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Working Harder, Working Smarter, or Doing Both? How the Interpretation of Combined Learning and Performance Goals Affects Complex Task Performance

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WORKING HARDER, WORKING SMARTER, OR DOING BOTH? HOW THE INTERPRETATION OF COMBINED LEARNING AND PERFORMANCE GOALS AFFECTS COMPLEX TASK PERFORMANCE

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by

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Abstract

Goal setting research has shown that on novel, complex tasks people perform better with learning goals than performance goals. In practice, people must often learn and perform at the same time to adapt to change. Does setting both types of goals simultaneously enhance complex task performance compared to singular goals? This dissertation consists of two studies – one qualitative and one quantitative – using a complex business simulation that examine setting simultaneous learning and performance goals ("combined goals") for highly complex tasks. The first study is a cognitive interview study where I examine how people interpret assigned singular goals (learning or performance) vs. combined goals at various difficulty levels. I examine 1.) how people understand the relationship between combined goals; 2.) how combined goals affect their behaviour; and 3.) the different ways people focus on combined goals. The second study is a laboratory experiment which examines how combined goals affect performance under dynamic conditions. I hypothesize that combined goals that emphasize learning more than performance will result in higher performance than singular goals or combined goals that emphasize performance.

The results of both studies suggest that regardless of the goals people are assigned, they focus on the performance goal more than the learning goal or both goals equally. Combined goals appear to have a strong goal hierarchy where performance goals are the dominant goal and learning goals are the background goal. In terms of task performance, as predicted people who consistently focus on both goals equally – particularly early in the task – perform better than those who switch or focus on only one. Also as predicted, assigned combined goals that emphasize learning over performance result in the highest performance. Overall, the results suggest that how people interpret combined goals within a goal hierarchy influences the goals they focus on which in turn influences task performance. This dissertation highlights the role of an individual's goal hierarchy in understanding how combined goals influence complex task performance. The concept of goal interpretation and the influence of goal hierarchy on goal focus have broader implications for understanding how and why other kinds of multiple goals impact performance.

Keywords

Goal setting, learning goals, performance goals, multiple goals, simultaneous goals, complex tasks, task performance, goal interpretation, goal hierarchy, goal focus

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1 Introduction

"The dreams which lure us into the adventures from which we learn are always at bottom the same. Science becomes dangerous only when it imagines that it has reached its goal. What is wrong with priests and popes is that instead of being apostles and saints, they are nothing but empirics who say "I know" instead of "I am learning.""

— George Bernard Shaw (1975)

In Preface to the play, The Doctor's Dilemma (1911), xc.

1.1 Why study multiple goals?

Given that goal setting is one of the most heavily researched topics in all of organizational behaviour (OB) with over a thousand published studies (Locke & Latham, 2013c; Miner, 2003), one might argue that the last thing the field needs is another goal setting dissertation, particularly one about conscious goals. If any area of OB research could be said to have "reached its goal", goal setting would be the most likely candidate.

Yet, if we are to keep science from being dangerous as Shaw cautions, we must always keep learning, even when it comes to a mature field like goal setting. Undoubtedly we know a tremendous amount about goal setting; however, even a mature literature has its empirical gaps and theoretical limitations. In the case of a managerial intervention as powerful and as universally applied as goal setting, those remaining gaps and limitations constitute important areas of inquiry nonetheless.

For a quarter of a century now, goal setting researchers have repeatedly called for research into multiple goals (Locke & Latham, 1990, 2002, 2006, 2013c); yet, this call has gone largely unheeded (Locke & Latham, 2013b). The topic of multiple goals raises fundamental questions about goal complexity: what happens when goals become more complex, when they go from singular to multiple? Does much of what we know about singular goals extend to multiple goals, or does the picture essentially change? Do the

known mechanisms by which singular goals function work the same way when there is more than one goal? There are a plethora of unanswered questions about the common phenomenon of multiple goals.

