytic results to a wider range of self-regulatory variables.

Keywords Goal orientation · Motivation · Self-efficacy · Self-evaluation · Self-monitoring · Self-reactions · Self-regulation · Traits

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Introduction

The goal orientation construct has received a great deal of attention by researchers and practitioners interested in work motivation as evidenced by the volume of research that has been conducted over recent years (e.g., Payne et al. 2007). According to DeShon and Gillespie (2005), this construct has spurred such interest because of its roots in the achievement motivation literature and, given its theoretical foundation, the potential to provide insights into important questions such as why some people set higher goals, persist longer in the face of adversity, or conversely why some people tend to avoid achievement situations. While research and meta-analytic studies have investigated goal orientations, there exists a need for a more comprehensive integration of goal orientation theory with other theories of self-regulation and corresponding variables as it may provide answers to the important questions regarding achievement in the workplace (e.g., DeShon and Gillespie 2005; Diefendorff and Lord 2008).

Self-regulation has been defined as the capacity to guide one's activities over time and across changing circumstance (Kanfer 1990). Kanfer has identified four component processes used in self-regulation: self-monitoring, self-evaluation, self-reactions, and self-efficacy judgments. The concept of self-regulation is important because it explains a wide range of human behavior across a wide variety of contexts (e.g., Locke and Latham 2002; Kanfer 1990).

Diefendorff and Lord (2008) made a distinction between structural and content theories of self-regulation. Structural theories describe self-regulatory constructs and their interrelationships over time, without addressing the content of what is regulated. Some examples of self-regulatory constructs associated with structural theories have included goals, goal hierarchies, feedback, comparators, discrepancy reduction, discrepancy production, goal revision, and affect. According to this distinction social learning theory and control theory are exemplars of structural theories (Bandura 1991; Carver and Scheier 1998). Content theories of self-regulation describe the types of activities people engage in and how the nature of ones' goals affects self-regulation (Grant and Dweck 1999). According to Diefendorff and Lord, goal orientation theory is a content theory of self-regulation as it concerns the types of goals that individuals have in achievement situations and how these goals influence self-regulation (Dweck 1986). These authors have called for more research that integrates structural and content theories of self-regulation to better understand their combined effect on performance and self-reactions.

Our study addresses the need for the integration of content and structural theories of self-regulation through the meta-analysis of empirical studies that have examined the relationship of goal orientation on the dependent variables (e.g., feedback seeking, changes in effort, self-efficacy, etc.) associated with the structural theories on a piecemeal basis. More specifically, individual empirical studies have examined incomplete sets of self-regulation variables. We categorize the self-regulation variables studied in past research into the broad categories of self-monitoring, self-evaluation, self-efficacy, and self-reactions creating a relatively complete set of self-regulation variables in a single report. To the extent goal orientations affect these categorical variables, the pattern and magnitude of these relationships will lead to a clearer understanding of the relationships between content (goal orientation) and structural theories of self-regulation.

An additional concern in the literature has been related to the conceptual definition of goal orientation dimensions (e.g., DeShon and Gillespie 2005). Specifically, goal orientations have been conceptualized as both states and traits (e.g., Dweck and Leggett 1988; VandeWalle 1997). Diefendorff and Lord (2008) suggested that trait goal orientations might have a more consistent impact on self-regulation across tasks and situations compared to goal orientation states. They indicated that this would be the case, because trait goal orientation reduces the person's sensitivity to situational primes that are contrary to their trait orientation rendering the situational primes less influential as determinants of state goal orientation. Thus, goal orientation traits would have a pronounced and consistent influence on self-regulation across multiple tasks and contexts. In order to examine this proposition, the present study only included trait measures of goal orientation and included as many task contexts as the number of studies per context permitted.

In summary, questions remain unanswered regarding the influence of trait goal orientations on self-regulation and performance across different performance contexts: Do goal orientation traits consistently correlate highly with self-regulation variables? And, are these relationships consistent across task contexts? It is important to answer these questions because of their theoretical relevance as well as their significance for better understanding motivation in a workplace that increasingly emphasizes self-regulated achievement as a means of enhancing flexibility and competitiveness (Boswell et al. 2008; Parker and Ohly 2008). The present meta-analytic study focuses exclusively on trait orientations, to examine a broader set of self-regulation categories as dependent variables and focuses on a wider variety of performance contexts compared to past meta-analyses (e.g., Payne et al. 2007).

The Goal Orientation Construct

The goal orientation construct has its roots in Atkinson's (1964) theory of achievement motivation that focused on the joint influence of *motivation to succeed* and *motivation to avoid* failure in achievement situations. As stated above, goal orientation has been conceptualized as having both trait and state components (e.g., Dweck and Leggett 1988). According to this type of model, different goal orientation states can be elicited by cues embedded in the task or context (e.g., Stevens and Gist 1997). However, there is also a trait component of goal orientation that was initially defined as the tendency toward a consistent pattern of responses in achievement situations based on the individual's standing on goal orientation dimensions (e.g., Dweck 1986; Dweck and Leggett 1988; Nicholls 1975, 1976, 1978, 1984; VandeWalle 1997). There is recent evidence of the stability of trait goal orientation measures over time, further underscoring the state-trait distinction (Payne et al. 2007).

The factor structure of goal orientation dimensions has progressed in the literature from conceptualizing goal

orientation as a single bi-polar scale to a four-factor model where the factors are relatively independent, however, most trait measures have been based on a two- or three-factor model (Brett and VandeWalle 1999; Button et al. 1996; Elliot 1999; Elliot and Church 1997; Elliot and Harackiewicz 1996; Elliot and McGregor 1999, 2001; Elliot et al. 1999; Elliot et al. 1997; Heyman and Dweck 1992; VandeWalle 1997; VandeWalle et al. 2001). The four factors include mastery-approach, mastery-avoid, performance-approach, and performance-avoid (Elliot and McGregor 2001). Thus, in the four-factor model of goal orientation, mastery and performance dimensions are crossed with approach and avoid.

Mastery orientations are concerned with self-perceptions of one's competence. A mastery-approach orientation focuses on the goal of demonstrating incremental improvement to one's self. A mastery-avoid orientation is the goal of striving to avoid demonstrating loss of competence to one's self. The performance orientation is concerned with others' perceptions of one's competence. Performance-approach represents a focus on demonstrating competence to others and the performance-avoid is striving to avoid demonstrating incompetence to others. Three of these dimensions have been widely researched while the mastery-avoid orientation has received less attention in the research literature.

Past Meta-Analyses

Past meta-analyses have examined goal orientation when manipulated as a state (Rawsthorne and Elliot 1999; Utman 1997), or examined factor structure and the prediction of academic performance without emphasis on self-regulation and performance in other important domains (Day et al. 2003). Other meta-analyses have focused on the construct validity of the four-factor model (Baranik et al. 2010) and conceptual inconsistencies in the manner in which goal orientations are measured and their influence on outcomes (Hulleman et al. 2010).

Payne et al. (2007) conducted a meta-analysis of the goal orientation literature that examined both state and trait measures of goal orientation. Studies were included in the Payne et al. meta-analysis if they involved adults in academic and work situations. Included in the study were proximal and distal consequences of the goal orientation variables. They found generally positive relationships between trait measures of the mastery-approach goal orientation and performance as well as for the variables that mediate the goal orientation-performance relationship (e.g., feedback seeking, state goal orientations). Their findings for the performance-avoid orientation indicated negative relationships with these variables. Finally, the performance-approach orientation was generally not related to performance or in one instance there was a small positive relationship with the job performance.

