

**The Interacting Effect of Self-Efficacy
and Performance Goal Orientation
on Goal Setting and Performance:
The Positive Side of Performance Goal Orientation**

by

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(Abstract)

The empirical literature on goal orientation is ambiguous in relation to the supposed effects of performance goal orientation (PGO) on goal setting and performance. In an attempt to clear up this issue it was hypothesized based on Carol Dweck's (1989) theoretical framework that dispositional performance goal orientation would interact with self-efficacy in their effect on level of self-set goal and performance, such that the relationship between PGO and goals (and performance) would be positive for individuals high on self-efficacy, while negative for individuals low on self-efficacy. Furthermore it was predicted that learning goal orientation would be positively related to both goals and performance. In both cases it was predicted that goals would serve as a mediator between the goal orientations and performance. The hypotheses were tested using a diverse sample (N = 146) of Icelandic job applicants on their way to a job interview. No support for the hypotheses was found. Potential causes for the non-findings are identified and analyzed and the status of the goal orientation construct is discussed.

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TABLE OF CONTENTS

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iii
List of Tables	iii
Introduction.....	1
Early Work on the Goal Construct	1
Research Support for Goal Setting.....	2
Individual Differences in Goal Setting.....	5
Self-efficacy.....	6
Personality variables	7
Goal Orientation	8
Performance Goal Orientation (PGO).....	9
Learning Goal Orientation (LGO).....	10
Issues with the Goal Orientation Construct.....	11
Stable trait or situational influence?.....	11
One or two dimensions?.....	12
Limitations of Past Goal Orientation Research.....	13
Goal Orientation and Goal Setting	14
PGO – Summary of Results.	15
PGO x Self-Efficacy interaction.....	16
PGO – Conclusion and Hypotheses	20
LGO – Summary of results and hypotheses.....	23
Contributions of Study	25
Method	27

Participants	27
Power Analysis.....	27
Procedure.....	28
Task	29
Measures.....	30
LGO and PGO.....	30
Self-efficacy.....	30
Performance goals.....	31
Ability	31
Translation of Scales	31
Data Analysis.....	32
Reliability and validity of the goal orientation scales.....	32
Testing the Hypothesis.....	32
Results.....	35
Frequency distributions and outlier analysis	35
Exploratory and Confirmatory Factor Analyses.....	35
Correlations and Descriptive statistics (mean, SD, range, outliers).....	37
Regression analyses.....	37
Additional analyses	38
Discussion.....	39
Main results	39
Alternative models/hypotheses.....	40
Correlational analyses	41
Plausible causes for the non-findings.....	42
Range Restriction.....	43
Dispositional Goal Orientation	44
Translation of the scales.....	45
Alternative causes/Limitations of the study	46
Settings.....	46
Task.....	48

Design	48
Position of the field – future research directions.....	49
Dimensionality.....	50
State vs. Trait	51
Measurement issues	52
Towards a unified framework	53
Concluding comments.....	53
References.....	55
Appendixes.	61
A. Quantitative Test – Sample Items	61
B. The Performance Goal Orientation measure. Original and retranslated items. .	63
C. The Learning Goal Orientation measure. Original and retranslated items.	65
D. The Learning Goal Orientation measure. Original and retranslated items.	67
E. Examples of the PGO 5 point Likert-scale as it appears in the program.	69
F. Frequency tables.	71
G. Stem-and-leaf and Box-plots.	79
H. Goal orientation item intercorrelations	82
I. Exploratory Factor Analysis for the goal orientation items.	84
J. The PGO x LGO interaction effect on SE.....	86
Vita.....	91

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1.	Mean, Standard Deviations, Minimum, Maximum, Intercorrelations and Alpha Coefficients	88
2.	Hierarchical regression analyses with performance as dependent variable	89
3.	Hierarchical regression analyses with goals as dependent variable	90

INTRODUCTION

The proposition that performance goals or standards play a significant role in human motivation is widely accepted by most researchers within the field of I/O Psychology (e.g., Bandura, 1986). In fact, Locke and Latham's (1990) goal setting theory is currently one of the most popular theories of work motivation within the field of I/O Psychology (Pinder, 1998). However, while Locke's (1968) early conceptualizations of goal setting theory are generally described as the origin of modern goal setting theory, the concept of personal standards, aspirations, or goals has been acknowledged by psychological and organizational researchers as an important part of human motivation and performance since the early 1900's.

Early Work on the Goal Construct

In the German Wurzburg school at the turn of the century, Kulpe, Ach and Watt did some pioneering work on the precursors of goal setting. Their most relevant contributions to the goal setting area was the definition of the term task, as something the subject was asked to do, and introducing the term determining tendency, describing the fact that an assigned task can affect behavior later on without the individual's conscious awareness of the task at the time of action. These two terms are directly analogous to current conceptualizations of the impact of goals or standards on behavior.

A second major precursor to goal setting theory was Kurt Lewin's research on level of aspiration. Level of aspiration (LA) has been defined as...“the level of future performance in a familiar task which an individual, knowing his level of past performance in that task, explicitly undertakes to reach” (Frank, 1935, p. 119 – as cited in Locke and Latham, 1990, p. 110). LA was thought to serve as a reference point when

current performance was evaluated as success or failure, as well as acting as an incentive for future performance. In contrast to modern goal setting research, LA researchers focused more on the factors that determined LA and the generalization of LA across tasks, but were not interested in LA as an independent variable (Locke and Latham, 1990).

The third precursor to modern goal setting theory was C. A. Mace's experiments from the 1930's. He was the first to compare the effects of specific challenging goals with general, 'do-your-best' goals, as well as suggesting that incentives such as praise, criticism and feedback would affect performance through their effects on the individual's goals.

Perhaps the most immediate precursor to Locke's (1968) conceptualizations of goal setting theory was the work of T.A. Ryan. In the late 1950's, Ryan (1958), used the work of those mentioned above in his work on *intentional behavior*, which revolved around the idea that looking at an individual's intention in a specific situation was the simplest way to explain the individual's action. It was Ryan's statement of these principles that led his student, Edwin Locke, to formulate what is now known as goal setting theory.

Research Support for Goal Setting

The two main postulates of Goal Setting Theory are: 1) There is a linear relationship between the difficulty of attainable goals and performance, and 2) Specific, difficult goals lead to better performance than vague, easy, or "do-your-best" goals (Locke and Latham, 1990). Thorough tests by researchers over three decades have shown these relations to be among the most robust findings within the motivational literature.

Several meta-analyses of the goal difficulty-performance relationship have been conducted, all reporting consistent positive relationships between difficulty of goal and performance level. Three of these will be discussed below.

Mento, Steel and Karren's (1987) meta-analysis compared the effects of setting hard goals vs. easy goals and the effects of setting specific hard goals to general "do your best" goals. They found a mean corrected effect size of $d = .58$ in 70 studies for goal difficulty, indicating that hard goals lead to better performance than easy goals, and a mean effect of $d = .44$ in 49 studies for goal specificity indicating that specific, hard goals are better than vague, easy, or "do your best" goals.

Tubbs (1986) compared 147 effect sizes in 87 studies to look for the effects of goal difficulty, goal specificity, goals and feedback combined, and participation in goal setting on performance. Apart from the common prediction that specific, general goals would be associated with higher performance, it was hypothesized that goals combined with feedback would have a stronger effect on performance than goals alone. The hypotheses were supported. The mean effect for goal difficulty was $d = .816$, for goal specificity $d = .502$, and for feedback $d = .564$, indicating that hard, specific goals, combined with feedback are associated with increases in performance.

Wood, Mento and Locke (1987) hypothesized that task complexity would moderate the traditional performance effects of specific, difficult goals, such that the effects of goal difficulty and goal specificity would be stronger for simple tasks than for complex tasks. A meta-analysis combining the effect sizes of 125 studies supported their hypotheses. For goal difficulty, mean effect sizes were $.69$ for tasks of low complexity, $.50$ for tasks of

medium complexity and .48 for difficult tasks. For goal specificity the effect sizes were .47, .43 and .36 respectively.

In addition to the considerable support that has been found for the primary propositions of goal setting theory, this body of research has also demonstrated that the impact of specific, difficult goals on performance generalizes across tasks, settings and subject populations.

Locke and Latham (1990) report that successful goal setting experiments have been conducted with 88 different tasks, the most common of those being simple arithmetic/computational tasks, clerical/miscellaneous tasks, and listing nouns, objects, or uses for various items. Although most of the tasks are simple in nature, several are more complex, such as prose learning, bargaining and management simulations. These studies have included several different kinds of criteria for measuring performance (e.g., physical effort, reaction speed, quantity of output, number of correct responses, performance quality). As mentioned above, the effects of setting specific difficult goals holds over tasks of various complexity, although the effect is stronger for simple tasks than for complex tasks.

Support for the propositions of goal setting theory have also been found in both laboratory situations and field studies. About 40% of the studies reported in Locke and Latham (1990) are either field or simulation studies, while about 60% are conducted in the laboratory. In addition, the goal-setting effect has been consistently found whether the goals are set by the individual, assigned by others, or jointly negotiated.

Although the majority of studies have used college students from the United States as subjects, several studies have tested the effect on subjects from other groups and

countries. This strongly suggests that the effect holds across different samples and cultures.

Finally, it has been demonstrated that the goal-performance relationship holds, and is of comparable magnitude, for self-set goals, goals negotiated jointly and assigned goals (Locke & Latham, 1990).

Summed up, the strong relations between the setting of specific difficult goals and increased performance has been found to hold over a variety of settings, tasks, criteria, time spans, cultures, and whether the goal is assigned, negotiated or self-set, suggesting the robustness of the goal-performance relationship.

Although there has been quite a bit of research conducted to assess the goal difficulty-performance relationship, relatively little research has been conducted to determine the factors that influence the process of personal goal establishment. In other words, there isn't a lot of work documenting what factors lead an individual to choose a particular goal level. This is an important area to study since a large part of the goal setting that occurs in organizations is employees' self-set goals, whether these are set in the absence of organizational goals or set as lower order goals derived from higher-order organizational/departmental goals.

Individual Differences in Goal Setting

When the immense number of studies conducted on goal setting is considered, it is apparent that relatively little attention has been given to the role of individual difference variables in the goal setting processes. However, research in this area has identified a number of individual difference factors that appear to be related to the process of goal establishment, including ability, self-efficacy, and various personality variables.

Ability. Perhaps not surprisingly, one of the predominant individual difference variables affecting the level of self-set goal is the individual's ability in the task, often measured by past performance (e.g. on a practice trial prior to the performance task). A number of studies have demonstrated that the higher an individual's ability, the higher goals are set (e.g. Campion and Lord, 1982; Phillips and Gully, 1997). For example, in academic settings, the correlations between test scores and/or GPA and initial goal, as reported in Phillips and Gully (1997) and Campion and Lord (1982), range from .20 to .35.

Self-efficacy.

Self-efficacy, a key construct in Albert Bandura's Social Cognitive Theory of Self-Regulation (Bandura, 1991) has been considered to play a significant role in affecting the choice of goals. Self-efficacy, which refers to "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391), influences several aspects relevant to the goal setting process, such as the choices people make for themselves, the persistence shown when facing difficulties, the effort engaged in a task, and whether the thought patterns individuals adopt are self-hindering or self-aiding (Bandura, 1991). Among the variables that affect an individual's self-efficacy in a given situation is that individual's history of successes or failures on the task, perceived controllability on the task, and whether the individual believes that his or her ability is a fixed entity or an acquirable skill (Bandura and Wood, 1989; Wood and Bandura, 1989). Perceived control and belief in ability as an acquirable skill are related to higher levels of self-efficacy, while low perceived controllability and believing that ability is a fixed entity lead to lower levels of self-

efficacy (Bandura and Wood, 1989; Wood and Bandura, 1989). Since the level of an individual's self-efficacy depends on the task at hand, aspects of the situation, and the individual's prior performances at that task, self-efficacy is generally thought of as a situation-specific variable.

Empirical studies have confirmed that self-efficacy is positively related to the persistence individuals show when facing negative discrepancies between goal and performance (Bandura and Cervone, 1986), to task performance (e.g. Bandura and Wood, 1989, Wood and Bandura, 1989; Phillips and Gully, 1997) and to levels of self-set goals (Bandura and Wood, 1989; Locke and Latham, 1990; Phillips and Gully, 1997). The average correlation between self-efficacy and level of self-set goals reported in Locke and Latham (1990) is .39, indicating a moderately strong relation.

Personality variables

Beginning in the 70's, and continuing up to the present day, researchers have examined the impact of various personality variables on the goal establishment process. Up until the mid 90's the main variables studied in relation to goal setting were need for achievement (nAch), Type A or Type B behavior, self-esteem, depression and locus of control.

Although results for these variables were not overly consistent and the number of studies on each variable was fairly limited, general results indicate that high need for achievement, Type A behavior pattern and high self-esteem are associated with an adaptive behavioral pattern. Individuals with these characteristics tend to be more active in seeking ways to overcome obstacles, in dealing efficiently with complex tasks, and take action to increase their ability more readily than individuals that are low on these

traits (Locke and Latham, 1990). However, these variables were not examined in relations to goal choice.

In their search for stable individual differences variables that affect the goal establishment process, researchers have recently devoted a substantial amount of attention to the role of the construct of goal orientation.