These are important questions for goal setting theory because the evidence is mounting that the phenomenon of multiple goals may be more common than previously recognized. For instance, goal setting researchers now recognize the fact that people can set personal goals in addition to assigned goals, even in a laboratory setting (Masuda, Locke, & Williams, 2014). In fact, these self-set goals can actually be a different goal type than the goal assigned (Seijts & Latham, 2011). Furthermore, setting personal goals in addition to assigned goals also happens spontaneously in organizations (Porter & Latham, 2013). Consequently, it may be that truly singular goals - where people pursue one and only one goal on the same task at a time – are rare, even in laboratory studies intended to study singular goals. Given the complexity of goals in organizations (Donde, Dennis, Reuben, & McDaniel, 2000), and the promotion of multiple goal based techniques such as the balanced scorecard (Kaplan & Norton, 1995), singular goals may be rarer still in organizational settings. It is therefore no wonder that research into multiple goals has long been and continues to be considered a high priority area for goal setting research.

Importantly, however, the concept of multiple goals presents a key theoretical challenge to goal setting theory. Goal setting theory argues that one of the main goal mechanisms by which goals function is goal focus (Locke & Latham, 1990). According to the theory, a goal increases performance over no goal because the goal serves to direct or focus attention on the goal content (Locke & Latham, 1990). Goal setting theory further argues that goals work because they result in non-goal areas being ignored (Latham & Locke, 2013). As Latham and Locke argue, “goal setting results in a singleness of purpose” (Latham & Locke, 2013, p. 572). In fact, that goals result in non-goal areas being ignored is one of the main concerns of critics of the wide-spread practice of goal setting in organizations (Ordóñez, Schweitzer, Galinsky, & Bazerman, 2009a).

This concept of goal focus becomes critically important to understand as goal setting research moves from investigating primarily singular goals to examining multiple goals.

Specifically, does this "singleness of purpose" (Latham & Locke, 2013, p. 572) persist in the case of multiple goals? If yes, how is the goal that is focused on determined? If there is only a single goal focus, are there in fact multiple goals? Alternatively, if this "singleness of purpose" does not persist, how does goal focus operate when there are multiple possible purposes rather than just one: simultaneously, sequentially, alternatingly? Do different people focus on multiple goals the same way? The bottom line is that multiple goals are clearly more complex than singular goals.

With its "singleness of purpose" (Latham & Locke, 2013, p. 572) explanation about how goal focus operates, goal setting theory therefore faces a conundrum when it comes to explaining how the key mechanism of goal focus works when goals are more complex. Whereas the object of goal focus is clear in the case of singular goals, the object(s) of goal focus is less clear in the case of multiple goals. Conceivably, this means that individuals with the same assigned multiple goals could focus on different goal(s), or focus on the goals in different patterns over time. Multiple goal researchers have recently developed a typology of multiple goals which outlines the various relationships between multiple goals (Sun & Frese, 2013). Despite this typology, there is little by way of theoretical explanations or empirical investigations into how the mechanism of goal focus works in complex goals. The research that has examined this has focused on multitasking - how people manage goals across several tasks.

This dissertation explores the question of what happens to goal focus when goals are complex, specifically when there are multiple goals in relation to only one task. I develop and test a deductively derived conceptual model - informed by the current literature - of how goal focus is determined through a process of goal interpretation. To do this, I have selected the case of simultaneously assigned learning and performance goals as a simple but practically relevant example of a multiple goal. The possibility of combining learning and performance goals is a topic which goal setting researchers have long argued is important to empirically examine (Locke & Latham, 2002, 2006, 2013b, 2015; Seijts & Latham, 2005, 2006, 2012), but about which only one study has been published to the best of my knowledge (Masuda et al., 2014) . Additionally, this dissertation articulates several important implications of multiple goals generally – as

well as combined learning and performance goals specifically - to both goal setting theory and to goal setting practice. In particular, this dissertation introduces the process of goal interpretation as a way of explaining how people understand combined learning and performance goals, how it influences the goal(s) they focus on, and ultimately how combined learning and performance goals influence complex task performance.

The following section outlines the purpose and benefits of studying combined learning and performance goals. In addition to being a specific case of multiple goals to examine, there are several important reasons to study combined learning and performance goals.