Our meta-analysis differs from previous meta-analytical work in that it focuses exclusively on studies where goal orientation was conceptualized as a trait based on the conceptual foundation of the measure and the nature of the items. Therefore, for example, the three-factor measure developed by Elliot and Church (1997) that does not conceptualize goal orientation as a personality trait was excluded from our analysis. In addition, we included a wider range of performance contexts and self-regulation variables compared to the Payne et al. (2007) study that only included studies from educational and occupational settings. The present meta-analysis included studies from academic, work performance, work task simulation, training, athletic/motor, or games-based contexts. A notable difference was the inclusion of the athletic/motor category. This context is important because a number of jobs in the workplace (e.g., police officers, firefighters, military occupations, professional athletes, dancers) have a physical component.

Finally, we included variables related to positive self-reactions such as satisfaction, affect, and interest. The affective component of self-regulation is a critical component as it leads to sustained levels of well-being, influences choice of goal over time and maintains self-regulation over time (see Diefendorff and Lord 2008). Thus, compared to previous meta-analyses, we examine a more complete set of self-regulation variables that are consistent with structural self-regulatory models and a broader range of performance settings. Like Payne et al. (2007), we did not include the mastery-avoid dimension in our analysis because there were not enough studies using this dimension.

Trait Goal Orientation and Self-Regulation

Trait measures of goal orientation are of particular interest because of their potential influence on self-regulation and performance across task domains. In order to better understand why trait goal orientations lead to greater consistency regarding self-regulation it is important to understand their theoretical underpinnings. DeShon and Gillespie (2005) argued, based on their motivated action theory (MAT), that goal orientation is best considered a goal that once accepted leads to an orientation. Thus, according to MAT, goal orientation is not a trait per se but rather a goal. However, goals that are frequently activated become highly accessible and eventually become chronic in the sense that they are chronically ready to be activated (Bargh 1999; Bargh and Thein 1985). Thus based on MAT,

it is chronic goals that are measured by trait measures of goal orientation and predict behavior across time and situations. Moreover, these chronic goals lead to behavioral consistency because of their influence on self-regulation. Whether goal orientation is ultimately a trait or a chronic goal is not the primary issue in our study because there is consensus in the literature that the trait-based measures used in goal orientation research are relatively stable and trait-like and our predictions would remain the same because they are based on the greater stability of the trait measures.

A second important aspect of trait goal orientation is the connection with affective variables and the role of affect in determining self-regulation. Diefendorff and Lord (2008) maintain that both cognitive evaluations and emotions are important for self-regulation. Positive emotions lead to the maintenance of self-regulation and behavior. Conversely, in their model, negative emotions lead to rapid updating of information, which is disruptive for on-going self-regulation. Therefore, a mastery-approach orientation should lead to higher correlations with self-regulation, performance and affectively based variables. Conversely the negative emotion associated with the performance-avoid goal would lead to negative relationships between this orientation and self-regulation, performance and affectively based variables. For trait goal orientation these patterns would tend to be consistent across time and situations.

In the present study, we used Kanfer's (1990) four component processes in self-regulation: self-monitoring, self-evaluation, self-efficacy, and self-reactions as categories to which we assigned variables. These self-regulatory processes, along with the availability of studies, served as the foundation upon which we selected variables for the present meta-analysis. We believe our selection criteria resulted in a set of variables that (1) are very much at the core of self-regulation, (2) are theoretically related to goal orientation, and (3) have been the focus of goal orientation research.

Goal Orientation and Self-Monitoring

Self-monitoring involves seeking and interpreting feedback on progress toward goal attainment. Such feedback can be derived from the task or from external sources such as a supervisor or coach. At the core of self-regulation is goal setting, including self-set goals and externally assigned goals (Locke and Latham 1990, 2002). As Locke and Latham have indicated, both goals and feedback are crucial for high performance to occur.

In the present meta-analysis, variables relating to collecting information about the consequences of one's actions or feedback seeking were considered measures of self-monitoring. Feedback seeking is a key aspect of self-monitoring and has been positively associated with the mastery-approach goal orientation and negatively related to the performance-avoid orientation (e.g., VandeWalle and Cummings 1997). Based on the notion that a mastery-approach orientation emphasizes the developmental aspects of feedback for incremental improvement of performance, it is expected that the mastery-approach orientation will be positively correlated with feedback seeking. Those high on the performance-avoid scale should tend to view ability as fixed and negative feedback as threatening. Therefore, the performance-avoid construct should correlate negatively with the tendency to seek feedback. It is expected that the performance-approach dimension will have a low positive correlation with self-monitoring. The effect is expected to be weaker than the prediction for mastery-approach because the goal of proving competence to others and its associated anxiety would lead to distraction, diminishing the effect of the approach aspect of this orientation and the associated positive emotion on self-monitoring.

Goal Orientation and Self-Evaluation

Situations where both a goal and feedback are present allow one to make self-evaluations regarding progress toward that goal. If progress is not sufficient, one may increase effort or change strategies to increase the likelihood of goal attainment and improving performance improvement. In the present meta-analysis, self-set goals, effort, self-ratings of performance, and goal commitment were included into the general category of self-evaluation. According to Kanfer (1990), during self-evaluation individuals compare their desired goal state with current performance levels. Such an evaluation often leads to changes in effort, perceptions of self-rated performance, goal commitment, and self-set goals. Thus, while effort, self-rated performance, self-set goals, and goal commitment are not the actual evaluation or judgment based on the goal/feedback comparison, they are highly influenced by the decisions made based on such a comparison and are a direct and proximal consequence of the self-evaluation process.

We expected self-set goals, effort, self-ratings of performance, and goal commitment to be more positively correlated with the mastery-approach goal orientation than with any of the performance goal orientations. Based on the logic presented earlier, the goal of incremental improvement that is associated with a mastery-approach orientation emphasizes the significance of self-set goals, the usefulness of effort, and the utility of commitment, in the service of incremental improvement. A mastery-approach orientation would then be consistent with higher self-set goals, effort expenditure, self-ratings of performance, and goal

commitment. Those high on the performance-avoid scale would tend to view ability as fixed, negative feedback as threatening, and high effort as an indication of low ability. Therefore, the performance-avoid construct should correlate negatively with self-set goals, effort, self-ratings of performance, and goal commitment. Finally, performance-approach scales should exhibit low positive correlations with self-evaluation. Again, the relationship would be positive because one is motivated to approach the task making it more likely that positive emotion would be experienced and facilitate self-evaluation but low because the anxiety associated with the greater uncertainty of the external goal of proving competence to others could cause distraction and reduce the amount or accuracy of self-evaluation.

Goal Orientation and Self-Efficacy

An additional variable identified by Kanfer was *self-efficacy*, which is at the heart of social learning theory (e.g., Bandura 1997; Bandura and Locke 2003). Wood and Bandura (1989) defined self-efficacy as "belief in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (p. 408). Bandura (1997) has indicated that self-efficacy is enhanced as goals are set, performance monitored, adjustments are made based on feedback, and goals are attained. Given that self-efficacy enhancement is closely tied to setting goals, seeking feedback, and expending effort, we expected the same rationale would apply for self-efficacy as for self-monitoring and self-evaluation variables. Thus, it was expected that mastery-approach orientation would have the highest positive relation with self-efficacy, followed by performance-approach orientation. Conversely, it was expected that the performance-avoid orientation would be negatively correlated with self-efficacy.