Goal Orientation

The goal orientation construct stems from Carol Dweck's pioneering work on achievement motivation in the educational environment (Dweck and Reppucci, 1973; Dweck, 1975; Diener and Dweck, 1978). Dweck and colleagues studied young children's motivational patterns in the classroom, and observed two distinct behavior patterns in response to challenging activities or obstacles to performance. These patterns are the maladaptive "helpless" pattern and the "mastery-oriented" adaptive pattern. While the "mastery-oriented" pattern is associated with challenge-seeking and effective striving in the face of obstacles, the "helpless" pattern results in avoidance of challenge and decreased performance when facing difficulty. Interestingly, these different behavior patterns seem to be independent of the children's ability since many highly skilled individuals show the maladaptive pattern and vice versa (Dweck, 1975, 1989). When striving to explain why individuals of equal ability showed such different behavior patterns, Dweck and colleagues identified two classes of goals within the domain of intellectual achievement. They proposed that these goals create the framework within which individuals react to and interpret events. The two goal types are learning oriented goals, in which individuals strive to increase their competence, and performance oriented goals, in which the individual is concerned with gaining favorable judgments of their

competence (Dweck and Elliott, 1983). Goal orientation is defined as an individual difference variable that states to what degree an individual is predisposed to either type of goals (Dweck and Leggett, 1988, Elliott and Dweck, 1988). Hence, an individual's learning goal orientation is the degree to which the individual is predisposed to preferring learning oriented goals, while performance goal orientation refers to the degree to which the individual is predisposed to setting performance oriented goals (Dweck and Leggett, 1988, Dweck, 1989). Similar theoretical distinctions that have been made by other researchers within the motivational literature include task-involved vs. ego-involved individuals (Nicholls, 1984) and mastery-focused vs. ability-focused (Ames, 1992). In order to provide the reader with a more complete understanding of these goal orientation dimensions, each dimension will now be discussed in detail.

Performance Goal Orientation (PGO)

Individuals that are highly predisposed towards performance oriented goals (i.e., are highly performance goal oriented) are concerned with being perceived as competent, and with gaining favorable judgments or avoiding negative judgments from others. Individuals with this predisposition tend to adopt normative standards of success (i.e., they evaluate their performance relative to others). By defining success relative to the performance of others, this achievement pattern can lead to a situation over which the individual has little control, since in most cases one cannot control the performance of others. While highly performance goal oriented individuals will show the mastery oriented behavior pattern if they believe that their ability is high compared to others, this combination of concern for others' judgments and limited control over performance outcomes creates a vulnerability for the helpless, or maladaptive, response pattern

(Dweck and Leggett, 1988). A high PGO combined with a lack of confidence in ability is likely to lead to a tendency to avoid challenging tasks, limited persistence in the face of failure, and a tendency to be easily distracted when difficulty at a task is encountered. Furthermore, these individuals are more likely than individuals low on PGO to engage in self-handicapping, (i.e., introducing factors that reduce the likelihood of success and might serve as an excuse for the poor performance), to avoid negative judgment of their ability.

Learning Goal Orientation (LGO)

Individuals that are highly predisposed towards learning oriented goals (i.e., are highly learning goal oriented) are concerned with increasing their competence and mastering whatever they are dealing with at that time. Since they are focused on learning and mastering certain skills, these individuals are likely to evaluate their performance relative to their own previous achievements, and measure success in terms of personal progress. This thought pattern is likely to be associated with a greater sense of personal control over the outcome of one's effort, since the individual is referring only to him- or herself when setting goals and striving for achievement. Thus, challenging tasks become an opportunity for growth and learning. The emphasis on learning along with the sense of control makes these individuals likely to set challenging goals for themselves and take on challenging tasks independent of their perceptions of their abilities, and is likely to lead to the mastery-oriented response pattern in all instances. Individuals with a strong LGO see effort as the means to success, and are therefore likely to be persistent when facing obstacles on their way to achievement. They tend to perceive negative feedback as valuable information on how to improve and they treat failure as a learning experience,

not as a sign of insufficient ability (Dweck, 1989; Dweck and Leggett, 1988; Farr, Hoffman and Ringenbach, 1993).

Issues with the Goal Orientation Construct

In the process of defining and establishing the goal orientation construct and its relations to the goal setting process, two issues have created some debate among researchers in this area; the dimensionality of the construct (i.e., whether it is one or two dimensional), and whether goal orientation is a stable personality trait or situationally induced.

Stable trait or situational influence?

Historically goal orientation has been treated either as a situational variable, which can be manipulated for the purposes of a given study (Ames and Archer 1988; Elliott and Dweck, 1988), or as a stable and measured dispositional trait, which influences the response patterns of individuals across situations (e.g. Thorkildsen, 1988; Nicholls, Cobb, Wood, Yackel, & Patashnick, 1990). In most of Dweck's research, the children are typically assigned to either the learning goal or the performance goal condition, where the desired type of goal is experimentally induced, typically by referring to a normative comparison (performance goal), or the potential gain in learning (learning goal).

When addressing this issue, Dweck and Leggett's (1988) conclusion is that a certain goal orientation will influence the probability that an individual in a given situation will take on a particular goal and display a certain behavior pattern. In other words, the choice of an individual is determined by a combination of situational and dispositional factors. If the situation offers strong cues favoring one type of goal over the other, this is likely to override the individual's predisposition to some degree (depending on how strong it is)

and affect the choice of goals and the individual's behavior in the direction of the situational cues. On the other hand, when the situation offers no cues, the disposition will dominate the decision making process and be likely to lead to goals that are consistent with the individuals dispositional goal orientation.

Empirical support for the relations between goal orientation and goal setting has been found for both situationally induced goal orientation (e.g. Elliott and Dweck, 1988; Steele-Johnson, Beauregard, Hoover, and Schmidt, 2000), as well as measured dispositional traits (e.g. Phillips and Gully, 1997; Button, Mathieu and Zajac, 1993). In line with Dweck and Legget's (1988) line of thought, Button et al. (1996) concluded in their review on goal orientation "that goal orientation is best characterized as a somewhat stable individual difference variable that may be influenced by situational characteristics" (p. 28). Currently there seems to be general consensus within the field about viewing goal orientation in this dual dispositional/situational light and both approaches are frequently taken.

One or two dimensions?

In addition to the confusion and debate that has surrounded the stability of goal orientation, there has been considerable confusion concerning the dimensionality of the goal orientation construct. In Dweck's writing (e.g. Dweck, 1989), little attention seems to be given to the issue of goal orientation dimensionality. As noted above, children in her studies are typically assigned to one type of goal, which implies that children cannot be oriented towards both goals simultaneously. When discussing the issue of dimensionality, Farr et al. (1993) came to the conclusion that Dweck views learning and PGOs as end points of a single continuum, with strong LGO at one end and strong PGO at the other

end (Farr et al. 1993). However, Dweck and Leggett (1988) seem to acknowledge the possibility that individuals can, to some degree, hold both types of goals simultaneously since “earning the positive judgment of those who control important resources may be a necessary step in one’s pursuit of skills and knowledge. Thus adaptive individuals effectively coordinate performance and learning goals” (p. 260).

In line with these suggestions, researchers have increasingly subscribed to the idea that LGO and PGO are separate dimensions, and that individuals can be high or low on one or both dimensions (Nicholls et al., 1990; Farr, et al., 1993). The strongest empirical support for this is found in the research of Button et al. (1996), who developed measures of LGO and PGO and tested the dimensionality in four separate validation studies. The results supported the proposition that LGO and PGO are two separate dimensions as evidenced by the weak correlation between the dimensions in the four studies ($r = -.08$; $r = -.05$; $r = -.02$; $r = -.11$ respectively), and the fact that the scale items for each dimension loaded on separate factors.

Limitations of Past Goal Orientation Research

Although the traditional goal orientation research has brought with it substantial insight and knowledge about motivational factors in performance settings, at least two major issues make it difficult to apply those findings to the organizational setting. First, the research on goal orientation has been conducted mostly on young children or college students in experimental settings, bringing the generalizability of the results to organizational settings into question. Second, research in the domain of goal setting has only recently begun to look at the role of goal orientation in the goal setting process.

The purpose of this study is to examine how LGO, PGO, and self-efficacy influence the process of goal establishment, using a diverse organizational sample facing a performance task in a partially organizational setting.

Goal Orientation and Goal Setting

To the best of our knowledge, only four studies have examined the effects of dispositional goal orientation on goal setting and performance to date.

Phillips and Gully (1997) used college students to examine the effects of LGO, PGO and self-efficacy on self-set goals and performance on an exam while controlling for individuals' ability, Locus of Control and Need for Achievement. They proposed and tested a mediated model where self-efficacy mediated the effects of LGO and PGO on level of self-set goal, which in turn mediated the relationship between self-efficacy and performance on the exam. The results indicated partial support for the model. LGO correlated positively with level of goal ($r = .14$) and self-efficacy ($r = .19$), while PGO correlated negatively with self-efficacy ($r = -.15$) and goal level ($r = -.11$). Self-efficacy was positively correlated with both level of goal ($r = .48$) and performance ($r = .38$). Phillips and Gully (1997) concluded that goal orientation influences level of goal through its influence on self-efficacy.

VandeWalle, Brown, Cron, and Slocum (1999) conducted a longitudinal field study in which the influence of goal orientation on sales performance was investigated. Participants set goals regarding number of units they expected to sell during a three-month period. As expected, LGO correlated positively with level of self-set goals ($r = .30$) and sales performance ($r = .33$). Although insignificant, PGO in this study correlated

positively with level of goals ($r = .11$), but showed no correlation with performance ($r = .01$).

In a study conducted on track and field athletes, Donovan (1998) found a positive correlation between LGO and individuals' level of goals ($r = .19$) and self-efficacy ($r = .34$). No relationship was found between PGO and individuals' self-set goal ($r = .02$) and self-efficacy ($r = -.01$). In contrast to Phillips and Gully (1997), who proposed that self-efficacy completely mediated the relationship between goal orientation and level of goals, Donovan (1998) found that LGO explained an additional 3% of the variance of goal level when self-efficacy and ability were controlled for.

Donovan and Swander (2000) conducted a classroom study in which the relations between goal orientation, self-efficacy and goal choice were examined during the course of a semester. As before, no relationship was found between PGO and individuals' self-efficacy ($r = -.07$), nor between PGO and goals ($r = -.01$). LGO and self-efficacy were positively correlated ($r = .36$) but somewhat surprisingly no significant correlation was found between LGO and level of goal ($r = .05$). However, supplemental analysis revealed that the reason for this absence of relationship was most likely due to range restriction in the choice of goals.

PGO – Summary of Results.

Although researchers have unanimously hypothesized a negative relationship between PGO and goal level, the empirical results have been rather inconsistent and confusing, showing either weak negative correlations (Phillips and Gully, 1997), a nonsignificant positive correlation (VandeWalle et al., 1999), or an absence of a relationship (Donovan, 1998; Donovan and Swander, 2000). Up until now, this

inconsistency has received limited attention from researchers who have mainly focused their efforts on the beneficial effects of LGO.

We seek to clear up this confusion by rejecting the commonly held view that the effect of PGO on goals and performance is consistently negative and argue that the relationship between PGO and goals and/or performance is under some circumstances positive and as strong as for LGO. Furthermore, we follow Dweck's original theoretical model and propose that the relationship between PGO and goals and/or task performance will depend on the individual's level of self-efficacy, such that the relationship between PGO and goals and/or performance is going to be positive for individuals with high self-efficacy but negative for individuals with low levels of self-efficacy.

PGO x Self-Efficacy interaction.

Dweck's motivational theory (Dweck 1989; Dweck and Leggett, 1988) states that the perceived ability of individuals with a strong PGO will determine which one of the two behavior patterns discussed previously will be triggered. She proposes that high PGO combined with high perceived ability (or self-efficacy) will lead to the adaptive "mastery-oriented" pattern, while a high PGO combined with low perceived ability will lead to the maladaptive "helpless" pattern. A strong LGO will lead to the adaptive "mastery-oriented" pattern, independent of the individual's perceived ability (Dweck, 1989; Dweck and Legget, 1988). In other words, Dweck's theory predicts that strong PGO combined with high self-efficacy will lead to similar performance outcomes as a strong LGO (independent of self-efficacy), while a strong PGO combined with low self-efficacy will lead to lower performance outcomes. Some empirical support has accumulated for this model.

Steele-Johnson et al. (2000) tested the effects of manipulated goal orientation and task demands on motivation, affect and performance in two studies. Their task was a computerized class-scheduling task where the number of task rules (5 or 7) provided a manipulation for task demands (simple vs. complex). In the first study they found that on a simple task, those in the performance goal condition significantly outperformed the participants in the learning goal condition. In the complex task condition there was no difference between the groups. In their second study they manipulated task demands by varying task consistency (consistent vs. inconsistent). Goal orientation interacted with task demands in their relations with intrinsic motivation and self-efficacy. Participants in the performance goal/consistent task condition were more intrinsically motivated and reported higher levels of self-efficacy than participants in the performance goal/inconsistent task condition. The opposite was true for participants in the learning goal condition. They were more intrinsically motivated and reported higher self-efficacy when doing the inconsistent task rather than the consistent task. Summed up, the results of Steele-Johnson et al.'s (2000) study demonstrate that PGO can be even more beneficial than LGO, and they further suggest that high levels of performance in the performance goal conditions were associated with high levels of self-efficacy. Although the results provide some support for Dweck's propositions, the support is indirect since they did not specifically look at the PGO x self-efficacy interaction.

Elliott and Dweck (1988) conducted a study on school children, assessing the effects of goal orientation and perceived ability on performance-related variables on a pattern recognition task. They hypothesized that PGO combined with low perceived ability would yield less favorable results than the other three conditions. A LGO or PGO

was induced by giving different instructions, and perceived ability was manipulated by giving bogus feedback on performance on a practice trial. They found support for their hypotheses for two of the outcome variables, strategy change after failure and verbalization. Children in the performance-goal/low ability condition were more likely to deteriorate in their hypotheses-testing strategy and were less likely to improve upon their strategy than children in the other three groups. In fact, children in the performance goal/high ability condition did improve their strategy on 37% of trials, compared to 21-22% in the LGO conditions, and they deteriorated on 30% of tasks, compared to 33% for the LGO conditions. As predicted, there were no main effects for perceived ability between the two LGO conditions. Similar results were found for verbalizations. Children in the performance goal/low ability condition made verbalizations about attribution and negative affect far more frequently than children in all other groups. No difference was found between other conditions. However, it is important to realize that this research was conducted with children, and as such, the generalizability of such results to adults in organizational settings is questionable.