1.2 Why study combined learning and performance goals?

1.2.1 Business context

Today's business environment is a moving target. We live and work in a "world in flux" (Ignatius, 2013, p. 12) which brings with it a myriad of new challenges for business leaders and employees. In today's turbulent times, the ability for people to continually adapt is considered a business imperative (Ignatius, 2013). Quite simply, "the world of work in the 21st century is characterized by ever-changing dynamic environments" (Latham, 2012, p. 143). Consequently, organizational members across a broad range of industries face the reality of having to respond to the ever-changing demands of our work world.

Business success today, therefore, means meeting competitive goals in the context of continuous change (McGrath, 2013). Though the times are always changing, goals must still be met. While change can bring both threats and opportunities, what is certain is that contextual change – or dynamic complexity - necessarily renders tasks more complex (Campbell, 1988; Wood, 1986). Dynamic complexity reflects "changes in the states of the world which have an effect on the relationships between task inputs and products" (Wood, 1986, p. 71). In other words, dynamic complexity makes the relationship between how a task is accomplished and the outcome produced less predictable.

Because a dynamic context makes completing tasks more complex, it also makes successfully achieving task goals more difficult (Locke & Latham, 1990). Thus, how well

organizational members manage task complexity is pivotal to predicting how change will affect outcomes. Though their targets may be constantly moving, people must nevertheless figure out a way to hit them or face failure.

1.2.2 Learning goals

One way for people to cope with the need to hit moving targets is to learn. A changing environment prompts the need to acquire new knowledge and skills that have become relevant to the task at hand (Audia, Locke, & Smith, 2000; Wood, 1986). Learning is a process through which people develop new abilities and is typically defined in the management literature as "a relatively permanent change in knowledge or skill produced by experience" (Weiss, 1990, p. 172). But, how do you learn to hit a moving target when you are also under pressure to hit it? How do people succeed at both learning highly complex tasks and achieving difficult goals in the face of constant change?

One answer that has emerged in the goal setting literature for how to effectively cope with highly complex tasks is to set learning goals instead of performance goals. Unlike performance goals which focus people on the achievement of a specific outcome, learning goals are process oriented and focus people on the identification of effective strategies that will contribute to a particular outcome (Winters & Latham, 1996). For example, whereas a performance goal is asking someone to hit the bull's eye on a moving target three times in a row, a learning goal is asking someone to identify and implement three strategies that will help them hit the target.

Learning goals are effective because they prompt adaptive behaviours such as planning, information search, and strategy development that lead to learning and ability acquisition over time (Seijts & Latham, 2001; Seijts, Latham, Tasa, & Latham, 2004; Winters & Latham, 1996). Although performance goals also affect strategy search, they do so by prompting effort or motivation rather than cognition and are therefore less effective when learning new strategies is required rather than activating ones already known (Earley, Connolly, & Ekegren, 1989; Earley, Connolly, & Lee, 1989; Wood & Locke, 1990). Since the effects of learning goals are primarily cognitive, learning goals are effective for

developing the knowledge and skills required to succeed at new complex tasks. In short, learning goals prompt people to work smarter.

1.2.3 Performance goals

Contrastingly, performance goals influence motivational processes by increasing a person's attention, effort, and persistence towards the desired outcome (Locke & Latham, 1990, 2004). This approach is effective on relatively simple tasks – like hitting a fixed target - where the required strategies for success are already known. When the task becomes more complex – like when the target starts to move - the existing strategies are no longer effective and performance goals typically cease to enhance task performance. By focusing attention on outcome attainment rather than strategy development, performance goals tend to result in a less systematic and less effective strategy development process. For example, in the pressure to meet the desired outcome, people can resort to an ineffective approach to strategy development which results in lower quality strategy use (Cianci, Klein, & Seijts, 2010; Seijts et al., 2004).

While performance goals are effective at prompting people to work harder, the outcome focused rather than learning focused approach they trigger results in less effective strategies and hence lower performance. A meta-analysis of learning versus performance goal studies showed that the effectiveness of learning goals over performance goals increases as the task becomes more complex (Seijts, Latham, & Woodwark, 2013). Collectively, studies suggest that performance goals prompt people to work harder but can prevent them from working smarter. Thus, for people who have yet to acquire the knowledge and skills to complete a highly complex task successfully, learning goals are more effective at enhancing performance than performance goals. When we still need to learn, working smarter is more effective than working harder.