Goal Orientation and Self-Reactions

Self-reactions are considered to be largely affective in nature (e.g., Kanfer 1990). Reactions have been viewed as being associated with goal attainment and particularly with rate of progress toward a goal. Attainment, or attainment at a faster rate than expected, leads to greater satisfaction and positive affect (e.g., Bandura and Locke 2003; Carver and Scheier 1981, 1982, 1990, 1998). Conversely, failure to attain a goal or slower progress toward goal attainment than anticipated can lead to dissatisfaction and/or negative affect. Such reactions are important for task persistence and the well-being of individuals as dissatisfied individuals have a greater tendency toward withdrawal behavior (e.g., Kanfer 1990). In addition, as discussed previously negative affective reactions likely disrupt self-regulation activities leading to less self-regulatory behavior and lower performance (e.g., Diefendorff and Lord 2008).

Our study includes the self-reactions of task satisfaction and task interest because of the theoretical relevance of these variables for self-regulation and the presence of these variables in past research. Theories of self-regulation generally have conceptualized goal attainment and/or rate of goal attainment as being related to affect regarding job or task engagement (Bandura and Locke 2003; Carver and Scheier 1990). If an incremental theory of ability is an antecedent of a mastery-approach goal orientation, success would be defined as incremental improvement through effort, thereby increasing the likelihood of goal attainment and subsequent satisfaction.

In addition, self-regulatory activities (e.g., self-set goals, feedback seeking) would tend to focus attention on the task, as well as the self, as a referent, thereby increasing perceptions of self-determination and competence, which have been related to task interest and task persistence (e.g., Deci et al. 1999). We expected lower correlations between the performance-approach orientation and self-reactions because of the emphasis on an external referent for performance and the fixed entity theory of ability. Finally, negative correlations were expected between the performance-avoid orientation and self-reactions. Again, there is an external referent for performance and a higher fear of failure that should lead to decreased satisfaction and interest.

Performance and Context

Past theorizing suggests a moderating effect for performance context on the relationship between goal orientation and performance in that people may hold different goal orientations across different performance contexts such as work or academic domains thereby influencing the magnitude and direction of the relationships (Chiu et al. 1994; Dweck 1991). For example, VandeWalle (1997) has maintained that performance contexts, such as work and academic, can influence the relationships between goal orientation dimensions and performance due to the extent that individuals manifest behavior associated with differences in contextual cues (DeShon and Gillespie 2005; Stevens and Gist 1997). Tangential support for this premise is provided by findings that more contextually based measures of personality tend to exhibit higher relationships with performance in that context (e.g., Cellar et al. 1996; Mount et al. 1994; Schmit et al. 1995). Similarly, measures of trait goal orientation have also been developed to measure goal orientation dimensions in academic, work, sales, and other contexts (e.g., Sujan et al. 1994; VandeWalle 1997).

However, research to date has generally found positive relationships for mastery-approach orientation and negative relationships for performance-avoid and performance across contexts (Payne et al. 2007). To some extent the consistency with which the mastery-approach orientation has been related to performance has been perplexing and led researchers to be cautious about claiming the mastery-approach orientation is the most effective orientation across performance domains (e.g., DeShon and Gillespie 2005). Why wouldn't a performance-approach orientation be more influential in competitive situations such as sales or athletics? Considering these questions from a self-regulation perspective suggests that as long as self-regulation was related to performance a mastery-approach orientation should be positively related to performance because of increased self-regulatory activities fueled by higher levels of positive affect (Diefendorff and Lord 2008). Therefore, one would expect the mastery-approach orientation to be more highly correlated in a positive direction with performance compared to the other orientations unless self-regulatory activities are not related to performance. It would seem that most work tasks have a self-regulation component that is not only related to learning the task but also performing it well. However, before a definitive conclusion can be made, relationships across contexts should be studied. The present study includes additional performance contexts to further shed light on this issue.

Goal Orientation and Performance

A consequence of more effective self-regulatory processes is enhanced performance (e.g., Bandura 1997; Carver and Scheier 1990; Kanfer 1990; Locke and Latham 1990). As higher goals are self-set, commitment to goal attainment increased, feedback sought and interpreted, effort reallocated, strategies developed and changed, and self-efficacy enhanced, performance should subsequently be increased. Therefore, given that we expected a mastery-approach goal orientation to have the highest correlations with self-regulatory variables, followed by the performance-approach orientation, we expected to find the same relationships with performance. Similarly, we expected to find negative relationships between performance-avoid and performance.

Method

Locating Studies

Several steps were taken to locate research related to trait goal orientation. Databases were searched using keywords of *goal orientation, learning goal, mastery goal, achievement goal* combined with specific outcomes (i.e., *intrinsic motivation, goal-setting, interest, self-efficacy, satisfaction, performance*). The databases of PsycInfo (1966–2009) and ERIC (1966–2009) were searched as well as Digital Dissertations. The citations of trait-like goal orientation scales (e.g., Button et al. 1996; VandeWalle 1997) were entered into the Social Sciences Citation Index to locate studies using these scales. Researchers presenting on goal orientation at the meeting of the Society for Industrial-Organizational Psychology (2004 through 2009) were contacted for presentations and file drawer studies. Reference lists from major goal orientation articles were scanned for potential reports.

Criteria for Inclusion

Articles selected for inclusion must have examined trait, rather than state, motivational orientation as identified by the author of the scale, research summaries (e.g., DeShon and Gillespie 2005; Payne et al. 2007), and our review of the scales. Specifically, the focus was on the extent the goal orientation scales were oriented toward a specific situation rather than a general construct or general domain specific construct. The research participants must have been at least college age adults from a non-disordered population. Only reports written in English were included. Articles were retained if relationships were reported between trait-like motivation orientation and at least one of the dependent variables of interest.

Dependent Variables

Separate effect sizes were recorded for each goal orientation across five dependent variables: self-monitoring, self-evaluation, self-efficacy, self-reaction, and task performance outcomes.

Self-Monitoring

Self-monitoring is self-observation or "attention given to specific aspects of ones own behavior" (Kanfer 1990, p. 131). In actuality, the distinction between self-monitoring and self-evaluation is not always clear. For the meta-analysis, variables relating to collecting information about the consequences of one's actions such as the cost or value, of feedback (e.g., Brett and Atwater 2001; VandeWalle et al. 2000) or feedback seeking (e.g., DeShon et al. 2004) were considered measures of self-monitoring.

Self-Evaluation

In self-evaluation, people compare their desired goal state with performance (Kanfer 1990). A wide variety of

variables were considered to represent some aspect of comparing one's goals and relevant performance. Measures of self-evaluation that were incorporated include goal commitment (e.g., DeShon et al. 2004), rated effort (e.g., DeShon et al. 2004), self-rated performance (e.g., Radosevich et al. 2004), rated usefulness of feedback (e.g., Park et al. 2007), self-set goals (e.g., Fortunato and Goldblatt 2006), and goal discrepancy (e.g., Radosevich et al. 2004).

Self-Efficacy

Self-efficacy relates to individuals' confidence in their ability to perform specific tasks. Examples in the meta-analysis include self-efficacy for problem solving and recall (Towler and Dipboye 2001), as well as self-efficacy for specific academic subjects such as Math or English (Patrick et al. 1999). Measures of general self-efficacy were not included (e.g., Chen et al. 2000).

Self-Reactions

A number of studies measured variables related to self-reactions. Examples include task interest (Church et al. 2001), task satisfaction (Balaguer 2002; Ralston et al. 2002), self-rated intrinsic motivation (Butler and Reiter-Palmon 2004), and positive reactions (Brett and Atwater 2001). Situational negative affect and off-task attention (e.g., Dobbins et al. 2002) were also included but reversed coded. Measures of positive and negative trait affectivity were excluded as the focus was on self-reactions tied to the specific activities rather than dispositions.