Stevens and Gist (1997) manipulated goal orientation by advising participants in a post-training intervention to focus on improving their skills (LGO) or to achieve their best outcome (PGO). They then examined the effects of self-efficacy and goal orientation on trainees' negotiation skill maintenance and hypothesized four self-efficacy x post-training condition interaction effects, using performance, cognitive withdrawal, analytical task strategies and worry as dependent variables. In the learning goal condition, it was predicted that self-efficacy would be unrelated to the dependent variable. In the performance condition, however, self-efficacy was expected to be positively related to

performance and analytic task strategies, and negatively related to cognitive withdrawal and worry. Three of their hypotheses were supported. For performance, no self-efficacy main effects were found for participants in the learning goal condition, they performed equally well whether their self-efficacy was high or low. For participants in the performance goal condition on the other hand, there was a positive relationship between self-efficacy and negotiation performance, such that participants with high levels of self-efficacy negotiated higher salaries than those with low self-efficacy. A similar pattern was found for analytic task strategies. Participants in the performance goal condition reported the use of more analytical task strategies if their self-efficacy was high rather than low, while no relationship was found between self-efficacy and reported use of analytic strategies in the learning goal condition. Partial support for the predicted interaction was found for cognitive withdrawal. Individuals in the performance goal condition showed the predicted pattern, where low self-efficacy was associated with more reported cognitive withdrawal than high self-efficacy.

Finally, Sujan, Weitz and Kumar (1994), tested a model examining the effect of feedback, self-efficacy, LGO, and PGO on performance through mediating constructs they labeled “working smart” and “working hard”. They defined working smart as “behaviors directed toward developing knowledge about sales situations and utilizing this knowledge in sales situations” (p. 40), while working hard was “the overall amount of effort salespeople devote to their work” (p. 40). Among their predictions was that self-efficacy would moderate the effect of PGO on the working hard construct. The hypothesis was supported; there was a significant interaction between self-efficacy and PGO. For highly self-efficacious sales people, PGO was positively related to working

hard, while for sales people low on self-efficacy the relationship between PGO and working hard was negative. These results suggest that individuals with high levels of self-efficacy will devote more effort to their work as their PGO increases, while individuals with low levels of self-efficacy will devote less effort to their work as their PGO increases. Contrary to their expectations, Sujan et al. (1994) found that the self-efficacy x PGO interaction significantly affected the working smart construct. Individuals with high self-efficacy engaged in more adaptive “smart work” behavior as their PGO increased, while for low self-efficacy the relationship between PGO and working smart was negative. Summed up, the results of the Sujan et al. (1994) study strongly suggest that a PGO – self-efficacy interaction effect plays a significant role in explaining the relations between goal orientation and performance.

Although the studies discussed above provide strong support for hypothesizing an interacting effect of PGO and self-efficacy on performance and self-set goals, none of them measure the effect of the interaction between PGO and self-efficacy on level of self-set goals. The studies discussed above use performance or variables related to performance as their outcome variables and hence do not clarify the relations between PGO and self-set goals.

PGO – Conclusion and Hypotheses

To summarize, research has shown that PGO combined with high self-efficacy frequently is associated with desirable outcomes on several performance related variables while PGO combined with low self-efficacy generally leads to worse outcomes. These results support Dweck’s original model and suggest that the moderating effects of self-efficacy should be looked at when the effects of PGO on performance motivation variables are

studied. Given the weak and inconsistent results for the main effects of PGO, it is not expected to find main effects for PGO on either performance or level of goal, but hypothesized instead that PGO and self-efficacy will interact in their effect on performance, and that this relationship will be partially mediated by level of self-set goal.

Hypothesis 1: Self-efficacy will moderate the relationship between PGO and performance, such that the relationship between PGO and performance will be positive for those individuals who have high self-efficacy, but negative for individuals with low self-efficacy.

Hypothesis 2: Self-efficacy will moderate the relationship between PGO and self-set goals, such that the relationship between PGO and level of self-set goals will be positive for those individuals who have high self-efficacy, but negative for individuals with low self-efficacy.

Hypotheses 3: The positive effects of the PGO x self-efficacy interaction on task performance will be partially mediated by level of self-set goals.

It is worth noting that, contrary to the moderated relationship proposed above, Phillips and Gully (1997) proposed that self-efficacy mediates the relationship between the two goal orientation dimensions and level of goal. We disagree with their conclusion for several reasons. First, Phillips and Gully (1997) did not test alternative models that included either main effects of goal orientation on level of goal, or partial mediation of self-efficacy. This absence of these tests makes it impossible for them to conclude with certainty that the mediating effect of self-efficacy is the right way to go. In fact, Donovan

(1998) found that LGO explained an additional 3% of the variance in goal setting when entered into a regression model with self-efficacy, suggesting either partial mediation or simple main effects of LGO on goal level.

Second, the evidence for mediation in the Phillips and Gully (1997) study is weak. LGO correlated only weakly ($r = .19$) with self-efficacy and level of goal ($r = .14$), and PGO correlated $-.15$ with self-efficacy and $-.07$ with goal level. Self-efficacy clearly does not mediate the relationship between PGO and level of goal since the bivariate correlation between PGO and goal level was not significant. In the case of LGO the correlations that supported their conclusion was weak.

Third, the core of Phillips and Gully's (1997) theoretical argument for including self-efficacy as a mediator is based on the proposed relations between the goal orientation dimensions and theory of ability, which is a construct concerned with whether individuals view their ability as a fixed entity or a malleable trait. Phillips and Gully (1997) argued that since LGO is associated with viewing intelligence as malleable, which again is associated with higher self-efficacy, a higher LGO would lead to higher self-efficacy. Similarly they proposed a negative relationship between PGO and self-efficacy since PGO has been related to viewing intellect as a fixed ability, which again is related to lower levels of self-esteem. However, we fear that this argument has two flaws. First, Button et al. (1996) found that while LGO and theory of ability were moderately strongly correlated ($.42$ to $.53$), the correlations between PGO and theory of ability were weak ($-.15$ to $-.17$) bringing into question the assumptions made by Phillips and Gully (1997). Second, research has shown that there are situations in which a performance goal condition is associated with higher self-efficacy than a learning goal condition (Steele-

Johnson et al., 2000), a situation that should not occur if Phillips and Gully's (1997) propositions regarding the relations between self-efficacy and the goal orientation dimensions were correct.

On the basis of what has been argued, we conclude that the goal-setting literature has been pursuing the wrong path in at least two important ways. First, we believe that the commonly held view that the effects of PGO on goals and performance are consistently negative are wrong, and that PGO can be beneficial in certain situations. Second, we believe that self-efficacy has been misplaced as a mediator and that a moderating role in the PGO – goal setting relationship is more appropriate. As stated in the first three hypotheses, the present study hopes to clear up this confusion and direct future research in a more appropriate direction.

LGO – Summary of results and hypotheses.

The existing empirical evidence consistently shows positive relations between LGO and goal level or task performance (Phillips and Gully, 1997; VandeWalle et al., 1999; Donovan 1998). In the only study that failed to find this relationship, the absence of findings was explained with range restrictions on the goal choice of participants (Donovan and Swander, 2000). We therefore expect to find a positive relationship between LGO and both level of self-set goal and performance.

Hypothesis 4: LGO will be positively related to performance.

Hypothesis 5: LGO will be positively related to the level of self-set goal.

Hypothesis 6: Level of self-set goal will partially mediate the positive relationship between LGO and task performance.

Theoretically, it is unclear whether self-efficacy should moderate the relationship between LGO and self-set goal. Dweck (1989) does not propose that the relationship between LGO and performance depends on the level of self-efficacy in her model, and we see no plausible argument for hypothesizing the interaction.

However, on at least two occasions research results have indicated the possibility of a LGO x self-efficacy interaction effect. Stevens and Gist (1997) found that among participants in the learning goal condition, individuals high on self-efficacy reported more cognitive withdrawal than those with low self-efficacy, suggesting that the combination of a learning oriented goal and high self-efficacy lead to more cognitive withdrawal than when the learning oriented goal was combined with low levels of self-efficacy. Stevens and Gist (1997) suggested, as a possible explanation for this effect, that skill improvement might not be an attractive goal for high self-efficacy trainees who already perceive their skills as strong. Similarly, Sujan et al. (1994) found a self-efficacy x LGO interaction effect on the working hard construct. Contrary to what one would expect, LGO had a positive relationship with working hard for individuals when coupled with low self-efficacy, while a negative relationship was found for individuals high on self-efficacy. In their attempt to explain this finding the authors suggested that low self-efficacious sales-people believed they had to work hard in addition to working smart to develop their ability, while highly self-efficacious sales people believed they could do so by smart work only (hence the negative relationship between LGO and working hard for high self-efficacious sales-people). These somewhat surprising findings have in common that the combination of high LGO and high self-efficacy leads to outcomes that are less

than optimal (more cognitive withdrawal and less exerted effort), a result strongly contradicting common views in the literature.

Because of the absence of a theoretical argument for a learning goal x self-efficacy interaction effect on goal setting and performance, we will not make any formal hypotheses concerning this interaction effect. However, in the hopes of identifying potentially valuable directions for future research, exploratory analyses will be conducted to determine if self-efficacy moderates the positive effects of a LGO on performance and self-set goals.

Contributions of Study

In the current study, goal orientation was studied in an organizational setting while some of the stringent control of the laboratory settings was maintained. Data was collected from real job applicants applying for various jobs, with data collection software that contributed to a highly controlled procedure comparable to that of the laboratory. We believe this combination of field and laboratory setting has some potential advantages in terms of participants' motivation. By using real job applicants on their way to a job interview we believed that the participants in our study would be more motivated than the average college student to take the study seriously, and hence increase the probability of drawing valid conclusions from our results.

The current study attempted to make three significant contributions to the goal orientation literature. First, it set out to answer important and novel theoretical questions. Little thought has been given to the weak, and to some degree confusing relationship between PGO and goal setting. We sought to clarify this issue by proposing an interaction effect between self-efficacy and PGO on the level of self set goal. This

relationship has neither been proposed, nor empirically tested until now. By doing this, we hoped to demonstrate that PGO has a positive side to it, and can, under some circumstances, be beneficial to the individual's performance. This prediction clearly contradicts, to some extent, the conventional perspectives taken on goal orientation within the I/O literature (e.g. VandeWalle and Cummings, 1997).

Second, the study attempted to extend the generalizability of goal orientation findings by studying goal orientation in another cultural environment. Although the work environment of Iceland is in many ways very different from that in the USA, especially in terms of size and maturity in HR practices, the Icelandic cultural environment in general shares many important features with that of the United States (e.g., a modern western society, high standard of living, level of education, technological literacy, work ethic, taste for entertainment and more). Although Iceland belongs to Europe, its geographic location between Europe and America, ensures strong cultural influences from both continents, hence making the assumption that goal orientation effects obtained in the US would generalize to the Icelandic work environment somewhat plausible.

Third, by using job applicants from all socio-economic classes, this study is one of the few within the organizational goal orientation literature to use a sample that comes somewhat close to being representative of the population to which the results hoped to be generalized. As mentioned above, Dweck's studies were mainly done on school-children (Dweck, 1989), samples whose results clearly cannot be assumed to generalize to the adult work force. Studies within the area of I/O psychology have used either college students (Phillips and Gully, 1997; Donovan and Swander, 2000), track and field athletes (Donovan, 1998), or sales people (VandeWalle, 1999). All these samples are quite

homogeneous, and since all three groups are part of a highly competitive environment, the samples are likely to be somewhat restricted in range on one or both of the goal orientation dimensions. Given our relatively heterogeneous sample, it is expected that the range in both goal orientation dimensions will represent the actual population of the work force better than what has been seen in studies to date.

METHOD

Participants

Participants were 164 job applicants applying for jobs at an Icelandic selection company. Of these, 146 (55% female) completed all parts of the study. The sample was predominantly white, ranging in education from not finishing primary school education to having a master's degree. Participants came from all socio-economic-classes as can be seen in examples of jobs that participants applied for: Store clerk, hairdresser, secretary, IT-operator, teacher and CEO. All participants volunteered to participate in the study and received no incentive for their participation.

Power Analysis

A moderated multiple regression power analysis was conducted utilizing the procedures outlined in Jaccard, Turisi, and Wan (1990) to determine the sample size that would be necessary in the present study to achieve a power level of .80, with an alpha level of .05. To utilize this procedure, one must derive variance accounted for estimates for both a main effects model, and the incremental variance that will be accounted for by the addition of the moderator term into the regression equation. Based upon the results obtained in past research, an R^2 value of .20 was estimated for the main effects model of self-efficacy and PGO, and the increase in R^2 when the interaction term is added was

estimated at .05. The use of these estimates indicated that approximately 120 subjects would be needed to have adequate power to find the interaction effect proposed within the present study. It was therefore assumed that our sample of 146 participants would be sufficient to detect the hypothesized interaction effect.

Procedure

The data was gathered from real job applicants on their way to a standard assessment interview. A selection representative, who received special training in administering the data collection software, asked the applicants to fill out a standard application form and/or gave them information about a particular job they were interested in. The representative then asked the applicants to volunteer for participation in a research project conducted by the author in cooperation with the selection firm.

Participants were informed that their participation in the research process was entirely voluntary, that their answers would in no ways affect their probability of receiving a job offer, and that they could choose not to answer any question of the testing process. The selection representative then seated the participants in front of a personal computer. After ensuring that the participants were aware of how to use a windows-based computer and mouse, the representative then started the computer program that lead the applicants through the testing process. Before the applicants started the data collection process the representative asked the applicants if they had any questions. After answering the questions, the representative left the applicants to complete the testing process.

The measurement process started with an informed consent form, asking the participants whether they agreed to participate in the study. The data collection itself started with demographic information followed by measurement of the individual's

dispositional LGO and PGO. Following the completion of these measures, the applicants were introduced to the performance task and asked to do a 3-minute practice trial, which was followed by the first self-efficacy measure and a measure of participant's self-set goal for the upcoming performance task. Participants were then asked to complete an 8-minute performance task trial. Following task performance, the computer program notified participants that the testing process was over and displayed information about the purpose of the study along with the researcher's contact information. Finally, the selection representative answered any remaining questions and led the applicants to the job interview.

Task

The performance task selected for this study was a quantitative aptitude test. The test was designed to be a speed-test, (i.e., based on answering as many fairly easy mathematical problems as possible within a given time-frame; 8 minutes in the performance trials, 3 minutes in the base rate measure). Questions appeared on the computer screen, one at a time, and subjects were asked to answer each question before they proceeded to the next one. Participants were also given the option of skipping a question but they were not able to go back and change their answers. Only questions that were answered within the 8 minute (3 minute) time limit counted towards subjects' score. While working on the task, subjects received no feedback on the number of questions answered or the number of correct answers. Performance was defined as the number of correct answers. Examples of problems contained in this task are shown in Appendix A.