1.2.4 Sequential argument

Goal setting researchers have therefore argued that once a person has acquired the necessary knowledge and skills to successfully complete a task, learning goals should be replaced by performance goals in order to maximize performance (Seijts & Latham, 2005, 2012). This argument is made for two reasons. Firstly, by setting performance

goals only after ability has been acquired, people can focus their attentional resources on effective strategy development and avoid the unsystematic strategy search for that can be brought on by performance pressure (Seijts & Latham, 2005, 2012). A sequential approach of learning goals followed by performance goals therefore adjusts goal type to the appropriate stage of ability development. Once people have learned new knowledge and skills through experience, they can apply them to the task at hand.

Secondly, once the required new knowledge and skills have been acquired, learning goals are no longer necessary. In fact, at this stage learning goals may even be detrimental to performance because they are distracting rather than motivating (Brown & Latham, 2002). Instead, once the requisite ability has been developed, task performance will be predicted by motivational factors like effort and persistence rather than learning. Hence, learning mechanisms should be activated first followed by motivational mechanisms after ability has been acquired.

In summary, the current recommendation in the goal setting literature for maximizing performance on a highly complex task requiring learning is first to set a specific high learning goal followed second by a specific high performance goal once learning is complete (Seijts & Latham, 2005, 2012). This proposed sequential approach, however, has not been empirically tested with assigned goals, however, only with achievement goals (Miron-Spektor & Beenen, 2015).

1.2.5 Simultaneous argument

Because environmental changes trigger the need to learn, researchers have argued that learning goals are particularly advantageous under changing conditions (Seijts & Latham, 2005, 2012). If today's business climate is characterized by continuous – and sometimes dramatic - change, then the need to learn is also continuous. In this context, the use of learning goals may therefore always be warranted to ensure that strategies continue to be revised and developed. Without continuous learning, people may perpetuate the use of ineffective strategies and fail to adopt effective new ones. Hence, an on-going focus on learning goals may always be justified in today's business environment.

In this context, what is the role of performance goals? Are they no longer relevant or beneficial? If people need to finish learning before performance goals are appropriate, but environmental change requires that we never stop learning, then when – if ever – are performance goals applicable? Can complex task performance under dynamic conditions ever improve by also working harder while we continue to work smarter?

To date, the literature has focused on the relative effect of setting learning goals versus performance goals, an 'either-or' examination that compares the benefit of learning versus motivational mechanisms on task performance. One of the purposes of this dissertation is to examine the largely unexplored possibility that "[learning and performance goals] may even work better when they are combined" (Locke & Latham, 2013b, p. 625), that is when they are used simultaneously in relation to the same task. The key question is whether, by triggering both learning and motivational mechanisms at once, simultaneously combining learning and performance goals changes performance compared to a learning goal alone on a highly complex individual task. In other words, can working harder at the same time ever enhance the effect of working smarter?

It is important to note that the scope of this dissertation is limited to conscious, assigned goals. This focus is appropriate because these goals are more controllable than subconscious goals and are therefore more managerially relevant. If learning and performance goals can work better in combination, it is important for managers to know in order to set goals that will maximize task performance. Notably, only one study on combined learning and performance goals has been published to date in the management literature (Masuda et al., 2014).

The real-world need to understand the implications and effects of combined learning and performance goals (hereinafter "combined goals") in organizations is important for many reasons. Firstly, while research has shown that learning and performance goals are distinct, it is unclear whether they are distinct in their organizational use. There is mounting evidence that organizations may already use combined goals. For example, Latham and Locke observed that when Jack Welch was CEO of General Electric he required employees to pursue high learning as well as high performance goals, an

approach which has been credited with the organization's strong performance under his leadership (Latham & Locke, 2007). More recently, a field study conducted during the economic turbulence of the financial crisis found that companies' use of learning and performance goals were highly correlated (Porter & Latham, 2013). This suggests that in practice learning and performance goals may be less distinct in their usage than they have been in research. Nonetheless, in order to remain relevant, goal setting research must examine the effects of goals as they are applied in practice.