Task Performance Outcomes

Given that a variety of contexts were considered, a wide range of performance measures appear in the meta-analysis. Performance outcomes include GPA, knowledge tests, and learning measures, but also allowed for more unique measures such as dart throwing accuracy (Tenebaum et al. 2001). Self-ratings of performance were not considered performance measures, but rather coded as self-evaluation.

Coding

Key articles from the literature were reviewed to determine characteristics and variables to be coded within each report. The research team then coded a set of pilot articles. Revisions to the coding protocol were made where needed and guidelines were developed for the consistent coding of articles. Article coding was conducted by ten doctoral students working in two separate groups.

Correlation coefficients between motivational orientation and the dependent variables (e.g., self-monitoring, self-evaluation, self-efficacy, self-reactions, and/or performance) were extracted. Statistical artifact information on the reliability of the goal orientation measure was recorded when available. Other coded information included sample size and task context.

The task context of the study was classified as either academic, work performance, work task simulation, training, athletic/motor, or games-based. *Academic* contexts related to education or school in terms of students, classes, or grades. The *athletic/motor* task context focused on sports or physical ability tests. *Work performance* contexts involved participants who were employees in an actual work place doing a work related task. *Work task simulation* contexts involved activities that might be done on a job but the study itself did not occur in an existing work environment. For example, participants could have been employees engaged in a simulated work task, or research participants performing work related activities (e.g., group decision making or stock broker decisions). The *training* task context focused directly on teaching and learning new skills (e.g., learning how to use a computer program). The *games* context involved non-work related tasks like video games or puzzles. Tasks not fitting these contexts were classified as *other*.

Once articles were coded, the articles were divided among the other coders in the group for a second coding. Raters worked in rotating pairs such that they switched partners with others in the group across studies to increase consistency across coding. After articles had been coded twice, raters met to review disparities and reach consensus. All discrepancies were resolved by discussion.

Results

The meta-analysis included a total of 102 research reports (for the list of articles see online archive). Many reports provided more than one sample or study which resulted in multiple independent effect sizes per report. In cases with independent samples, each correlation was included in the meta-analysis. In cases where similar measures of a construct were collected within a participant sample, effect sizes were averaged to reach a single effect size. This prevented a study with multiple measures of the same construct from being included more than once; each effect size was independent from the others within any analysis. Data independence was particularly important in a few cases where measures were taken at multiple points within the study. In these cases,

the multiple effect sizes (e.g., correlations at Time 1, Time 2, and Time 3) were averaged to create a single effect size. Combining multiple effects across times was appropriate given our interest in trait rather than situational goal orientation.

Overall effect sizes were calculated for each variable of interest (self-monitoring, self-evaluation, self-efficacy, self-reactions, task performance) with the trait goal orientations of *mastery-approach*, *performance*, *performance-approach*, and *performance-avoid*. Effect sizes for the performance goal orientation came primarily from Button et al. (1996) and did not include the performance-approach or performance-avoid dimensions of VandeWalle's scale, which are reported separately.

Effect sizes across studies were estimated based on the meta-analytic procedures by Hunter and Schmidt (2004). Mean correlation (r) effect sizes and 95% confidence intervals were calculated for each dependent variable. Data were corrected for sampling error and for the artifact of unreliability in the goal orientation measure. We used variance accounted for by these statistical artifacts, the 95% credibility interval (95% Cred Int), and the standard deviation of the corrected population correlation (SDρ) as indicators of moderators or subpopulations affecting the obtained relationships between variables (Hunter and Schmidt 2004). When sampling error variance was larger than the observed variance, we followed the standard practice of reporting 100% as the actual percent of variance estimate (Arthur et al. 2001).

Self-Monitoring

Twenty-four research reports, yielding 70 effect sizes, included trait goal orientation and a self-monitoring variable. Results are provided in Table 1, including the sample-weighted mean correlations (SWMr) and the correlation between goal orientation and self-monitoring corrected for artifact distribution (ρ).

The overall sample-weighted mean correlation (SWMr) between *mastery-approach goal orientation* and self-monitoring (Table 1) was .22 (95% CI = .11/.32) and the corrected correlation coefficient (ρ) was .24 (95% CV_L = −.06). Thus, a small to moderate relationship was found between mastery-approach goal orientation and self-monitoring.

Only one study was found that looked at performance goal orientation and self-monitoring and performance; more studies were found that examined performance-approach and performance-avoid orientations and self-monitoring. The overall SWMr between *performance-approach goal orientation* and self-monitoring was .01 (95% CI = −.09/.12); the corrected correlation coefficient (ρ) was also .01 (95% CV_L = −.27). Thus, no relation was found between this approach goal orientation and self-monitoring. The overall relation between *performance-avoid goal orientation* and self-monitoring was −.03, (95% CI = −.13/−.07) and ρ was −.03 (95% CV_L = −.30). This implies no relationship between the variables. In terms of effect size, it is noteworthy that the mastery-approach

Table 1 Self-monitoring and goal orientation dimensions

	k	*N*	SWMr	SW SD	% Var due to Samp. Error	95% CI		ρ	SDρ	% Var Act For	95% CV (L)	95% Cred Int	
						L	U					L	U
Mastery-approach	12	2,391	.22	.18	14.01	.11	.32	.24	.19	14.18	−.06	−.12	.61
Context													
Academic	3	470	.38	.14	24.79	.22	.53	.43	.14	25.04	.20	.16	.69
Work performance	7	1,150	.28	.14	26.86	.18	.39	.31	.13	27.48	.10	.06	.57
Work simulation	2	771	.02	.02	100.00	.00	.04	.02	.00	100.00	.02	.02	.02
Performance-approach	10	1,852	.01	.17	18.14	−.09	.12	.01	.17	18.14	−.27	−.33	.36
Context													
Academic	3	470	.00	.21	15.19	−.23	.23	.00	.22	15.19	−.36	−.43	.43
Work performance	6	840	.02	.21	17.07	−.14	.19	.02	.21	17.07	−.31	−.38	.43
Performance-avoid	10	1,852	−.03	.16	21.1	−.13	.07	−.03	.16	21.11	−.30	−.35	.28
Context													
Academic	3	470	−.06	.11	53.49	−.18	.07	.07	.08	53.5	−.20	−.23	.10
Work performance	6	840	−.04	.22	14.83	−.22	.13	−.05	.23	14.84	−.42	−.50	.40

Note: For all tables, results are corrected for goal orientation unreliability. *k* number of correlations, *N* number of participants, *SWMr* sample-weighted mean correlation, *SWSD* sample-weighted standard deviation of the SWMr, *% Var due to Samp. Error* percentage of variance attributed to sampling error, *95% CI L* lower 95% confidence interval, *95% CI U* 95% confidence interval, ρ corrected population correlation, *SD*ρ standard deviation of the corrected population correlation; *% Var Act for* percentage of variance attributed to sampling error and artifact corrections; *95% CV(L)* lower 95% credibility value; *95% Cred Int L and U* lower and upper 95% credibility interval

goal orientation had a relatively strong relationship with self-monitoring ($\rho = .24$), especially compared to the other goal orientations.

Self-Evaluation

Forty-two research reports yielding 295 effect sizes included trait goal orientation and a self-evaluation variable (Table 2). The overall sample-weighted mean correlation (SWMr) between *mastery-approach goal orientation* and self-evaluation (Table 2) was .29 (95% CI = .24/.34) and the corrected correlation coefficient (ρ) was .32 (95% $CV_L = .02$). Therefore, a moderate relation was found between mastery goal orientation and self-evaluation.