Measures

LGO and PGO

LGO were measured with Button et al.'s (1996) 8-item scale. The scale includes items such as "I prefer to work on tasks that force me to learn new things." (Item 3), "I try hard to improve on my past performance" (Item 6). Responses are based on a 5-point scale that ranges from (1) "Strongly disagree" to (5) "Strongly agree". The reliability (α) of the scale in this study was .80, which is comparable to the values that have been obtained by other researchers.

PGO was measured using Button et al.'s (1996) 8-item scale. The scale includes items such as "The things I enjoy the most are the things I do the best." (Item 3), "I like to work on tasks that I have done well in the past" (Item 7). Responses are based on a 5-point scale that ranges from (1) "Strongly disagree" to (5) "Strongly agree". The reliability (α) of the scale in this study was .69, which is comparable to other studies. The total score on either scale was the computed sum of responses to individual items. The goal orientation scales are included in appendix B-C.

Self-efficacy

Self-efficacy was assessed using a 10-item scale, based upon the self-efficacy scale developed by Phillips and Gully (1997). Since their scale reflects self-efficacy in the academic environment, items were adjusted to reflect participants' belief in their abilities to perform on the quantitative-aptitude test used in the current study. The scale includes items such as "I feel confident in my ability to perform well on the upcoming quantitative aptitude test" (Item 1), "On average, other applicants are probably not as capable of doing as well on this quantitative aptitude test as I am" (Item 10). Responses were made on a 5-

point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total self-efficacy score was the computed average of responses to individual items. The reliability (α) of the self-efficacy scale in this study was .83. The self-efficacy scale is included in appendix D.

Performance goals

Following the procedure of Phillips and Gully (1997), the initial goal (Goal #1) was measured with the following item: “My goal is to get ___ items right on the 8 minute test trial (fill in the blank with the appropriate number).”

Ability

As suggested by Locke and Latham (1990), ability was measured by giving the participants a 3-minute practice trial on quantitative problems similar to the one used in the study. After the practice trial, the participants immediately received feedback on their performance. Participant’s number of right answers on the practice trial served as our indicator of ability.

Demographic measures. In addition to the measures mentioned above, information on the following demographic characteristics was collected: gender, age, previous/current job, level of education and type of job applied for.

Translation of Scales

The goal orientation and self-efficacy scales were translated into Icelandic using the three-step process termed “back translation” in the APA Publication Manual (4th edition, 1999). The first step of the process was translating the original scales into Icelandic. In the second step, an expert blind to the original English scales translated the

items back from Icelandic into English. In the third step, experts in the field of I/O psychology compared the original version and the back-translated English version.

In this study, three subject matter experts (I/O faculty) evaluated the appropriateness of the back translation. An item was judged appropriately translated if the three experts unanimously agreed on the appropriateness of the translation. The criterion for adequate translation in this study was that the experts judged the two English versions as conceptually identical. All items for which discrepancies occurred were re-entered into the process until sufficient convergence was achieved. In this study, two items (SE3 and SE4) needed the second translation-cycle before judged as conceptually identical. The back-translated English versions are included in appendixes B - D. Example of the 5 point Likert scale as it appeared in the software is given in appendix E.

Data Analysis

Reliability and validity of the goal orientation scales

To assess whether the two goal orientation scales maintained their psychometric properties after the translation into Icelandic, we used a process similar to the one used by Button et al. (1996) to assess the internal structure of the scales. Cronbach's α was calculated to estimate the reliability of each of the two goal orientations and the self-efficacy scale, and a confirmatory factor analysis was conducted to ensure that every item loads on its intended factor.

Testing the Hypothesis

To test for the main effect of LGO and the SE x PGO interaction effect on level of goal and performance, and for the mediating effects of goals, the following multiple regression analysis were conducted. Analyses labeled with a letter refer to steps in a

hierarchical regression where additional variables in each step are entered simultaneously.

1) Testing the main effects of LGO and the SE x PGO interaction on performance:

a. $\text{Perf.} = \beta_1 \cdot \text{Ability} + \beta_2 \cdot \text{SE}$

b. $\text{Perf.} = \beta_1 \cdot \text{Ability} + \beta_2 \cdot \text{SE} + \beta_3 \cdot \text{PGO} + \beta_4 \cdot \text{LGO}$

c. $\text{Perf.} = \beta_1 \cdot \text{Ability} + \beta_2 \cdot \text{SE} + \beta_3 \cdot \text{PGO} + \beta_4 \cdot \text{LGO} + \beta_5 \cdot \text{PGO} \cdot \text{SE}$

2) Testing the main effects of LGO and the SE x PGO interaction on goals:

a. $\text{Goal} = \beta_1 \cdot \text{Ability} + \beta_2 \cdot \text{SE}$

b. $\text{Goal} = \beta_1 \cdot \text{Ability} + \beta_2 \cdot \text{SE} + \beta_3 \cdot \text{PGO} + \beta_4 \cdot \text{LGO}$

c. $\text{Goal} = \beta_1 \cdot \text{Ability} + \beta_2 \cdot \text{SE} + \beta_3 \cdot \text{PGO} + \beta_4 \cdot \text{LGO} + \beta_5 \cdot \text{PGO} \cdot \text{SE}$

3) Testing for the mediating effects of goals on performance.

a. $\text{Perf.} = \beta_1 \cdot \text{Ability} + \beta_2 \cdot \text{SE} + \beta_3 \cdot \text{PGO} + \beta_4 \cdot \text{LGO} + \beta_5 \cdot \text{PGO} \cdot \text{SE} + \beta_6 \cdot \text{Goal}$

Hypothesis 1 is supported if β_5 in analysis 1c is significant. Hypothesis 2 is supported if β_5 in analysis 2c is significant. Hypothesis 3 is supported if β_5 in analysis 3a is lower than β_5 in analysis 1c, but remains significantly different from zero (Baron and Kenny, 1986). Hypothesis 4 is supported if β_4 in analysis 1b is significant. Hypothesis 5 is supported if β_4 in analysis 2b is significant. Hypothesis 6 is supported if β_4 in analysis 3a is lower than β_4 in analysis 1a, but remains significantly different from zero.

In order to visually inspect any significant interactions obtained in these analysis, the procedures outlined by Jaccard et al. (1990) were utilized to graph each interaction. Scores one standard deviation above and below the mean on PGO and self-efficacy were entered into regression equation 2c and predicted values of goal were calculated for each of the four combinations of scores (low-low, low-high, high-low, high-high). The

predicted values were then plotted on a PGO vs. Goal (or Performance) graph for high/low values of self-efficacy.

RESULTS

Frequency distributions and outlier analysis

Frequency tables of the variables in the study are presented in tables 1 - 9, appendix F. A box-plot analysis of the focal variables (see figures 1-3, appendix G) revealed a normal-like distribution for self-efficacy, while LGO, and to a lesser extent PGO were positively skewed (see figures 1-3, Appendix G). The frequency distributions of all three variables were dramatically shifted towards the high end of their scale, with the lowest assigned scale scores typically around the midpoint of the scale, while the highest scores were either the maximum possible scores (PGO and LGO) or close to maximum (SE). This fact points to a range restriction for all three variables, which unfortunately seems to be a common problem with the dispositional goal orientation measure used in this study (e.g., Breland, 2001; Donovan & Swander, 2000).

No outliers were found for PGO and self-efficacy, but two mild outliers¹ were identified for the LGO scale. Since one of the low LGO outliers was also a mildly high outlier on ability (counteracting the predicted positive correlation between LGO and performance variables) all analysis were run both with and without that particular outlier. However, the removal of the outlier didn't have a significant effect on the results, therefore the results for the full sample are presented here.

Exploratory and Confirmatory Factor Analyses

Confirmatory factor analyses were conducted to verify that the original factor structure of the goal orientations was maintained through the translation to Icelandic. The

¹ A mild outlier as defined in the box-plot is a data point located more than 1.5 IQR (Interquartile range = $Q3 - Q1$) from the first and third quartiles (Schabenberger, 2000).

one factor (one goal orientation factor) and two factor models (LGO and PGO) were compared in terms of fit to the data. The one factor model served as the baseline model and tested the possibility of a single goal orientation. The one factor goal orientation model fit the data poorly, $\chi^2 = (104, N=146) = 294.78, p < .0001$; GFI = .76; RMSEA = .11; CFI = .62). The two-factor model fit the data somewhat better, $\chi^2 = (103, N=146) = 198.67, p < .0001$; GFI = .85; RMSEA = .08; CFI = .81 (see tables 1-2 appendix 1R). Although a chi-square significance test between the two models indicated a significantly better fit for the two factor model, $\chi^2 (1, N=146) = 96.11, p < .01$, other fit indexes did not reach the most common cut-offs adopted for these indexes, which are .90 for GFI and CFI and below .05 for RMSEA. This indicates that the fit here is not as good as it should be. In comparison, the fit indexes of Button et al (1996) were slightly higher, mostly in the upper eighties or lower nineties (GFI and CFI) and RMSEA ranged from .05 to .07.

Several exploratory factor analyses as well as suggestions of modifications in the confirmatory factor analysis identified that one PGO item, 'The opinions others have about how well I can do certain things are important to me' (P4), had loadings above .25 on both goal orientation constructs, and more often than not somewhat higher on the learning goal orientation scale. However, further confirmatory factor analyses where the model was modified such that: a) the item was removed; b) the item loaded on LGO only; or c) the item loaded on both PGO and LGO; resulted in a marginally better (PGO4 removed or loaded on LGO) or slightly worse (PGO4 loaded on both factors), fit to the data. Therefore, it was decided to retain item PGO4 in the analyses that follow. Item intercorrelations along with the results of a typical exploratory factor analysis are presented in appendixes H – I.

Correlations and Descriptive statistics (mean, SD, range, outliers)

Correlations, coefficient alphas and descriptive statistics of the study variables are presented in Table 1. The pattern of correlations found in this study was in line with expectations, with the exception of LGO that surprisingly did not correlate strongly with level of goal [$r(145) = .07$, ns] or performance [$r(145) = .03$, ns]. However, LGO correlated positively and somewhat strongly with self-efficacy [$r(145) = .29$, $p < .05$]. As expected, PGO had weak bivariate correlations with LGO [$r(145) = .10$, ns], self-efficacy [$r(145) = .01$, ns], goals [$r(145) = -.09$, ns] and performance [$r(145) = -.10$, ns]. Finally, self-efficacy correlated strongly with both goals [$r(145) = .46$, $p < .05$] and performance [$r(145) = .40$, $p < .05$].

Regression analyses

The hypotheses of the study were tested with hierarchical regression analyses, whose results are presented in Tables 2 and 3.

Of the main effects on performance examined in the study, only main effects for ability ($b = 2.43$, $p < .0001$) and self-efficacy ($b = .37$, $p < .05$) were significant (see Table 2). Similarly, ability ($b = 2.05$, $p < .0001$) and self-efficacy ($b = .58$, $p < .01$) had main effects on level of goals. Contrary to expectations no significant main effects for LGO were found on goals ($b = .22$, $p = .46$) or performance ($b = .08$, $p = .75$), hence failing to support hypotheses 4 and 5 (see steps 1 and 2 in Table 3).

Similarly, no support was found for the predicted interaction effect of self-efficacy and PGO on either performance ($b = .013$, $p = .72$) or self-set goals ($b = -.04$, $p = .39$), hence failing to support hypotheses 1 and 2.

Failing to find the main effects of LGO and the effects of the self-efficacy x PGO interaction makes it unnecessary to test for the partially mediating effects of goals on performance. Nevertheless, the regression analysis designed to test for that interaction is included in step 4, Table 2.

Finally, a regression analysis testing for an LGO x self-efficacy interaction on goals and performance was conducted for exploratory purposes. No signs of a LGO x self-efficacy interaction on goals ($b = 0.007$, $p = .90$) or performance ($b = -.07$, $p = .11$) were found in the data.

Additional analyses

Since support for the predicted relations were not found, supplemental regression analyses were conducted to test for three alternative models recently proposed in the literature.

The first model, proposed by Phillips and Gully's (1997), predicts that self-efficacy mediates the effects of the goal orientations on goals. When self-efficacy was regressed on LGO and PGO, the results showed that LGO did in fact predict self-efficacy ($b = 0.43$, $p < .0001$) while PGO did not ($b = 0.04$, $p = .64$), hence ruling out a possible self-efficacy mediation between PGO and goals. Next, goals were regressed on LGO and PGO while ability was controlled for. LGO did not significantly predict goals ($b = 0.44$, $p = .13$), hence ruling out the possible mediation. Finally, as was reported before, LGO and PGO did not predict goals with self-efficacy in the regression equation. The conclusion therefore is that no self-efficacy mediation was found in this study.

Second, a LGO x PGO interaction effect on goals and performance, proposed by Breland (2001), was tested. A regression analysis was conducted, where goals and

performance were regressed on LGO x PGO while controlling for self-efficacy, ability and the main effects of LGO and PGO. No LGO x PGO interaction effect was found on either goals ($b = -.06, p = .46$) or performance ($b = -.04, p = .47$).

The third model tested was a hybrid of the former two, testing whether self-efficacy mediated the LGO x PGO interaction effect on goals and performance. Since the two goal orientations failed to interact in their effect on goals ($b = -.06, p = .46$) the necessary conditions for mediation could not be fulfilled. However, results of the regression analysis showed that the goal orientations had an interaction effect on self-efficacy ($b = .06, p < .05$), while ability and main effects of LGO and PGO were controlled for. To analyze the interaction effect, values 1 standard deviations above and below the mean for each of the two goal orientations were entered into the regression equation and the results plotted. The interaction effect is depicted in Appendix J. As proponents of the LGO x PGO interaction effect would have expected, PGO and self-efficacy had a positive relation for people high on LGO, while the PGO – self-efficacy relation was negative for those low on LGO.