Findings that learning and performance goals are used simultaneously likely reflect the fact that in organizational life people regularly face the need to both learn and perform at the same time, and often in relation to the same task. Even when people face new and complex tasks where the need to learn is most salient, they are often required to meet minimum performance standards at the same time. For example, when new employees make development plans we know they should set learning goals to assist with mastering novel tasks. Typically, however, employees must also set performance goals in relation to those same novel tasks. Thus, having combined goals that explicitly reflect the need for both types of goals may be more effective than goals that focus on one goal type but overlook the other.

Secondly, in addition to being under constant pressure to adapt to change, organizations and employees are also under constant pressure to perform. While the literature recommends setting learning goals first and performance goals second, that may be a practically challenging recommendation. Switching from learning goals to performance goals means managers need to be able to identify when learning is complete enough to switch. But even the most masterful performer can continue to raise the bar and find better ways of doing things, so learning is rarely truly complete. Furthermore, although learning goals are more effective than performance goals on complex tasks, this is partly due to the fact that people in learning goal conditions can take longer to complete the task due to more extensive information searching (Seijts et al., 2004). Therefore, due to time and performance pressures, organizations may simply not have the luxury of setting only learning goals without accompanying performance goals even if they recognize that

substantial learning is required. Consequently, organizations often face the need to meet both learning and performance demands simultaneously.

Thirdly, there are strong reasons to expect that adding a performance goal to a learning goal may enhance performance. Although learning goals focus people on the process of effective strategy development, people must rely on performance feedback to assess whether their strategies are effective or not (Seijts et al., 2013). In the absence of a performance goal, the 'effectiveness' of strategies is difficult if not impossible to evaluate clearly. This is because judging the effectiveness of strategies is fundamentally dependent upon performance feedback. Without a specific target to compare their performance to, people cannot assess whether a strategy is effective enough to meet expectations. Consequently, a performance goal may serve as a reference point to evaluate whether learning is sufficient to meet expectations.

Furthermore, adding a performance goal to a learning goal may have affective as well as motivational impacts. In the presence of a performance goal to which they are committed, people will focus more effort on the task and persevere longer than they would otherwise, thereby achieving higher performance. Part of the reason why performance goals are motivating, however, is that people enjoy meeting goals (Plemmons & Weiss, 2013). Goal attainment satisfies needs such as the need for achievement and positive self-evaluation (Bandura & Locke, 2003). Thus, performance may improve by adding a performance goal because it provides a sense of accomplishment as well as the accompanying positive affect and self-evaluation that a learning goal may not.

A combined goal, therefore, may allow people to better appreciate their accomplishments. This may be particularly true of high ability individuals since the positive effect of learning goals on task performance may be lower in high ability individuals (Latham, Seijts, & Crim, 2008). High ability individuals may perform better in a performance goal condition because they are able to learn the task effectively on their own without a learning goal (Seijts & Crim, 2009), or because they may find a

learning goal demotivating. For those individuals, then, a combined goal may result in higher performance than a single learning goal.

Reasons such as these may be behind an unexplained finding relevant to the subject of combined goals: the tendency to self-set a performance goal when only a learning goal is assigned. In addition to assigned goals, goal setting researchers recognize that people can also have self-set goals (Locke & Latham, 1990). For example, if an assigned goal is perceived as too challenging, an employee may set a slightly lower goal instead. On the other hand, if the assigned goal is too easy, an employee may set a higher goal. Typically, a self-set goal simply revises the difficulty level of the assigned goal to adjust for current performance. Self-set goals are therefore highly predictive of task performance (Locke & Latham, 1990; Masuda et al., 2014; Seijts & Latham, 2011) .

Research shows that self-set goals can also be the opposite goal type from the assigned goal. For example, in the case of an assigned learning goal, a self-set goal may actually be a performance goal. In an experimental study, Seijts and Latham reported a serendipitous finding that "75% of participants self-set a performance goal even though they were committed to a learning goal" (2011, p. 201). In that study, the correlation between self-set goals and performance was positive and significant (r=0.31, p<0.001) (Seijts & Latham, 2011).