The overall correlation between *performance goal orientation* and self-evaluation was .04 (95% CI = −.03/.11), the corrected correlation coefficient (ρ) was also .04 (95% $CV_L = -.24$). Thus, no relationship was found between overall performance goal orientation and self-evaluation.

The overall SWMr between *performance-approach goal orientation* and self-evaluation was .06 (95% CI = .02/.11); the corrected correlation coefficient (ρ) was .07 (95% $CV_L = -.08$). Thus, no relation was found between this approach goal orientation and self-evaluation. Finally, the relation between *performance-avoid goal orientation* and self-evaluation was −.05, 95% CI = −.11/.00) and ρ was −.06 (95% $CV_L = -.28$). This suggests little to no relationship between variables. In terms of effect size, mastery-approach goal orientation had a relatively strong relationship with self-evaluation ($\rho = .32$), especially compared to the other goal orientations.

Because a mixture of variables was included in the self-evaluation dimension, follow-up analyses were conducted. We separated the self-evaluation variables that had a more proximal motivational connection (e.g., goals, effort, expectancies) and those with an outcome focus (self-rated performance, goal commitment). These analyses are provided in Table 3. The pattern of effects

Table 2 Self-evaluation and goal orientation dimensions

	k	*N*	SWMr	SW SD	% Var due to Samp. Error	95% CI		ρ	SDρ	% Var Act For	95% CV (L)	95% Cred Int	
						L	U					L	U
Mastery-approach	48	10,916	.29	.18	11.65	.24	.34	.32	.18	11.92	.02	−.04	.68
Context													
Academic	31	7,266	.33	.14	16.44	.27	.38	.36	.14	16.79	.12	.07	.64
Training	3	524	.19	.09	68.34	.09	.29	.21	.06	68.65	.12	.10	.32
Work performance	4	655	.25	.06	100.00	.19	.31	.29	.00	100.00	.29	.29	.29
Work simulation	4	1,098	.03	.15	17.13	−.11	.18	.04	.15	17.14	−.20	−.25	.32
Other	5	1,278	.39	.22	5.67	.19	.59	.42	.23	6.01	.04	−.04	.87
Performance	21	4,180	.04	.16	18.53	−.03	.11	.04	.17	18.54	−.24	−.29	.37
Context													
Academic	13	3,098	.02	.18	12.85	−.08	.11	.02	.19	12.85	−.30	−.36	.40
Work performance	3	516	.08	.07	100.00	.00	.16	.09	.00	100.00	.09	.09	.09
Work simulation	3	342	.12	.11	73.23	.00	.24	.13	.06	73.29	.03	.01	.25
Performance-approach	20	5,210	.06	.10	36.54	.02	.11	.07	.09	36.61	−.08	−.11	.25
Context													
Academic	12	2,742	.05	.11	38.57	−.01	.11	.06	.10	38.61	−.10	−.13	.25
Training	2	463	.02	.02	100.00	.00	.04	.02	.00	100.00	.02	.02	.02
Work performance	2	377	.17	.12	34.63	.00	.33	.19	.11	34.64	.01	−.03	.40
Work simulation	2	770	.05	.12	18.69	−.12	.21	.05	.11	18.69	−.14	−.17	.27
Other	2	858	.10	.01	100.00	.08	.12	.11	.00	100.00	.11	.11	.11
Performance-avoid	21	5,271	−.05	.13	22.52	−.11	.00	−.06	.13	22.55	−.28	−.32	.20
Context													
Academic	12	2,742	−.02	.13	26.00	−.10	.05	−.03	.13	26.00	−.23	−.27	.22
Training	3	524	−.08	.06	100.00	−.14	−.01	−.09	.00	100.00	−.09	−.09	−.09
Work performance	2	377	−.04	.07	100.00	−.14	.06	−.05	.00	100.00	−.05	−.05	−.05
Work simulation	2	770	.03	.01	100.00	.01	.05	.03	.00	100.00	.03	.03	.03
Other	2	858	.22	.12	15.50	−.38	−.05	−.23	.11	15.50	−.42	−.45	−.01

Table 3 Self-evaluation and goal orientation dimensions divided by motivational self-evaluation and outcome self-evaluation

	k	*N*	SWMr	SW SD	% Var due to Samp. Error	95% CI		ρ	SDρ	% Var	95%	95% Cred Int	
						L	U			Act For	CV (L)	L	U
Motivation self-evaluation													
Mastery-approach	40	9742	.30	.19	9.40	.24	.36	.33	.20	9.69	.01	−.06	.72
Performance	18	3839	.01	.20	11.96	−.09	.10	.01	.21	11.96	−.34	−.41	.42
Performance-approach	18	4721	.07	.10	39.39	.03	.12	.08	.09	39.50	−.06	−.09	.25
Performance-avoid	18	4721	−.08	.12	24.38	−.14	−.02	−.09	.12	24.45	−.29	−.32	.15
Outcome self-evaluation													
Mastery-approach	11	1723	.22	.10	63.87	.16	.27	.24	.06	64.41	.14	.12	.36
Performance	6	902	.07	.08	100.00	.01	.14	.08	.00	100.00	.08	.08	.08
Performance-approach	3	670	.06	.15	19.46	−.11	.23	.07	.15	19.48	−.19	−.24	.37
Performance-avoid	4	731	−.01	.10	58.11	−.10	.09	−.01	.07	58.11	−.13	−.15	.14

Note: Outcome self-evaluation includes goal commitment and self-rated performance as consequences of self-evaluation while motivation self-evaluation includes all other self-evaluation variables (i.e., goals, effort, attention)

remained similar with mastery orientation having the strongest and most positive relationship with self-evaluation in both the motivational (SWMr = .30, ρ = .33, 95% CI = .24/.39, 95% CV_L = .01) and outcome focused variables (SWMr = .22, ρ = .24, 95% CI = .16/.27, 95% CV_L = .14).

Self-Efficacy

Forty-five reports yielded 116 effect sizes with goal orientation and self-efficacy. The overall sample-weighted mean correlation (SWMr) between *mastery-approach goal orientation* and self-efficacy (Table 4) was .33 (95% CI = .29/.37) and the corrected correlation coefficient (ρ) was .33 (95% CV_L = .33). A moderate relation was found between mastery-approach goal orientation and self-efficacy.

The overall correlation between *performance goal orientation* and self-efficacy was .02 (95% CI = -.04/.09); the corrected correlation coefficient (ρ) was .03 (95% CV_L = −.24). Thus, there was no relationship between overall performance goal orientation and self-efficacy.

The overall *SWMr* between *performance-approach goal orientation* and self-efficacy was .10 (95% CI = .05/.15); the corrected correlation coefficient (ρ) was .11 (95% CV_L = −.08). Thus, there was a small positive relation between level of performance-approach goal orientation and self-efficacy. The overall relation between *performance-avoid goal orientation* and self-efficacy was negative (SWMr = −.13, 95% CI = −.18/−.07) and ρ was −.15 (95% CV_L = −.34). As with self-monitoring and self-evaluation, mastery goal orientation had a relatively strong relationship with self-efficacy (ρ = .33), compared to the other goal orientations.

Self-Reactions

Thirty research reports included goal orientation and self-reactions which yielded 89 effect sizes. The overall sample-weighted mean correlation (SWMr) between *mastery-approach goal orientation* and self-reactions (Table 5) was .28 (95% CI = .22/.35) and the corrected correlation coefficient (ρ) was .32 (95% CV_L = −.01).