DISCUSSION

Main results

The focus of this study was on PGO and its hypothesized interaction with self-efficacy in their effects on task goals and task performance. This relationship, which is derived from Dweck's (1989) original model, has not been explicitly tested in the goal setting literature to date. The PGO x SE interaction effect was hypothesized here as an attempt to partially clarify substantial confusion surrounding the empirical relations of PGO with other important variables in goal setting. Hypotheses 1 – 3 predicted that self-

efficacy would moderate the effects of PGO on goals and performance, and that the SE x PGO interaction effect on performance would be partially mediated by level of goal. The only effects found were the well-documented main effects of self-efficacy on goal and performance. Neither main nor interaction effects were found for PGO on either goals or performance, hence failing to provide support for hypotheses 1-3.

Hypotheses 4 – 6 stated the relatively well-established positive relations between LGO and goals and performance. Somewhat surprisingly no support was found for these hypotheses since LGO failed to significantly predict both goals and performance. Finally, exploratory regression analyses were conducted to test for a possible LGO x Self-efficacy interaction effect on goals and performance. No signs of a LGO x Self-efficacy interaction were found in the data.

Alternative models/hypotheses

Other goal orientation researchers have proposed alternative models in an attempt to account for the relations between the goal orientations, self-efficacy, goals, and performance. Since no support was found for the PGO x SE interaction in this study, the data were reanalyzed to explore the plausibility of competing models. More specifically, the models examined were the mediating model of Phillips and Gully (1997), a model proposing an interaction between LGO and PGO on goals and performance (Breland, 2001), and a hybrid of those two, proposing that SE mediates the interaction effects of LGO and PGO on goals and performance (Breland, 2001).

Phillips and Gully (1997) found partial support for their proposed model, which predicted that SE mediated the effects of PGO and LGO on goals. Following Baron and Kenny's (1986) procedure to test for mediation, the data from the study showed that LGO

was in fact positively related to SE, but since LGO was not significantly related to level of goal, no conclusions about full or partial mediation could be drawn. In the current study, PGO was not significantly related to either SE or goals eliminating the possibility of mediation.

The rather interesting hypothesized interaction between the goal orientation dimensions suggests that the effects of PGO on goals and performance depend on the level of LGO, such that a high LGO buffers the negative effects of PGO. This buffering effect is proposed to result in a less negative or even weak positive relationship between PGO and goals for high-LGO individuals, but clearly negative relations for low-LGO individuals. No support for this interaction was found in the data when utilizing self-set performance goals as the dependent variable.

Since LGO and PGO failed to have an interactive effect on goals the third hypothesis that the goal orientation dimensions have an interaction effect on goals through their effect on self-efficacy was bound to fail. However, it is worth noting that further regression analyses showed that LGO and PGO did in fact interact in their effect on SE demonstrating the predicted interaction pattern. For high-LGO individuals the relationship between PGO and SE was positive, while PGO and SE had a negative relationship for low-LGO individuals. This relationship is demonstrated in Appendix [HJ](#). This in itself was an interesting finding that can perhaps trigger further theorization about the role of PGO in the goal setting/performance context.

Correlational analyses

Since the study was carried out in another cultural environment where goal orientation has not yet been researched, it is important to have a clear picture of any

dissimilarity between the results of this study and the established empirical literature on this topic. One way of approaching that goal is to take a quick look at the correlation patterns of self-efficacy and the goal orientation constructs. Of the three key constructs of the study, LGO showed the most distinct correlation patterns relative to results typically found in goal orientation research. In this study, LGO correlated as expected with self-efficacy ($r = .29$) but failed to correlate meaningfully with both level of goal ($r = .07$) and performance ($r = .03$). The magnitude of these last two correlations is significantly weaker than those obtained in prior research. For example, Phillips and Gully (1997) found correlations of .14 and .15 between LGO and goals and performance respectively, the same correlations in the study by VandeWalle et al. (1999) were .30 and .33, and finally, Donovan (1998) found a correlation of .19 between LGO and goals.

The other two variables showed somewhat typical correlation patterns. PGO showed the familiar pattern of weak ($r < .11$) non-significant correlations with the other variables, while self-efficacy correlated strongly to both goals ($r = .46$) and performance ($r = .40$) and, as noted above, with LGO. The conclusion here therefore is that LGO definitely did not function as it normally does and that self-efficacy seemed to function in its normal fashion. Since the null results of PGO make it hard to draw definite conclusions about the functioning of PGO in this study, it is unclear whether PGO functioned in a manner that is consistent with past research on this construct.

Plausible causes for the non-findings

In an attempt to identify possible factors regarding the study and its setting that might have contributed to the failure to find the predicted relationships, a systematic

analysis of the study, its components and the goal orientation literature was conducted. The most salient issues are discussed below.

Range Restriction

In spite of a diverse sample of participants, the range on both goal orientation measures and self-efficacy was somewhat restricted. Over 99% of the sample on each of the scales received scores higher than the midpoint, resulting in effective scales that were only half the range of the full scales. Range restriction did not appear to be a problem with self-efficacy since no participant received the maximum possible score (50 out of 50) on that scale, and the distribution looked fairly normal (see Figure 3, Appendix G). On the other hand, LGO, and PGO to a lesser degree, showed signs of positive skew, indicating that the scale did not capture the full range of goal orientation scores (see Figures 1 and 2, Appendix G).

Range restriction is not an uncommon problem in goal orientation studies using the Button et al. (1996) measure. For example, Breland (2001), Donovan and Swander (2000), and Donovan (1998) all reported restricted range on one or both goal orientation measures. This problem has been attributed to the homogenous samples typically used in goal orientation studies (such as college students and athletes) combined with the emphasis on performance and learning typically found in these environments. It is therefore somewhat disappointing that the same type of range restriction was found in a sample of people of wide age range, applying to a diversity of jobs and with diverse educational backgrounds. Although all of these results can be attributed to specific characteristics of the samples in question, it also points out that the measure of Button et

al. (1996) might need to be improved in this regard to reflect the full range of goal orientation scores.

Dispositional Goal Orientation

It is worth noting that in this study goal orientation was treated as a disposition, assumed to be relatively stable over time and situations. One of several unresolved issues with the goal orientation construct is that the literature has not reached a consensus on whether to treat goal orientation as a trait, a state, or both. Up to date, researchers have chosen either option or both (Carr, DeShon & Dobbins, 2001). It has been pointed out by numerous researchers that a possible downside of using generic dispositional variables to predict specific, situational variables is that strong relationships are unlikely to occur (e.g., Fishbein & Ajzen, 1975). In agreement with this, a review of past research conducted using Button et al.'s (1996) dispositional measure of goal orientation indicates that relatively weak relationships seem to be the rule rather than the exception. The magnitude of correlations in the study conducted by Phillips and Gully (1997) between the goal orientation constructs, self-efficacy, goals, and performance ranged from .07 to .19, a correlation that would be considered weak according to most classification systems (e.g., Cohen, 1988). Other studies that have used the Button et al. (1996) measure have found correlations of similar magnitude (Donovan, 1998; Donovan & Swander, 2000; Breland, 2001). Interestingly, two studies that have compared situational and dispositional measures of goal orientation have found both different and considerably stronger effects for the situational measure than the dispositional one (Breland, 2001; Donovan & Swander, 2000). Given these results, it can be argued that choosing the

Button et al. (1996) measure for this study was a rather costly mistake, and that a more specific, situational measure might have yielded stronger results.

Translation of the scales

This study made use of constructs whose measures were translated especially for the purposes of the study, and had not been administered to another Icelandic sample before this study. Although care was taken in translating the items from English to Icelandic as well as possible, the factor structure of the two goal orientations did not appear as clear in the Icelandic sample as it should have. Exploratory factor analyses were conducted to test if the items loaded on their intended factors. Results showed that all items but one loaded on its intended factor, but also that the unique variance of most items was substantial, indicating that the factors explained only a limited portion of the item variance. This problem was confirmed in the results of the confirmatory factor analyses where the fit indices examined did not reach the most commonly accepted cut-offs for acceptable fit, and did not reach the fit Button et al. (1996) reported. This lack of fit might very well have contributed to the insignificant results of the study.

There are at least three possible reasons for the poor fit of the goal orientation items to their intended dimensions. First, sampling error may have caused the results. Second, the translation of the scales might have been inadequate. However, given the fact that three experts in the field of I/O psychology saw the back translation as very satisfactory this is seen as somewhat unlikely. The third possible explanation is that the goal orientation items do not have the same psychological meaning in the Icelandic culture as in the American. Although it is hard to pinpoint specific aspects of the Icelandic culture that could have caused the obtained result pattern, it is for example possible that the

emphasis on goals and performance in the United States is stronger than that in Iceland, causing the goal orientation constructs to have a clearer and somewhat different meaning for US subjects than the Icelandic ones. It should be pointed out that any discussion of specific aspects of cultural differences is highly speculative, especially since no replications or results from further studies guide the discussion.

Alternative causes/Limitations of the study

Settings

Although the study was carried out in an organization using real applicants as subjects, the design and data collection method was identical to what would have occurred in a more traditional lab setting. Thus, the study is probably most accurately described as a lab study carried out in an organizational environment. Since this study shared qualities of both types of research, the potential qualities and drawbacks of either or both types might have characterized this study. Though it was hoped that the settings would simultaneously enhance participants' motivation and honesty, the opposite might have happened. In other words, we might have gotten the best or the worst of both worlds (or something in between).

A possible problem relevant to this study, which is often associated with laboratory studies but not real world studies, is ensuring participants' motivation for the task. In an attempt to reduce socially desirable response patterns, the participants were told that the data collection had nothing to do with their application for their current job. However, these instructions may have inadvertently reduced the participants' motivation for doing their best on the task and, in general, taking the study seriously. Since the study was anonymous, there was no incentive for people to do their best and take the study seriously

once they had agreed to participate, which might have contributed to the results. Some support for this was found in the fact that over 10% of participants failed to finish the study after agreeing to participate, a number that would probably have been substantially smaller if the data collection had in fact been part of the company's selection process.

Another problem, which is often associated with selection situations in organizations but is of lesser concern in the laboratory, is when participants choose to represent themselves in socially desirable ways in an attempt to affect the decisions made (e.g., Barrick & Mount, 1996; Ones, Viswesvaran & Reiss, 1996). This issue, that relates more to the non-findings of LGO, is the inevitable emphasis on performance and appearance when applicants are being interviewed for a job. Many studies have demonstrated the situational aspects of goal orientation by manipulating the goal orientation of participants (e.g., Elliot & Dweck, 1988; Steele-Johnson et al., 2000) suggesting that a person's standing on a goal orientation dimension can rather easily be influenced by the situation. Button et al. (1996) found that LGO correlated .27 with a measure of social desirability, indicating that people see high standings on LGO as more socially desirable than low standings. In spite of the fact that participants were explicitly told that the data collection would not be taken into account when job decisions were made, the strong situational influences might nevertheless have inflated scores on the LGO measure somewhat, causing the range restriction and lack of findings.

Although the LGO scores might have been inflated somewhat due to social desirability, it is not unlikely that participants in this study were primarily interested in making a good impression and hence that the dominating goal orientation when it came to setting goals in the study was PGO. This might have led participants to be more

cautious in their goal setting, which again contributed to the repression of the otherwise stable effects of LGO on goals.

Task

Another somewhat plausible explanation for the absence of effects of LGO in this study might be the nature of the task. As demonstrated by Steele-Johnson et al. (2000), LGO does not always show the typical positive relations to goals and performance, especially when the tasks are simple and/or non-challenging. By definition people high on LGO are concerned with gaining knowledge and increasing their ability. In the current study it is unclear how high-LGO applicants on their way to a job interview could have seen potential learning benefits out of the calculation of several 6th grade math problems, which again might have demotivated them and contributed to the lack of correlation between LGO and goals and performance. Note that this argument does not apply to the PGO x SE interaction since studies have shown that high PGO and relatively simple routine tasks are a combination that tends to result in high levels of motivation (e.g., Steele-Johnson et al. 2000). The fact that PGO was the focus of this study was a major factor in choosing this particular task for this study, although the price paid may have been the insignificance of LGO.

Design

A further issue related to the study design, and the lack of significant results in general, was that the ability measure was very similar to the actual performance trial. This resulted in ability accounting for most of the explained variance in the dependent variables, leaving little room for other variables to have their effect. Although analyses conducted without ability as a control variable showed no effects for LGO or PGO x SE

interactions either, this may be due to the fact that the relatively simple relationship between numbers of problems solved on a 3 vs. 8 minute trial restricted the range of self-set goals for each individual and left little space for the goal orientations to have their effects beyond the ability measure. Ultimately this may have resulted in a conservative test for the effects of LGO and PGO on goals and performance. It can be argued that with such a simple task, a 3 min practice trial was overkill in terms of getting participants familiar with the task. A better approach might have been to assess ability by administering a short standardized math test with a fixed number of problems.

Position of the field – future research directions

In spite of the weak results obtained with the dispositional measure of Button et al. (1996), goal orientation has become a popular construct in I/O psychology, especially in the context of training and goal setting. Results from researchers who have manipulated goal orientation (e.g., Steele-Johnson et al. 2000) or measured it as a more domain-specific trait than Button et al. (1996) did (e.g., VandeWalle et al. 1999), have shown that it has the potential to be a useful tool in enhancing the effectiveness of training and motivation programs by identifying and responding to an employee's focus in a given situation. However, it seems, as somewhat frequently is the case, that researchers and practitioners have started running before they learned to walk. As pointed out by Carr et al. (2001) there are still fundamental issues regarding the dimensionality, trait vs. state, measurement and the definition of the goal orientation construct that need to be resolved before we can go on to a unified framework of goal orientation and start to reliably map its relations to other important constructs in the training/self-regulation area. These issues will be discussed in more detail below.

Dimensionality

Goal orientation started out as a one-dimensional construct, with LGO on one end and PGO on the other (Dweck, 1975, 1989). Later, the notion that LGO and PGO could in fact be independent of each other grew in popularity and became an accepted standard after Button et al. (1996) presented their measure of goal orientation and provided support for the unrelatedness of the two goal orientation dimensions.