The prevalence of self-setting a performance goal while committed to a learning goal suggests that the self-set performance goal may serve a distinct function from that of the assigned learning goal. It also suggests a natural inclination for the two goal types to be combined. More importantly, however, the finding obtained by Seijts and Latham suggests that "people are able to keep in mind their desired performance level even when their primary focus is on a learning goal, and they can do so without hurting task mastery" (2011, p. 201). This finding suggests that when learning and performance goals are combined the normally detrimental effects of a performance goal may not necessarily outweigh the beneficial effects of a learning goal on task performance. Whether this is the case when the performance goal is assigned rather than self-set is an empirical question.

Finally, in the one exploratory study published in the management literature examining the effects of combined goals on individual task performance (Masuda et al., 2014) initial support was found for the effectiveness of combined goals. Using a moderately complex Excel task where participants were provided with a list of effective task strategies to implement, Masuda et al. examined the effects of goal type (learning vs. performance) and goal difficulty level (specific difficult, do best, no goal) in a four-trials repeated measures experimental design. The results showed that performance was higher when a combined goal was set rather than only a learning goal, except when both goals were at the specific, difficult level. Because Masuda et al.'s study used a moderately complex task and only required participants to implement already identified strategies, the question of whether assigning combined goals is beneficial or detrimental to performance on a highly complex task where one must both identify and implement strategies remains unanswered. Masuda et al.'s results, however, support that further research on the effects of combined goals is warranted.

Consequently, for all the above reasons, there is strong justification for exploring the effects of combined goals on highly complex tasks. In a dynamically complex work environment where many employees face high task complexity and high learning demands, and where employees are faced with the expectation to both learn and perform simultaneously, it is vital to understand how the two goal types affect task performance so that recommendations for their effective combination – or separation – can be developed based on empirical evidence. Finally, it is appropriate to examine the effects of combined goals first on individual tasks so that their effects at that level can be understood before examining their effects at higher levels of analysis.

1.3 Theoretical implications of combined goals

The topic of combined goals presents interesting theoretical questions that are rarely raised in goal setting research because the emphasis has been on singular goals (Austin & Vancouver, 1996). The limited empirical work on other types of multiple goals has examined the topic of multiple goals primarily in relation to multiple tasks. This line of research has brought to light cognitive practices specifically related to multitasking like task prioritization and the allocation of time and effort to each goal task (i.e. trade-offs)

(Emsley, 2003; Kernan & Lord, 1990; Northcraft, Schmidt, & Ashford, 2011). The research has shown that there are cognitive practices that occur with multiple goals that do not occur with singular goals, such as prioritizing, sequencing, and making trade-offs between tasks (Sun & Frese, 2013).

Studies related to multiple goals, however, tend to be one-offs that examine a specific phenomenon (e.g. trade-offs). Consequently, there is little theory based on programmatic research that addresses the conceptual consequences for goal setting theory of multiple goals compared to singular goals. This is a limitation since we know there are practices like prioritization and trade-offs of time and effort that are unique to multiple goals. It is also a limitation because, as outlined above, it is unclear how the mechanism of goal focus functions in the case of multiple goals. Given these gaps in our understanding of how multiple goals affect performance, the lack of theory about multiple goals is particularly concerning since they characterize many - if not most - people's work lives. This reality is why the need for research on multiple goals is deemed so pressing (Locke & Latham, 2013b). The question is how can we extend goal setting theory to explain the common phenomenon of multiple goals? We know that multiple goals present important new considerations, but how do we incorporate those theoretically?

1.3.1 Goal interpretation process

Accordingly, I argue that there is a need to develop theory that addresses the issues raised by multiple goals. Specifically, I argue that in the case of multiple goals there is a cognitive process of goal interpretation that must occur which incorporates the practices that are unique to multiple goals. Because a combined goal in relation to the same task constitutes a simple case of a multiple goal, combined goals present the opportunity to examine whether a goal interpretation process occurs and, if so, to illustrate it. Thus, this dissertation examines the proposed goal interpretation process on an exploratory basis. The initial conceptual model is informed by the current literature and is outlined at the beginning of chapter three. By way of introduction, the key arguments of the conceptual model are briefly outlined here.