The other goal orientations did not have a similar relationship with self-reactions. The overall correlation between *performance goal orientation* and self-reactions was −.08 (95% CI = −15/−.01); the corrected correlation coefficient (ρ) was −.09 (95% CV_L = −.30). Thus, there was a small negative relationship between overall performance goal orientation and self-reactions. The overall SWMr between *performance-approach goal orientation* and self-reactions was .06 (95% CI = .01/.11); the corrected correlation coefficient (ρ) was .06 (95% CV_L = −.12). Finally, the overall relation between *performance-avoid goal orientation* and self-reactions was negative (SWMr = −.11, 95% CI = −.19/−.04) and ρ was −.13 (95% CV_L = −.42).

Task Performance

Sixty-eight research reports included goal orientation and performance which yielded 189 separate effect sizes. The overall sample-weighted mean correlation (SWMr) between *mastery-approach goal orientation* and task performance (Table 6) was .12 (95% CI = .10/.14) and the corrected correlation coefficient (ρ) was .13 with a lower 95% credibility value (95% CV_L) of −.01.

The overall correlation between *performance goal orientation* and task performance was .01 (95% CI = −.03/.05),

Table 4 Self-efficacy and goal orientation dimensions

	k	*N*	SWMr	SW SD	% Var due to Samp. Error	95% CI		ρ	SDρ	% Var Act For	95% CV (L)	95% Cred Int	
						L	U					L	U
Mastery-approach	49	10,217	.33	.14	20.93	.29	.37	.33	.00	100.00	.33	.33	.33
Context													
Academic	20	5,071	.35	.17	10.72	.27	.42	.39	.18	11.00	.10	.04	.74
Games	2	286	.29	.03	100.00	.25	.33	.32	.00	100.00	.32	.32	.32
Training	9	1,348	.29	.07	100.00	.24	.33	.33	.00	100.00	.33	.33	.33
Work performance	4	654	.36	.08	71.57	.28	.44	.40	.05	72.92	.32	.30	.49
Work simulation	8	1,746	.29	.09	51.49	.23	.35	.33	.07	52.52	.22	.20	.46
Other	5	746	.40	.08	84.24	.33	.46	.22	.00	100.00	.22	.22	.22
Performance	23	5,005	.02	.16	18.98	−.04	.09	.03	.16	18.99	−.24	−.29	.34
Context													
Academic	11	2,643	.03	.18	12.46	−.08	.13	.03	.19	12.46	−.29	−.35	.41
Training	3	419	.00	.18	23.33	−.20	.20	.00	.18	23.33	−.30	−.36	.36
Work performance	5	488	.01	.12	39.58	−.13	.16	.02	.11	39.58	−.17	−.20	.24
Work simulation	4	959	−.03	.03	100.00	−.06	.01	−.03	.00	100.00	−.03	−.03	−.03
Performance-approach	21	4,572	.10	.13	28.91	.05	.15	.11	.12	29.16	−.08	−.12	.35
Context													
Academic	6	1,881	.14	.15	13.56	.02	.26	.16	.16	14.31	−.11	−.16	.48
Games	2	286	.04	.04	100.00	−.01	.09	.05	.00	100.00	.05	.05	.05
Training	6	929	.07	.04	100.00	.04	.10	.08	.00	100.00	.08	.08	.08
Work simulation	5	977	.05	.10	52.01	−.04	.14	.05	.08	52.02	−.07	−.10	.20
Performance-avoid	21	4,572	−.13	.13	28.09	−.18	−.07	−.15	.12	28.30	−.34	−.38	.09
Context													
Academic	6	1,881	−.09	.15	14.75	−.20	.03	−.10	.16	14.81	−.37	−.42	.21
Games	2	286	−.18	.09	89.24	−.30	−.06	−.20	.03	89.26	−.25	−.26	−.14
Training	6	929	−.18	.05	100.00	−.22	−.14	−.20	.00	100.00	−.20	−.20	−.20
Work simulation	5	977	−.14	.08	84.49	−.21	−.07	−.16	.03	84.80	−.21	−.22	−.09

the corrected correlation coefficient (ρ) was also .01 (95% $CV_L = -.15$). Thus, no relationship was found between overall performance goal orientation and task performance.

The overall SWMr between *performance-approach goal orientation* and task performance was .05 (95% CI = .02/.08); the corrected correlation coefficient (ρ) was .06 (95% $CV_L = -.08$). The effect showed a weak to nonexistent relationship between performance-approach goal orientation and task performance. Finally, the overall relation between *performance-avoid goal orientation* and performance was small and negative (SWMr = −.07, 95% CI = −.10/−.04) and ρ was −.08 (95% $CV_L = -.22$).

Context

In general, analyses found less than 75% of the variance was accounted for within each goal orientation variable and self-regulation variable; it appears that moderators play an important role in understanding the relationships of goal orientation and self-regulation. Grouping the studies by task context accounted for more of the variance than the overall effect, but other moderators are likely since there is variance beyond sampling error and artifact corrections yet to be accounted for.

Across the self-regulation variables, self-efficacy and self-reactions had a number of subgroups where a large proportion of the variance was accounted for by task context breakdowns. However, some of these cases involve very few studies and caution is required in interpretation. For task performance the effects are homogenous within the *performance goal orientation* in both the academic and training contexts with 100% the variance due to sampling error and very small credibility intervals. Likewise with *performance-approach goal orientation*, the contexts of games and work training were homogeneous. With the *performance-avoid goal orientation*, the relationship with performance was homogeneous with games and training.

Table 5 Self-reactions and goal orientation dimensions

	k	*N*	SWMr	SW SD	% Var due to Samp. Error	95% CI		ρ	SDρ	% Var Act For	95% CV (L)	95% Cred Int	
						L	U					L	U
Mastery-approach	35	8,575	.28	.19	9.92	.22	.35	.32	.20	10.24	−.01	−.07	.70
Context													
Academic	16	5,086	.34	.14	11.73	.27	.41	.38	.15	12.13	.13	.09	.67
Athletic	2	181	.09	.02	100.00	.06	.12	.11	.00	100.00	.11	.11	.11
Training	8	1,175	.30	.18	17.41	.17	.42	.34	.19	17.58	.03	−.03	.70
Work performance	5	697	.18	.09	91.4	.10	.25	.20	.03	92.22	.15	.15	.25
Work simulation	3	920	.02	.16	12.35	−.17	.20	.02	.16	12.35	−.25	−.30	.34
Performance	13	2,911	−.08	.13	25.92	−.15	−.01	−.09	.13	25.99	−.30	−.34	.16
Context													
Academic	6	1,899	−.12	.09	36.62	−.20	−.05	−.14	.08	36.81	−.28	−.30	.02
Athletic	2	263	−.01	.03	100.00	−.05	.03	−.01	.00	100.00	−.01	−.01	−.01
Training	3	334	−.14	.16	34.59	−.32	.04	−.16	.15	34.84	−.41	−.46	.13
Work performance	2	315	.15	.07	100.00	.05	.25	.17	.00	100.00	.17	.17	.17
Performance-approach	21	5,274	.06	.12	28.49	.01	.11	.06	.11	28.56	−.12	−.16	.28
Context													
Academic	9	2,797	.01	.07	62.35	−.04	.06	.01	.05	62.36	−.07	−.09	.11
Training	5	841	.21	.14	13.61	−.04	.32	.15	.21	13.72	.20	−.27	.57
Work performance	3	381	.02	.09	97.55	−.09	.12	.02	.02	97.55	−.01	−.01	.05
Work simulation	3	920	.10	.05	100.00	.05	.15	.11	.00	100.00	.11	.11	.11
Performance-avoid	20	4,845	−.11	.17	13.94	−.19	−.04	−.13	.18	13.99	−.42	−.47	.22
Context													
Academic	8	2,368	−.22	.04	100.00	−.25	−.19	−.25	.00	100.00	−.25	−.25	−.25
Training	5	841	−.08	.06	100.00	−.13	−.03	−.09	.00	100.00	−.09	−.09	−.09
Work performance	3	381	−.10	.03	100.00	−.13	−.06	−.11	.00	100.00	−.11	−.11	−.11
Work simulation	3	920	.18	.14	15.78	.02	.34	.20	.14	15.86	−.03	−.08	.48