Since then, researchers have suggested that PGO should be split into two dimensions, 'prove' and 'avoid', where prove-PGO refers to wanting to demonstrate ability and receiving favorable judgment, while avoid-PGO is concerned with avoiding negative evaluation (VandeWalle, 1997). Although researchers have abandoned the one-dimensional model, there currently is no real consensus on whether to use two- or three-dimensions when goal orientation is operationalized. Empirical support for the three-dimensional model is scarce so far, and results are not clear in regard to the distinctions between the two PGO constructs. The argument for choosing the two-dimensional model over the three-dimensional model in this study was mainly that we believed that a self-efficacy x PGO interaction would provide the same level of explanation in more parsimonious terms than the two independent PGO-dimensions. More specifically, in a performance setting a performance goal oriented individual high on self-efficacy will be pre-occupied with demonstrating ability while a low self-efficacy individual will be more likely to focus on avoiding negative assessment. It is interesting to note that Carr et al. (2001) took an almost identical position when attempting to integrate the current literature on goal orientation into a unified framework. They proposed that the level of

self-efficacy would determine whether performance oriented individuals would choose prove- or avoid-goals.

Since the research field can at best move slowly without first establishing the dimensionality of goal orientation, future goal orientation research should be directed towards answering these questions by testing the competing hypotheses discussed above against each other, and integrating the results into future goal orientation theories.

State vs. Trait

Another fundamental but largely ignored issue regarding the goal orientation construct is whether it should be treated as a trait or a state. The literature spans the whole range of treatments, from a highly situational state-variable, to a domain-specific trait variable (VandeWalle, 1997), to a trait variable somewhat susceptible to situational influences (Button et al. 1996), and finally to a stable trait variable (Elliot & Church, 1997). Surprisingly little attention has been devoted to this ambiguity and its potential implications for research carried out on the goal orientation construct. Carr et al. (2001) conclude that the field favors the ‘situationally-influenced’ trait approach, but point out that its susceptibility to manipulations strongly suggests state-like characteristics and that theoretical reasons for treating goal orientation as a trait are unclear. When the rather weak results of studies treating goal orientation as a trait are considered and compared to situational goal orientation studies (Breland 2001; Donovan & Swander, 2000), treating goal orientation as a situationally influenced state variable appears to hold promise for future research.

Another possibility not frequently discussed in the literature is that the two goal orientations might have a different standing on the state vs. trait dimension. LGO and

PGO have, according to theories, very different properties in several respects. LGO is more internal, emphasizes inner standards, growth and long-term striving towards mastery without much regard for situational influences, while PGO's focus is on demonstrating ability in a given situation, managing impressions and it is much more likely to emphasize short term goals. Furthermore, it is largely the situation that determines whether PGO turns into 'prove' or 'avoid' goals. This might suggest that LGO is further towards the trait-like end of the continuum than PGO, and that LGO is more likely to be a stable predictor of goal-setting behavior over time and across situations than PGO. Further research on goal orientation's stability over time is needed to assess their standings on the trait-state dimension but future theorization should not take for granted that the two goal orientation dimensions share similar properties.

Measurement issues

Given the lack of consensus on dimensionality and whether to treat goal orientation as a trait or a state, it is probably not surprising that there are many diverse measures of goal orientation. The most popular measures are those of Button et al. (1996), which measures goal orientation in broad, situationally independent terms, and the measure of Vandewalle (1997) who takes the trait-perspective but within specific domains (such as sports, work, school etc.). Carr et al. (2001) noted that the five most frequently used measures were used in only 25% of the studies reviewed, indicating that most authors create their own measures of goal orientation. Needless to say, this diversity of measurement makes it harder still to make meaningful comparisons between goal orientation studies and accumulate the knowledge in meaningful ways.

Towards a unified framework

The most important task at hand for the field of I/O psychology is to make up its mind regarding the fundamental issues of goal orientation discussed above, and establish a common paradigm for goal orientation research to progress within. As it currently stands, comparing the results between studies is an almost impossible task, and this lack of comparability severely slows down both theoretical progress and applicability of the goal orientation construct to real world settings.

Carr et al. (2001) made one of the first attempts to propose a unified framework to study goal orientation and clear up the theoretical mess. They presented an interesting state-model in which goal orientation was defined as: “the process of selecting achievement goals and its subsequent impact on the selection of more proximal goals” (Carr et al., 2001, p.13). Three types of achievement goals are defined in the model, growth, prove and avoid which correspond to VandeWalle’s (1997) three goal orientation dimensions and the authors suggest, somewhat similar to what was proposed in this study, that the level of self-efficacy determines whether individuals focused on regard-goals choose ‘prove’ or ‘avoid’ goals. The attempt of Carr et al. (2001) is an interesting and desperately needed contribution into the goal orientation literature. Despite some shortcomings, it provides a good starting point for researchers to move further on and to establish a common ground to stand on.

Concluding comments

This study set out to clear out part of the confusion surrounding the construct of goal orientation by proposing an interaction effect between self-efficacy and PGO. No support was found, and the confusion remains. Although several possible causes for the

lack of findings have been pointed out here, the most straightforward one is of course that PGO and self-efficacy do not interact in their effect on goals and performance. However, the plausibility of the alternative explanations that might have caused the lack of results, the role of self-efficacy in the model of Carr et al. (2001), and the substantial ambiguity regarding the fundamentals of the goal orientation constructs, all require that the hypotheses tested here are kept alive and not written off until replicated tests have demonstrated their futility.

Goal orientation research has to establish a firm theoretical basis for its key constructs to enable researchers to adopt a common framework for their research. This includes establishing clear definitions, reaching a consensus on the number of goal orientation dimensions and the effect of self-efficacy, settling for a standing on the state vs. trait dimension, and, last but not least, developing sound measures that adequately capture the essence of the goal orientation constructs. When this is accomplished, applied researchers and practitioners will have a much greater chance of successfully transferring the accumulated knowledge to the organizations than what they have today, hopefully resulting in more well designed programs for training and motivating employees.

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APPENDIX A.

QUANTITATIVE TEST – SAMPLE ITEMS

Instructions

In this test you will be presented with various arithmetic problems. You have 8 minutes to answer as many problems as you can correctly. Your score will be measured in number of correct answers. Please pace yourself as fast as you can without making overly many errors. Please enter the correct answer to the each problem in the box on the right, next to the problem. When you reach the bottom of a page, click with your mouse on the 'next' button and continue the test.

Sample Items

1. $13 \cdot 6 =$
2. $7 \cdot 55 =$
3. $14 \cdot 6 =$
4. $72 / 8 =$
5. $96 / 6 =$
6. $45 / 3 =$
7. $36 + 17 =$
8. $48 + 23 =$
9. $123 + 25 =$
10. $67 - 18 =$
11. $85 - 33 =$
12. $51 - 25 =$

The positive side of PGO 63

APPENDIX B.

THE PERFORMANCE GOAL ORIENTATION MEASURE. ORIGINAL AND RETRANSLATED ITEMS.

Performance Goal Orientation - Original

I prefer to do things that I can do well rather than things that I do poorly. (P1)

I'm happiest at work when I perform tasks on which I know that I won't make any errors. (P2)

The things I enjoy the most are the things I do the best (P3)

The opinions others have about how well I can do certain things are important to me. (P4)

I feel smart when I can do something without making any mistakes. (P5)

I like to be fairly confident that I can successfully perform a task before I attempt it. (P6)

I like to work on tasks that I have done well on in the past. (P7)

I feel smart when I can do something better than most people (P8).

Performance Goal Orientation – Translated

I would rather do things I can do well than things which I do badly

I feel best at my job when I do things which I know I will do without any errors.

The things I enjoy the most are the things I do the best

Others' opinions of how well I perform on certain tasks are important to me

I feel I am intelligent when I can do something without any mistakes

I want to be reasonably certain that I can perform successfully on a task before I take it on

I like working on projects which I have previously done well on

I feel I am intelligent when I can do something better than most people

The positive side of PGO 65

APPENDIX C.

THE LEARNING GOAL ORIENTATION MEASURE. ORIGINAL AND RETRANSLATED ITEMS.

Learning Goal Orientation - Original

The opportunity to do challenging work is important to me. (L1)

When I fail to complete a difficult task, I plan to try harder the next time I work on it. (L2)

I prefer to work on tasks that force me to learn new things. (L3)

The opportunity to learn new things is important to me. (L4)

I do my best when I'm working on a fairly difficult task. (L5)

I try hard to improve my past performance. (L6)

The opportunity to extend the range of my abilities is important to me. (L7)

When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work. (L8)

Learning Goal Orientation - Translated

It is important for me to get an opportunity to work on challenging tasks

When I fail to complete a difficult task I plan to work harder the next time I work on it

I like to work on projects which force me to learn new things

It is important to me to get a chance to learn new things

I perform best, when I work on rather difficult tasks

I work hard to improve my earlier performance

It is important to me to get a chance to increase the scope of my abilities

When I have a hard time solving a problem I enjoy trying different ways to find out which one works.

The positive side of PGO 67

APPENDIX D.

THE LEARNING GOAL ORIENTATION MEASURE. ORIGINAL AND RETRANSLATED ITEMS.

Self-efficacy – Original	Self-efficacy - Translated
I feel confident in my ability to perform well on the upcoming test. (SE1)	I am confident about my ability to do well on the pending exam
I think that I can eventually earn a satisfactory score on this test. (SE2)	In the end, I think I can get a satisfactory score on this exam
I am not confident that I will do as well on this test as I would like. (SE3)	I am not sure that I will do as well on this exam as I would like
I don't feel as if I am as capable of performing as well on this test as other people. (SE4)	I feel I am not capable of doing as well as others on this exam
I am a fast learner for these type of tests, in comparison to other people. (SE5)	Compared to others, I learn quickly for exams of this kind.
I am not sure I can ever do well on this test, no matter how much practice I get. (SE6)	I am not sure I can ever do well on this exam, no matter how much practice I get
I would have to practice for a long time to be able to do well on this test. (SE7)	I would have to practice for a long time in order to do well on this exam
I think that my performance will be adequate on this test. (SE8)	I think my performance on this exam will be satisfactory
I am sure that I can learn the skills covered on this test in a relatively short period of time. (SE9)	I am certain that I could learn the skills which are being tapped by this exam, in a relatively short time.
On average, other people are probably not as capable of doing as well on this test as I am. (SE10)	Generally, other people are probably not as capable as I am to do well on this exam

APPENDIX E.

EXAMPLES OF THE PGO 5 POINT LIKERT-SCALE
AS IT APPEARS IN THE PROGRAM.

PGO 1. I prefer to do things that I can do well rather than things that I do poorly. (P1)



Gagnaöflun

Spurningalisti 1

Vinsamlegast svaraðu hversu sammála/ósammála þú ert eftirfarandi staðhæfingu:

1. Ég kys að gera hluti sem ég get gert vel frekar en hluti sem ég geri illa.

Mjög ósammála Ósammála Hlutlaus Sammála Mjög sammála

Áfram >>

APPENDIX F.
FREQUENCY TABLES.

Table 1. Gender

kyn	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	65	44.52	65	44.52
2	81	55.48	146	100.00

Table 2. Age

age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
17	1	0.68	1	0.68
18	3	2.05	4	2.74
19	3	2.05	7	4.79
20	5	3.42	12	8.22
21	1	0.68	13	8.90
22	4	2.74	17	11.64
23	8	5.48	25	17.12
24	5	3.42	30	20.55
25	10	6.85	40	27.40
26	8	5.48	48	32.88
27	7	4.79	55	37.67
28	4	2.74	59	40.41
29	5	3.42	64	43.84
30	6	4.11	70	47.95
31	7	4.79	77	52.74
32	11	7.53	88	60.27
33	4	2.74	92	63.01
34	5	3.42	97	66.44
35	8	5.48	105	71.92
36	4	2.74	109	74.66
37	3	2.05	112	76.71
38	4	2.74	116	79.45
39	2	1.37	118	80.82
40	3	2.05	121	82.88
41	1	0.68	122	83.56
42	2	1.37	124	84.93
43	1	0.68	125	85.62
44	3	2.05	128	87.67
45	4	2.74	132	90.41
46	2	1.37	134	91.78
47	1	0.68	135	92.47
48	1	0.68	136	93.15
49	1	0.68	137	93.84
50	1	0.68	138	94.52
52	2	1.37	140	95.89
53	2	1.37	142	97.26
54	2	1.37	144	98.63
55	1	0.68	145	99.32
58	1	0.68	146	100.00

Table 3. Education

Labels: 1-Did not finish primary school; 2 primary school; 3 some junior high school; 4 finished junior high school; 5 Some college; 6 A community college degree or comparable; 7 BA or BS degree; 8 MA or MS degree; 9 Phd Degree

educ	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	0.68	1	0.68
2	7	4.79	8	5.48
3	38	26.03	46	31.51
4	28	19.18	74	50.68
5	15	10.27	89	60.96
6	11	7.53	100	68.49
7	34	23.29	134	91.78
8	12	8.22	146	100.00

Table 4. Performance Goal Orientation

pgo	Frequency	Percent	Cumulative Frequency	Cumulative Percent
19	1	0.68	1	0.68
21	1	0.68	2	1.37
22	2	1.37	4	2.74
23	4	2.74	8	5.48
24	3	2.05	11	7.53
25	3	2.05	14	9.59
26	9	6.16	23	15.75
27	7	4.79	30	20.55
28	16	10.96	46	31.51
29	12	8.22	58	39.73
30	8	5.48	66	45.21
31	13	8.90	79	54.11
32	11	7.53	90	61.64
33	16	10.96	106	72.60
34	16	10.96	122	83.56
35	6	4.11	128	87.67
36	5	3.42	133	91.10
37	6	4.11	139	95.21
38	2	1.37	141	96.58
39	1	0.68	142	97.26
40	4	2.74	146	100.00

Table 5. Learning Goal Orientation

lgo	Frequency	Percent	Cumulative Frequency	Cumulative Percent
19	1	0.68	1	0.68
23	1	0.68	2	1.37
26	2	1.37	4	2.74
27	2	1.37	6	4.11
28	5	3.42	11	7.53
29	8	5.48	19	13.01
30	4	2.74	23	15.75
31	19	13.01	42	28.77
32	17	11.64	59	40.41
33	15	10.27	74	50.68
34	10	6.85	84	57.53
35	15	10.27	99	67.81
36	18	12.33	117	80.14
37	12	8.22	129	88.36
38	9	6.16	138	94.52
39	4	2.74	142	97.26
40	4	2.74	146	100.00