I argue that typically in goal setting research goal interpretation is not apparent because specific singular goals create high goal clarity. A specific single goal eliminates ambiguity about the goal, so there is little variance in its interpretation. This is partly why specific difficult goals result in higher performance than do best goals: because there is less variance in performance since the target is objectively clear rather than subjectively defined. Thus, specific difficult goals result in lower variance in performance than 'do your best' goals do because they provide more clarity about expectations (Locke & Latham, 1990). In fact, specific singular goals create so much goal clarity that they are considered strong situations that negate the impact of individual differences which might otherwise prompt differences in goal interpretation (Adler & Weiss, 1988).

Multiple goals inherently present people with more choices about how to pursue their goals than singular goals do. For instance, in the case of a combined goal people can chose to focus on one goal but *not* the other, to focus on one goal and *then* the other, to focus on both goals equally at the same time, or to adjust their goal focus over time as they go through the task. The specific approach people select will depend on how they interpret the combined goal. Thus, combined goals, like multiple goals in general, likely do not result in the same uniform approach that singular goals do (Kernan & Lord, 1990). Furthermore, under dynamic conditions, multiple goals also raise the issue of how people's interpretations of their combined goals may change over time.

Understanding how people interpret their combined goal is important because it can effectively alter the goal(s) a person actually pursues from the ones originally assigned. For example, if a person believes that only one of the two goals in a combined goal is important, then the person will only focus on only one of the goals and effectively have a singular goal instead of a combined one. Goal interpretation, in other words, can alter a person's actual goal condition compared to the assigned one due to different degrees of overlap between the goal assigned and the mental representation of the goal that the individual develops and then acts on (Austin & Vancouver, 1996).

Even if both of the assigned goals are pursued, however, differences in the sequence in which the combined goals are pursued (as well as any changes across time) mean that the same combined goal condition may not have the same effect across individuals. Consequently, understanding people's interpretations of combined goals and how they change over time is important to understanding the effect of combined goals on task performance since those differences can effectively alter the goal condition people act on. In short, assigned goal conditions alone may not tell the whole story of the effect of combined goals on complex task performance due to differences in goal interpretation.

It is important to understand the sources of any differences in goal interpretation. For instance, we know that multiple goals introduce the possibility of goal conflict because they require managers to prioritize and make trade-offs (Edmister & Locke, 1987; Emsley, 2003). Goal conflict complicates decision-making, which can lead people with multiple goals to experience increased tension (Emsley, 2003). Consequently, in several studies multiple goals have been associated with significant deterioration in performance (Emsley, 2003; Locke, Smith, Erez, Chah, & Schaffer, 1994; Yearta, Maitlis, & Briner, 1995). Some goals, however, can be mutually supportive rather than conflicting, so making progress on one goal contributes to progress on another too (Sun & Frese, 2013). Proximal and distal goals are an example of this type of multiple goal. Thus, a person's understanding of the nature of the relationship between multiple goals may be an important aspect of how multiple goals are interpreted (Austin & Vancouver, 1996).

The characteristics of the individual pursuing multiple goals may impact goal interpretation as well (Sheldon & Emmons, 1995). Whereas singular goals create strong situations, multiple goal conditions (including combined goals) may not. This is because multiple goals are more ambiguous and less clear than singular goals (Emsley, 2003; Kernan & Lord, 1990). Thus, individual difference variables may also affect how multiple goals are interpreted. For example, in the case of combined goals, people must decide whether to pursue both the learning goal and the performance goal, whether to do so simultaneously or in sequence, and whether to change their approach over time. Because all these sources of variation do not occur for singular goals, combined goals should be more strongly influenced by individual difference variables than singular goals.

In light of the important differences between singular and multiple goals, research into the effects of combined goals on task performance must consider the effect of goal interpretation and individual differences. Based on existing theory and my findings from study one, I develop a theoretical framework to understand how combined goals lead to goal interpretation, how individual difference variables may influence combined goal interpretations, and how goal interpretation differences may affect highly complex task performance.

1.4 Overview of studies and research questions

This dissertation consists of two studies using two different methods: cognitive interviews and a laboratory experiment. In both studies participants are senior business undergraduate students who complete a highly complex, repeated measures, computer-based business simulation task based on the early development of the cellular phone industry in the US (Perspectives Visuals & Audia, 1997). Participants play the role of the CEO of a cellular phone company and have to identify and implement effective strategies to increase the company's market share. Over the 13 rounds, there is substantial environmental change in the task environment. Most importantly, the regulatory restrictions in the market are lifted after round eight. As a result, the strategies that are effective in increasing market share change throughout the task. Consequently, participants must continue to learn new effective strategies throughout the simulation in order to be successful.