Discussion

The results of our study extended past meta-analyses in three ways. First the results strongly supported our general hypothesis that trait goal orientation would be related to self-regulation thereby supporting the linkage between content and structural theories of self-regulation. Second, our results indicated consistent strong positive relationships for the mastery-approach orientation across all the self-regulation variables. This finding supports the notion that a mastery-approach orientation influences the frequency of self-monitoring, self-evaluation, self-efficacy and more positive self-reactions. Finally, the relationships for self-reactions (affective measures) have not been investigated in past meta-analyses and support the recent theorizing about the role of affect in maintaining self-regulation over time (e.g., Seo and Ilies 2009). It should be noted that in a general sense, our findings were similar to Payne et al. (2007) in that the most consistent positive relationships were found for the mastery-approach goal orientation supporting the value of this orientation for self-regulation and performance.

As expected, some of the largest effects were with self-regulatory processes and mastery-approach goal orientation. In particular, the effects of mastery-approach orientation and self-monitoring ($\rho = .24$), self-evaluation ($\rho = .32$), self-efficacy ($\rho = .33$), and self-reactions ($\rho = .32$) were fairly robust and were based on a sufficient number of studies to have confidence in the relationships. However, moderators of these relationships are still possible.

It is also of interest that the relationship between performance-avoid and self-monitoring was substantially lower in magnitude in our study ($\rho = -.03$, $k = 10$) than that reported by Payne et al. (2007) ($\rho = -.27$, $k = 6$) for feedback-seeking. We reviewed our data to try to understand this difference in finding. In our sample, there were a few studies that found positive or very low correlations for this variable that likely resulted in the overall effect size being of lower magnitude. At least three of these studies

Table 6 Task performance and goal orientation dimensions

	k	*N*	SWMr	SW SD	% Var due to Samp. Error	95% CI		ρ	SDρ	% Var Act For	95% CV (L)	95% Cred Int	
						L	U					L	U
Mastery-approach	78	16,857	.12	.10	42.45	.10	.14	.13	.09	42.61	−.01	−.04	.30
Context													
Academic	36	10,198	.12	.09	46.34	.09	.15	.13	.07	46.48	.02	.00	.27
Athletic	3	578	.20	.10	47.56	.08	.31	.22	.08	47.66	.09	.06	.39
Games	4	427	.20	.12	65.81	.09	.31	.23	.08	66.15	.11	.08	.39
Training	15	2,191	.08	.12	50.18	.02	.14	.09	.09	50.22	−.06	−.09	.27
Work performance	8	1,636	.20	.09	53.87	.14	.26	.22	.07	54.36	.11	.09	.35
Work simulation	12	1,829	.06	.11	59.21	.00	.12	.06	.08	59.25	−.06	−.09	.21
Performance	33	6,624	.01	.11	40.52	−.03	.05	.01	.10	40.53	−.15	−.18	.21
Context													
Academic	14	3,965	−.01	.04	100.00	−.03	.01	−.01	.00	100.00	−.01	−.01	−.01
Athletic	3	578	.13	.14	27.35	−.03	.28	.14	.13	27.35	−.07	−.11	.39
Training	5	519	−.06	.10	95.49	−.15	.03	−.07	.02	95.58	−.11	−.12	−.02
Work performance	5	899	.15	.13	31.68	.04	.27	.17	.12	31.84	−.03	−.07	.42
Work simulation	5	633	−.07	.06	100.00	−.12	−.01	−.08	.00	100.00	−.08	−.08	−.08
Performance-approach	40	8,674	.05	.10	46.98	.02	.08	.06	.08	47.05	−.08	−.01	.22
Context													
Academic	16	4,710	.07	.09	44.58	.02	.11	.08	.07	44.83	−.05	−.07	.22
Games	2	129	−.25	.10	100.00	−.39	−.11	−.28	.00	100.00	−.28	−.28	−.28
Training	10	1,672	.02	.07	100.00	−.02	.06	.02	.00	100.00	.02	.02	.02
Work performance	4	875	.13	.10	48.54	.03	.22	.14	.08	48.62	.01	−.01	.30
Work simulation	8	1,288	.02	.10	67.83	−.05	.08	.02	.06	67.83	−.08	−.10	.14
Performance-avoid	38	7,873	−.07	.10	45.47	−.10	−.04	−.08	.09	45.55	−.22	−.25	.09
Context													
Academic	15	4,281	−.07	.09	46.78	−.11	−.02	−.08	.07	46.91	−.19	-.22	.06
Games	2	129	−.27	.09	100.00	−.40	−.15	−.31	.00	100.00	−.31	−.31	−.31
Training	10	1,672	−.08	.08	95.41	−.13	−.03	−.09	.02	95.52	−.12	−.13	−.05
Work performance	3	503	−.07	.11	51.89	−.19	.05	−.08	.08	51.98	−.22	−.25	.09
Work simulation	8	1,288	−.04	.15	29.62	−.14	.07	−.04	.14	29.63	−.27	−.32	.23

were not included in Payne et al., which explains some of the difference in results. Finally, there was no pattern that emerged to explain the variability in effect sizes in our study. This difference may also have resulted from the other studies included in the analyses.

Smaller effects were found for the relationships between trait goal orientations and task performance. The corrected population correlation for the relationship between task performance and mastery-approach orientation was .13, .01 with performance goal orientation, .06 with performance-approach, and −.08 for performance-avoid goal orientation. The positive relationship between performance and mastery-approach goal orientation is consistent with past meta-analytic research (e.g., Payne et al. 2007). An overall positive effect for the relationship between mastery-approach goal orientation and performance across many studies indicates that mastery-approach goal orientation has the potential to be a viable correlate of performance in various settings.

Overall, the effect size estimates supported the discriminant validity of goal orientation dimensions as well its efficacy as a correlate of self-regulation and, to some degree, task performance. This study provides a needed summary of the literature concerning the relationship between trait goal orientation with self-regulatory variables as well as performance. Given the great interest in goal orientation constructs, it is of critical importance to systematically evaluate our progress as researchers. It is encouraging that the relationships among the goal orientation constructs and self-regulation and performance variables have been supported across a range of performance domains.

The consistent and relatively strong positive correlations between the mastery-approach goal orientation and

self-regulation variables were greater than its relationships with the performance variables. This result is consistent with MAT that postulates that achievement goals serve to direct self-regulation (DeShon and Gillespie 2005). Also of note was the relatively strong relationship between self-reactions and the mastery-approach orientation. This was consistent with the notion that self-regulation is maintained by positive affect and disrupted by the occurrence of negative emotion that is associated with a performance-avoid orientation (Diefendorff and Lord 2008). Diefendorff and Lord have argued that this disruption occurs because the negative affect results in rapid processing of multiple sources of information as a means of reducing the negative affect. This rapid processing directs attention away from task-related self-regulation activities. Our results support the notion that goal orientations influence self-regulation and that the mastery-approach orientation has consistent positive relationships with performance. More research is needed to support Diefendorff and Lord's propositions.