Table 6. Self-efficacy

The FREQ Procedure

se	Frequency	Percent	Cumulative Frequency	Cumulative Percent
20	1	0.68	1	0.68
25	2	1.37	3	2.05
27	3	2.05	6	4.11
28	4	2.74	10	6.85
29	5	3.42	15	10.27
30	8	5.48	23	15.75
31	6	4.11	29	19.86
32	14	9.59	43	29.45
33	3	2.05	46	31.51
34	10	6.85	56	38.36
35	5	3.42	61	41.78
36	13	8.90	74	50.68
37	14	9.59	88	60.27
38	12	8.22	100	68.49
39	9	6.16	109	74.66
40	9	6.16	118	80.82
41	4	2.74	122	83.56
42	8	5.48	130	89.04
43	4	2.74	134	91.78
44	3	2.05	137	93.84
45	4	2.74	141	96.58
46	1	0.68	142	97.26
47	1	0.68	143	97.95
48	3	2.05	146	100.00

Table 7. Ability

prairight	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	1	0.68	1	0.68
2	1	0.68	2	1.37
3	4	2.74	6	4.11
4	4	2.74	10	6.85
5	5	3.42	15	10.27
6	5	3.42	20	13.70
7	5	3.42	25	17.12
8	12	8.22	37	25.34
9	7	4.79	44	30.14
10	10	6.85	54	36.99
11	9	6.16	63	43.15
12	8	5.48	71	48.63
13	13	8.90	84	57.53
14	5	3.42	89	60.96
15	4	2.74	93	63.70
16	5	3.42	98	67.12
17	3	2.05	101	69.18
18	5	3.42	106	72.60
19	4	2.74	110	75.34
20	6	4.11	116	79.45
21	3	2.05	119	81.51
22	5	3.42	124	84.93
23	1	0.68	125	85.62
24	1	0.68	126	86.30
25	3	2.05	129	88.36
27	3	2.05	132	90.41
28	4	2.74	136	93.15
29	2	1.37	138	94.52
30	1	0.68	139	95.21
31	1	0.68	140	95.89
33	1	0.68	141	96.58
36	2	1.37	143	97.95
40	1	0.68	144	98.63
42	1	0.68	145	99.32
45	1	0.68	146	100.00

Table 8. Goal

fgoal	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	2	1.37	2	1.37
3	1	0.68	3	2.05
4	2	1.37	5	3.42
5	3	2.05	8	5.48
8	5	3.42	13	8.90
9	3	2.05	16	10.96
10	8	5.48	24	16.44
11	1	0.68	25	17.12
12	4	2.74	29	19.86
13	2	1.37	31	21.23
14	2	1.37	33	22.60
15	10	6.85	43	29.45
16	4	2.74	47	32.19
18	1	0.68	48	32.88
20	13	8.90	61	41.78
22	1	0.68	62	42.47
25	11	7.53	73	50.00
26	1	0.68	74	50.68
27	2	1.37	76	52.05
28	3	2.05	79	54.11
29	1	0.68	80	54.79
30	8	5.48	88	60.27
32	2	1.37	90	61.64
33	1	0.68	91	62.33
35	4	2.74	95	65.07
36	1	0.68	96	65.75
38	1	0.68	97	66.44
40	18	12.33	115	78.77
45	2	1.37	117	80.14
48	1	0.68	118	80.82
50	7	4.79	125	85.62
55	2	1.37	127	86.99
56	1	0.68	128	87.67
60	4	2.74	132	90.41
65	3	2.05	135	92.47
70	2	1.37	137	93.84
80	3	2.05	140	95.89
85	2	1.37	142	97.26
90	1	0.68	143	97.95
100	2	1.37	145	99.32
118	1	0.68	146	100.00

Table 9. Performance

fright	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	0.68	1	0.68
7	1	0.68	2	1.37
10	2	1.37	4	2.74
11	2	1.37	6	4.11
12	1	0.68	7	4.79
14	1	0.68	8	5.48
16	1	0.68	9	6.16
18	1	0.68	10	6.85
19	1	0.68	11	7.53
20	3	2.05	14	9.59
22	2	1.37	16	10.96
23	2	1.37	18	12.33
24	2	1.37	20	13.70
26	4	2.74	24	16.44
27	1	0.68	25	17.12
28	3	2.05	28	19.18
29	3	2.05	31	21.23
30	3	2.05	34	23.29
31	3	2.05	37	25.34
34	2	1.37	39	26.71
36	5	3.42	44	30.14
37	6	4.11	50	34.25
38	3	2.05	53	36.30
39	2	1.37	55	37.67
40	2	1.37	57	39.04
41	2	1.37	59	40.41
42	4	2.74	63	43.15
43	2	1.37	65	44.52
44	1	0.68	66	45.21
45	2	1.37	68	46.58
46	2	1.37	70	47.95
47	4	2.74	74	50.68
48	2	1.37	76	52.05
49	2	1.37	78	53.42
50	4	2.74	82	56.16
51	1	0.68	83	56.85
52	1	0.68	84	57.53
53	2	1.37	86	58.90
54	6	4.11	92	63.01
55	3	2.05	95	65.07
56	4	2.74	99	67.81
57	1	0.68	100	68.49
58	4	2.74	104	71.23
60	2	1.37	106	72.60
61	3	2.05	109	74.66
62	1	0.68	110	75.34
63	1	0.68	111	76.03
64	2	1.37	113	77.40
66	2	1.37	115	78.77
68	1	0.68	116	79.45
70	2	1.37	118	80.82
71	5	3.42	123	84.25
72	1	0.68	124	84.93
74	3	2.05	127	86.99
76	1	0.68	128	87.67
78	3	2.05	131	89.73
80	1	0.68	132	90.41
81	1	0.68	133	91.10
83	1	0.68	134	91.78
86	1	0.68	135	92.47
88	1	0.68	136	93.15
89	1	0.68	137	93.84

The positive side of PGO 78

91	1	0.68	138	94.52
92	1	0.68	139	95.21
94	1	0.68	140	95.89
95	1	0.68	141	96.58
96	1	0.68	142	97.26
103	1	0.68	143	97.95
113	1	0.68	144	98.63
118	1	0.68	145	99.32
130	1	0.68	146	100.00

APPENDIX G.

STEM-AND-LEAF AND BOX-PLOTS.

Figure 1. PGO

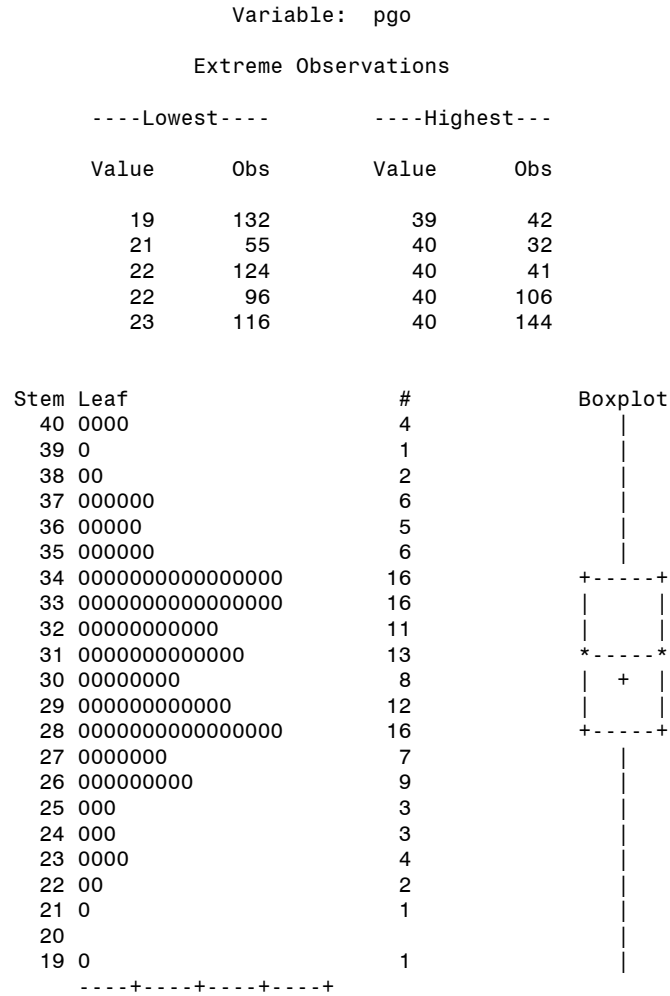
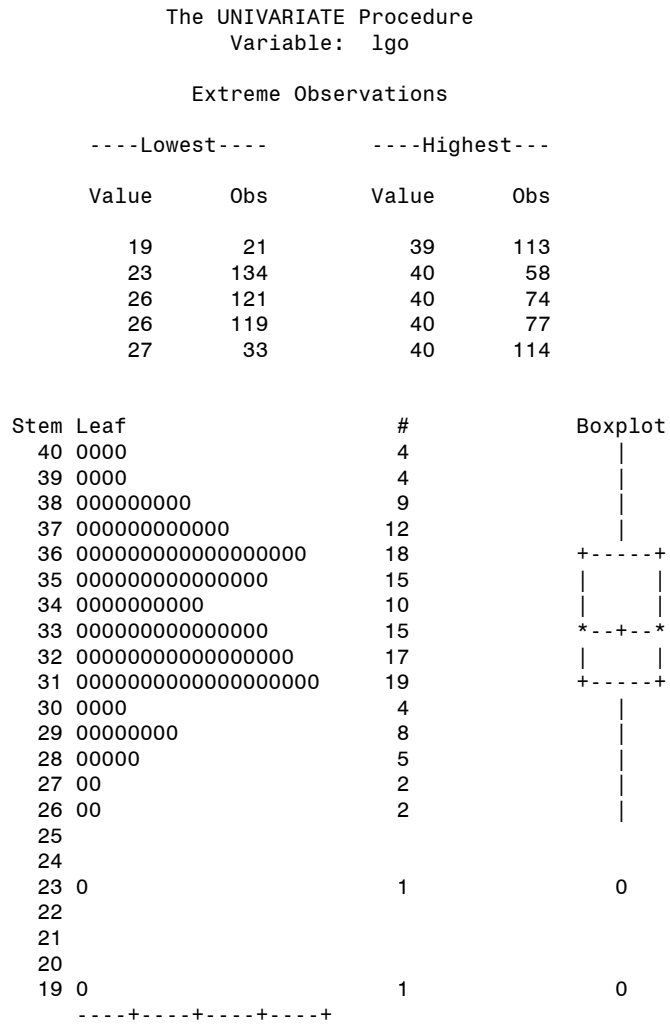


Figure 2. LGO



The positive side of PGO 82

APPENDIX H.

GOAL ORIENTATION ITEM INTERCORRELATIONS

The positive side of PGO 83

	pgo1	pgo2	pgo3	pgo4	pgo5	pgo6	pgo7	pgo8	lgo1	lgo2	lgo3	lgo4	lgo5	lgo6	lgo7	lgo8
pgo1	--															
pgo2	.40	--														
pgo3	.21	.34	--													
pgo4	.04	.12	.17	--												
pgo5	.07	.24	.16	.28	--											
pgo6	.17	.34	.21	.09	.11	--										
pgo7	.09	.34	.18	.21	.28	.31	--									
pgo8	.09	.28	.10	.14	.44	.13	.36	--								
lgo1	-.07	-.09	.00	.07	.09	-.02	-.11	.12	--							
lgo2	.05	.15	.15	.27	.14	.02	.08	.21	.37	--						
lgo3	-.08	-.05	.09	.20	.16	-.09	-.07	.07	.23	.23	--					
lgo4	-.01	-.14	.05	.23	-.01	-.05	-.03	.00	.35	.49	.37	--				
lgo5	-.03	-.23	-.02	.01	.07	-.18	-.22	.02	.40	.17	.39	.30	--			
lgo6	.00	.04	.16	.31	.18	.09	.16	.05	.31	.52	.35	.45	.30	--		
lgo7	.02	.00	.22	.33	.17	.09	-.04	.12	.40	.53	.32	.61	.33	.61	--	
lgo8	.06	-.06	.07	.01	-.01	-.01	-.09	.04	.14	.09	.31	.23	.32	.10	.00	--

Note. N = 146. PGO = Performance Goal Orientation. LGO = Learning Goal Orientation. Correlations $\geq .17$ are significant at the .05 level.

APPENDIX I.

EXPLORATORY FACTOR ANALYSIS FOR THE GOAL ORIENTATION ITEMS.

The positive side of PGO 85

The FACTOR Procedure

Rotation Method: Harris-Kaiser

Factor Weights for Rotation

Rotated Factor Pattern (Standardized Regression Coefficients)

	Factor1	Factor2
lgo7	0.79477	0.07237
lgo4	0.69646	-0.11874
lgo6	0.69097	0.14075
lgo2	0.63257	0.18795
lgo3	0.52500	-0.09543
lgo1	0.52137	-0.11797
lgo5	0.50472	-0.30912
pgo4	0.34744	0.29079
lgo8	0.31309	-0.11597
pgo2	-0.04478	0.67161
pgo7	-0.00932	0.59302
pgo8	0.16016	0.46567
pgo6	-0.01043	0.45092
pgo5	0.21952	0.43573
pgo3	0.16718	0.38576
pgo1	-0.01370	0.33751

APPENDIX J.

THE PGO X LGO INTERACTION EFFECT ON SE

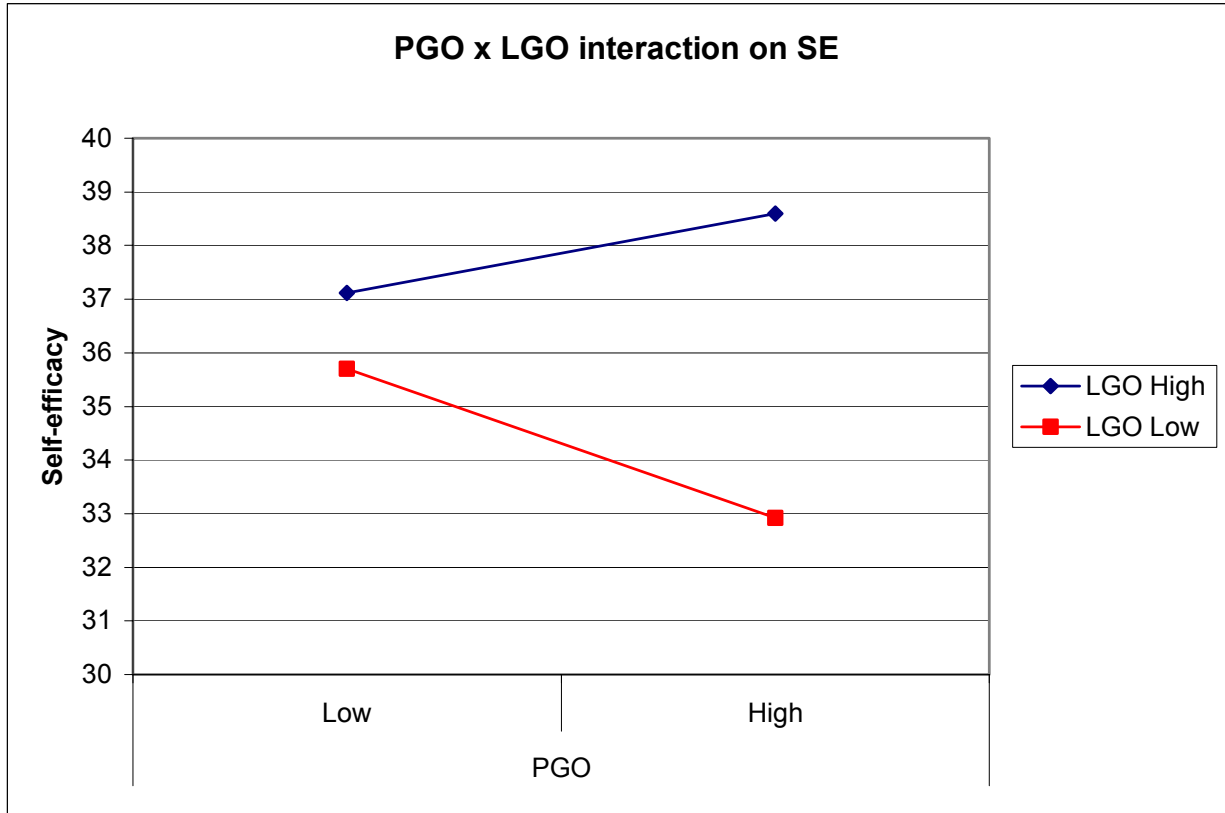


Table 1

Mean, Standard Deviations, Minimum, Maximum, Intercorrelations and Alpha Coefficients

Variable	M	SD	Min	Max	1	2	3	4	5	6	7	8	9
1. Gender	--	--	--	--	--								
2. Age	32.0	9.15	17	58	-.08	--							
3. Education	4.9	1.88	1	8	-.18*	.20*	--						
4. PGO	30.8	4.23	19	40	.20*	-.10	-.02	(.69)					
5. LGO	33.4	3.53	19	40	.01	-.13	.19*	.10	(.80)				
6. Ability	14.6	8.52	0	45	-.22*	.10	.26*	-.13	-.00	--			
7. SE	36.0	5.26	20	48	-.25*	-.01	.27*	-.01	.29*	.41*	(.83)		
8. Goal	31.4	22.39	0	118	-.20*	.02	.21*	-.09	.07	.84*	.46*	--	
9. Performance	49.4	23.5	6	130	-.14	.11	.23*	-.10	.03	.91*	.40*	.80*	--

Note. N = 146. Value on the diagonal represent α -reliabilities. PGO = Performance Goal Orientation. LGO = Learning Goal

Orientation. Ability = Performance at practice trial. SE = Self-efficacy. * denotes a correlation that is significant at the .05 level.

Table 2

Hierarchical regression analyses with performance as dependent variable

Values of b in the regression equation

Step	Intercept	Ability	SE	LGO	PGO	Se*PGO	Goal	\underline{R}^2	$\underline{\Delta R}^2$
1	.62	2.42***	.37*					.837	.837***
2	-4.77	2.44***	.35+	.077	.114			.838	.001
3	10.77	2.44***	-.074	.076	-.37	.013		.838	.000
4	18.83	2.21***	-.27	.051	-.53	.017	.11+	.841	.003

Note. $n = 146$ for all analyses. b = Unstandardized regression coefficient. SE = Self-efficacy. LGO = Learning Goal Orientation. PGO = Performance Goal Orientation. \underline{R}^2 = Proportion of variance accounted for by all predictors in the regression equation. $\underline{\Delta R}^2$ = The incremental variance accounted for by the predictor variables entered at each step.

*** $p < .001$; ** $p < .01$; * $p < .05$; + $p < .10$

Table 3

Hierarchical regression analyses with goals as dependent variable

Values of \underline{b} in the regression equations.

Step	Intercept	Ability	Self-efficacy	LGO	PGO	Se*PGO	\underline{R}^2	$\Delta \underline{R}^2$
1	-19.40	2.06 ^{***}	.58 ^{**}				.718	.718 ^{***}
2	-26.27	2.07 ^{***}	.52 [*]	.22	.04		.719	.001
3	-72.30	2.08 ^{***}	1.77	.22	1.47	-.039	.720	.001

Note. n = 146 for all analyses. \underline{b} = Unstandardized regression coefficient. SE = Self-efficacy. LGO = Learning Goal Orientation. PGO = Performance Goal Orientation. \underline{R}^2 = Proportion of variance accounted for by all predictors in the regression equation. $\Delta \underline{R}^2$ = The incremental variance accounted for by the predictor variables entered at each step.

*** p < .001; ** p < .01; * p < .05; + p < .10

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May 1997 **Psychology, statistics and methodology. 28 credits.**
The University of Iceland, Reykjavik, Iceland.

Jun 1995 **Teachers Credentials.**
The University of Iceland, Reykjavik, Iceland.

Oct 1994 **B.S. in Applied Physics.**
The University of Iceland.

Apr 1991 **Prüfung nach Deutsche Sprachkenntnisse, PNDS.**
Passed a standardized admission exam administered to test the knowledge of the German language. Passing this exam is required in order to pursue university studies in Germany.
Albert-Ludwigs-Universität Freiburg Im Breisgau. Freiburg, Germany.

Professional experience

Aug 2001 – Present **Research Assistant, Institutional Research and Planning Analysis, Virginia Tech.**

- Data analysis
- Preparation of graphs
- Quality Control
- Assistance in developing and administering a technology proficiency test.

Jun 2001 – Aug 2001 **Consultant at ANZA, Reykjavik, Iceland. 300 hours**

- Designed and organized the information flow between management and employees during a four-company merger.
- Managed the work on standardizing an employment contract for the employees of ANZA.
- Designed and negotiated the execution of a training program preparing employees for the merger.

Jun 2001	<p>Consultant at Mannafi (selection company), Iceland. 4 hours</p> <ul style="list-style-type: none"> ▪ Proposed a redesigned selection system for the company and its clients.
Dec 2000 – Jan 2001	<p>Consultant at Alit, Iceland, 46 hours</p> <ul style="list-style-type: none"> ▪ Reevaluated and redesigned employment contracts for Álit.
Aug 2000 – May 2001	<p>Recitation Instructor, Department of Psychology, Virginia Tech, Blacksburg VA.</p> <ul style="list-style-type: none"> ▪ Responsible for all elements of teaching two introductory to psychology recitations pr. semester, including lecture preparation and grading of tests and essays.
Sep 1999 – Jul 2000	<p>Indoor cycling instructor. Þokkabót Fitness Club. Reykjavik.</p>
Sep 1998 – Aug 2000	<p>Alit ehf. Director of Human Resources.</p> <ul style="list-style-type: none"> ▪ Employee recruitment, selection and hiring. ▪ Execution of an annual performance evaluation program, supervising service quality measurement and conducting a job satisfaction measurement. ▪ Developing and implementing an ambitious in-house training program for company employees. ▪ Planning of a company training institute which designs employee training programs for Alit customers. ▪ Various assignments: Project management, the making and maintenance of the Alit web site, quality control and marketing projects.
Aug 1997 – Aug 1998	<p>Research assistant for Professor dr. Sigrun Adalbjarnardottir, University of Iceland.</p> <ul style="list-style-type: none"> ▪ Responsibilities in the field of data processing and data analysis in addition to developing and co-authoring research articles and reports.
Aug 1997 – Jan 1998	<p>Teaching assistant for Associate Professor dr. Þorlakur Karlsson, University of Iceland.</p> <ul style="list-style-type: none"> ▪ Preparation and maintenance of Internet-based study material. ▪ Grading of computer-based and pencil & paper based tests and assignments.
Aug 1995 – Aug 1997	<p>Physics and Mathematics Teacher - Kvennaskólinn í Reykjavik Junior College</p> <ul style="list-style-type: none"> ▪ Mathematics: Basic calculus and trigonometry for students in a natural science concentration. ▪ Physics: Classical dynamics for students concentrating on natural sciences. ▪ Innovation and reorganization of physics curriculum, study material and student experiments. Organized renewal of laboratory equipment.
Oct 1989 – Sept 1990	<p>Office Clerk. Nes hf. Reykjavik Iceland.</p>
1986 – 1997	<p>Semi-Professional top-division soccer player.</p> <ul style="list-style-type: none"> ▪ National League Champion 1997 with IBV, Westman Islands. ▪ Cup runners-up 1996, 1997 with IBV, Westman Islands. ▪ Trophy for good sportsmanship 1995 and 1996 with IBV, Westman Islands. ▪ Division A games / goals: 101 / 34 ▪ Division B games / goals: 43 / 15 ▪ Cup games / goals: 23 / 7 ▪ European Championship games / goals: 6 / 0 ▪ U-21 International games / goals: 1 / 0 ▪ U-18 International games / goals: 3 / 0 ▪ Voted for 'Team of the year' by division A trainers 1991 ▪ The bronze shoe 1991 for being 3rd top goal scorer of division A with 12 goals in 18 games ▪ Voted for 'Team of the year' in Morgunblaðið Newspaper 1992 ▪ Division B top goal scorer in 1993, with 10 goals in 18 games
1983 – 1994	<p>Various summer jobs:</p> <ul style="list-style-type: none"> ▪ Journalist ▪ Taking care of pensioners on a nursing home in Stockholm, Sweden. ▪ Coaching junior soccer teams in Germany and Iceland ▪ Bank Cashier

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- Fish factory worker
 - Town worker
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Professional Affiliations

Society for Industrial and Organizational Psychology (Student Member).

Related Graduate Courses

Psychology	Industrial Psychology I, Organizational Psychology I and II, Social Psychology, Personality Processes, Learning Theory, Research Methods
Quantitative Courses	Statistics in Research I and II, Quantitative Topics in Applied Psychology, Psychometric Theory, Psychological Measuring, Seminar in Tests and Measurements

Language skills

Icelandic	Excellent writing and speaking abilities.
English	Excellent reading, very good speaking and writing abilities.
Norwegian	Very good reading, good speaking, fair writing abilities.
German	Good reading, fair speaking abilities.
Swedish	Good reading, fair speaking abilities.
Danish	Good reading abilities.

Computer skills

Operating Systems	Windows 95, 98, XP
Application Software	MS Word, MS Excel, MS Power Point, MS Outlook, MS Internet Explorer, Netscape.
Statistical packets	SAS, SPSS, BILOG, MULTILOG

Journal Articles

Adalbjarnardottir, S., & Hafsteinsson, L. G. (2001). (2001). Adolescents' perceived parenting styles and their substance use: Concurrent and longitudinal analyses. *Journal of Research on Adolescence, 11(4)*, 401-423.

Adalbjarnardottir, S., & Hafsteinsson, L. G. (1998). Tóbaksreykingar ungmenna: Tengsl við uppeldishætti foreldra og reykingar foreldra og vina (Adolescent tobacco smoking as related to parenting styles and the smoking of parents and peers). *Uppeldi og menntun, 7*, 83-98.

Conference Presentations

Adalbjarnardottir, S., & Hafsteinsson, L.G. (1999, april). Parenting styles and adolescent substance use: Concurrent and longitudinal analysis. Poster session presented at the Biennial meeting of the Society for Research in Child Development, Albuquerque, NM, USA.

Research Reports

Adalbjarnardottir, S., Rafnsson, F. D., & Hafsteinsson, L. G. (1999). Vímuefnaneysla ungmenna: Tengsl við árásgirni og andfélagslega hegðun (Adolescent substance use as related to aggression and antisocial behavior). Félagsvísindadeild, Háskóla Íslands. Research report, 40 pp.

Adalbjarnardottir, S., & Hafsteinsson, L. G. (1998). Áfengis- og fíkniefnaneysla reykivískra ungmenna: Tengsl við uppeldishætti foreldra (Adolescent alcohol and illicit drug use as related to parenting styles). Félagsvísindadeild, Háskóla Íslands. Research report, 45 pp. ISBN 9979-9357-0-7.

Adalbjarnardottir, S., & Hafsteinsson, L. G. (1998). Tóbaksreykingar unglunga: Tengsl við uppeldishætti foreldra og reykingar foreldra og vina (Adolescent tobacco smoking as related to parenting styles and the smoking of parents and peers). Félagsvísindadeild, Háskóla Íslands. Research report, 24 pp.

Rafnsson, F. D., Hafsteinsson, L. G., & Adalbjarnardottir, S. (1998). Tóbaksreykingar ungmenna: Tengsl við sjálfsmat, stjórnrot, depurð, félagslegan kvíða og streitu (Adolescent tobacco smoking as related to self-

esteem, perceived control, depression, social anxiety, and stress).
Félagsvísindadeild, Háskóla Íslands. Research report, 31 pp. ISBN 9979-9323-3-3.

Hafsteinsson, L. G., Rafnsson, F. D., & Adalbjarnardottir, S. (1998).
Áfengis- og fíkniefnaneysla ungmenna: Tengsl við sjálfsmat, stjórnrot, depurð og streitu (Adolescent alcohol and illicit drug use as related to self-esteem, perceived control, depression, and stress). Félagsvísindadeild, Háskóla Íslands. Research report, 35 pp. ISBN 9979-9323-4-1.