There has been controversy as to whether a mastery-approach orientation is the most effective orientation regarding enhanced self-regulation and performance (DeShon and Gillespie 2005; Payne et al. 2007). Based on our results, across a range of performance domains, it is clear that the mastery-approach orientation has the strongest relationships with desirable aspects of self-regulation and performance, which was consistent with Payne et al.'s conclusion. Conversely, though of smaller magnitude, the relationships with the performance-avoid orientation were consistently negative with self-regulation and performance. The performance-approach orientation was more variable and related only weakly to these variables. Thus based on the existing research, we conclude that the mastery-approach trait goal orientation may well be the most desirable orientation in achievement contexts. This is likely the case because the mastery-approach orientation results in more frequent and persistent self-regulation activities.

Also of note is the pattern of results across different types of tasks and contexts. Past theory and research has suggested that tasks where learning is a component, such as academic performance or novel work tasks, should be situations where a higher mastery-approach orientation is related to enhanced performance compared to simpler tasks (Payne et al. 2007). Our results do not directly compare task characteristics but supported the notion that context made a difference. This was particularly the case for the work simulation context where the relationships were near zero between mastery approach and self-monitoring, self-evaluation, self-reactions and performance. This suggests that in this context those self-regulation variables were not related to mastery-approach and perhaps for this task context self-regulation was not related to performance. Interestingly, for work and academic contexts the relationships with mastery-approach and self-regulation variables tended to be uniformly high. It is worth noting that the tasks used in the work simulation category were complex computer tasks that included the air traffic controller task used by Kanfer and Ackerman (1989). In their study they found that allocating attentional resources to self-regulation during the declarative phase of skill acquisition reduced performance because during that phase performance was largely dependent on general cognitive ability not self-regulation and goal setting. This seems a possible explanation for the results found in our study as well. Tasks used in the studies included in this part of our meta-analysis included the air traffic control task, a radar tracking task, and other problem solving tasks. Also, given that most of these tasks were computerized, the computer program may have effectively performed some self-regulation functions such as providing feedback. Thus our results suggest that, in general, mastery-approach orientation is positively associated with self-regulation and task performance, while the performance-avoid orientation tended to exhibit low or negative relationships but that task context did affect these relationships.

The exact mechanisms by which goal orientation influences self-regulation were not examined but past research has indicated that distraction due to thought intrusions and anxiety that are associated with the performance-avoid orientation are a factor (e.g., Diener and Dweck 1980). Our results suggest that self-regulation is more efficient with a mastery-approach orientation. Perhaps this is because the goal is more clearly and specifically articulated compared to an avoid orientation, where the goal is simply to avoid a negative outcome and may be less clear about how to achieve that goal and how success is defined (e.g., Elliot and McGregor 2001; Elliot et al. 1997). Thus, performance may be enhanced for relatively simple tasks that involve minimal task related learning if more effective self-regulation is related to performance. Based on this conceptualization, self-regulation is important for learning new tasks as well as for performing learned tasks more effectively. For many tasks this seems to be the case given our relatively consistent findings for the relationships between mastery-approach orientation and self-regulation across a number of performance domains.

Limitations

In general there were sufficient studies to assess the relationships between goal orientations, self-regulation, and performance. Thus, we are confident in the general findings of our meta-analysis. However, more studies were found in the academic and work domains than in other domains. While results were similar across most other domains, more caution regarding the generalizability of these

findings is in order because of the relatively low number of studies ($k < 5$) in some categories. Furthermore, we only included goal orientation measures in this study that were deemed to be trait measures, thus conclusions regarding state goal orientation are not possible. Given that our focus was on trait goal orientation this is not a problem per se but should be considered when interpreting results.

The results of this study should also be interpreted in light of the scheme used to categorize the self-regulation variables into broad categories. While this approach had the advantage of allowing a big-picture analysis of these relationships it may have obscured differences between the dependent variables. Thus, we are relatively confident in the categorical relationships that were found, but to the extent that divergent variables were included in the self-regulation and performance categories the results should be interpreted judiciously.

A further omission was that recent studies where a four-factor model of goal orientation served as the foundation for goal orientation measures (Elliot and McGregor 2001) were not included. Our review of the literature revealed few studies based on this model and in these studies goal orientation was conceptualized more as a state than a trait. Therefore, these studies did not fit our criteria for inclusion in the present study. However, the model is theoretically interesting and preliminary support has been generated supporting a four-factor model.

Future Research

Future research should examine other potential moderators of the goal orientation, self-regulation, and performance relationships. Payne et al. (2007) have suggested that goal orientation research should examine contextual factors related to anxiety and cognitive interference, task characteristics/demands, scale differences, and demographic variables as moderators of the relationships between goal orientation constructs and measures of self-regulation and performance. We agree with their assessment but would also, based on our findings, make some additional suggestions.

One set of recommendations stems from our findings regarding self-regulation. Our results support the significant relationship between goal orientation and a wide range of variables commonly associated with structural theories of self-regulation. More research is needed to clarify the causal relationships among these variables. In addition, the results suggest that context may moderate the relationship between goal orientation and performance by facilitating or impeding processes related to structural theories of self-regulation. We recommend that future research examine some of these relationships overtime to further clarify the causal mechanisms involved and how context may affect them. Also in a similar vein, future research should be conducted to further investigate the role of affect in sustaining or interrupting self-regulation as a function of goal-orientation. Past research has not clearly addressed these issues and our results regarding self-reactions suggest this would be a fruitful area for future research.

A second set of recommendations is to expand research beyond performance and into other domains where the influence of goal orientation has not been studied. To date, the vast majority of research has examined relationships between goal orientation, self-regulation and performance as related to job or task performance in work and academic settings. Even when studied in other settings, most frequently the dependent variables were ultimately conceptualized as task performance. We propose that by expanding dependent variables to other behaviors, the heuristic value of goal orientation constructs can be enhanced. Areas of psychology where trait goal orientation has not been studied but could have significant implications for theory and application include the psychology of personal and organizational change. These areas attach significance to concepts of self-efficacy and self-regulation but have not been linked with trait goal orientations. To the extent that success is defined as incremental improvement though effort, or persistence in the face of adversity, trait goal orientation may offer insights into motivation and performance. For example, DeShon and Gillespie (2005) discuss the relevance of goal orientation to organizational change. However, to our knowledge there have been few, if any, studies examining the relationships between goal orientation and specific change variables.

One would expect that individual differences in mastery-approach and performance-avoid orientations would have implications for change efforts where one must often overcome resistance to change (e.g., Argyris 1987; Dirks et al. 1996; Finney and Mitroff 1986; Schneider et al. 1995). We would expect that there would be a positive relationship between mastery-approach orientation and change attitudes and behavior. In addition, state goal orientation might be interesting to study as an aggregate perception in organizations as there may be group or unit level constructs reflecting differences in goal orientation; which could have important implications for aggregate measures of performance and effectiveness.

In conclusion, because many areas within and outside the workplace are concerned with positive self-regulation processes, trait goal orientation offers insights to describe and predict related processes and outcomes. While self-regulation depends on many factors both internal and external to an individual, our results suggest that trait-like goal orientation is better conceptualized with the three factor model than the two-factor model and has potential for furthering understanding into motivation and performance across settings.

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