1.4.1 Study one: Cognitive interview study

This study used a cognitive interview technique to explore in detail how combined goals are understood. This method allowed me to explore how participants pursued their goals and why they selected the manner they did. Participants were randomly assigned to one of six goal conditions, two of which were specific difficult singular goals (learning vs. performance) and four of which were combined goals of different difficulty combinations (do best vs. specific difficult).

The purpose of the study was twofold. Firstly, the interviews allowed me to investigate in-depth how people understood combined goals, whether there was evidence that a goal

interpretation process occurred, whether goal interpretation changed over time, and how goal interpretation influenced the way participants approached the task. It also allowed me to identify factors that influenced goal interpretation. Secondly, the results of study one were used to identify required changes to the design, method and instruments of the proposed study two before it was conducted. Thus study one served as a pilot for the laboratory experiment. The methodology and findings of study one are reported in chapter three.

1.4.1.1 Study one research questions

In addition to any required design changes for study two, the research questions for study one were as follows:

- How do people with combined goals understand the relationship between the two goals? Does it vary between-individuals?
- Do people have different interpretations of combined goals? If so, what are they? How do different interpretations affect the goals people focus on when they have assigned combined goals?
- Do the approaches people take to their combined goals change over time as they go through the task? If so, what are the factors that trigger those changes? Are there common patterns that emerge? In particular, how does environmental change relate to any changes in how people approach their combined goal?
- What are the mechanisms that operate when people have combined goals? Is there anything different between singular and multiple goals? Do different combined goals have different effects on people?

1.4.2 Study two: Laboratory experiment

The primary purpose of the proposed laboratory experiment was to examine the effect of singular versus combined goals of varying difficulty combinations on complex task performance. A laboratory experiment was appropriate because the effects of different combined goals on task performance could be isolated and measured objectively. Furthermore, since the study employs a managerially relevant and realistic decision-making simulation task along with participants who are trained for such tasks, and

because goal setting research conducted in a laboratory typically shows high generalizability to field contexts (Locke, 1986), the findings from this study are expected to generalize to field settings. As in study one, participants completed the simulation task after being randomly assigned to one of the same six goal conditions. The secondary purpose of this study is to examine how goal interpretation varies and how it affects task performance.

1.4.2.1 Study two research questions

The laboratory experiment was designed to answer the following research questions:

- On a complex and dynamic task requiring learning, does a combined goal increase or decrease task performance compared to having a singular learning goal?
- If a combined goal can be beneficial to performance, which difficulty level of combined goals results in the highest performance?
- If a combined goal can be detrimental to performance, which difficulty level of combined goals results in the lowest performance?
- What goal(s) do people with combined goals focus on? Does it change throughout the task? How does goal focus influence task performance?
- Does goal interpretation influence the effect of a combined goal on task performance? How?

1.5 Contributions

First and foremost, this dissertation contributes to our understanding of combined learning and performance goals and their effects on complex task performance. As one of the first studies on combined goals - and the first using a dynamically complex task where the need to learn is on-going - this dissertation contributes to the literature on goal setting both in theory and in practice. It responds to a call from goal setting researchers to investigate the effects of combined goals (Latham & Locke, 2007; Locke & Latham, 2002, 2006). Because of the two different methods used – one quantitative and one qualitative – this dissertation provides an in-depth examination of the topic of combined

goals. Together, the two studies allow me to explain not only the effects of combined goals on performance, but also provide more insight into why they have such effects. As a specific case of multiple goals, this dissertation also contributes more broadly to the literature on multiple goals which, despite almost a quarter of a century of repeated calls for research attention, remains a poorly understood everyday reality in today's work world.

1.5.1 Theoretical

Although the possibility of combined goals has long been considered, researchers have not outlined why the use of combined goals may be justified. I argue that the context most relevant to the use of combined goals is a dynamically complex one where the need for learning is ongoing. Because this characterizes the work world of the 21st century (Latham, 2012), this context is not only theoretically appropriate but practically relevant as well. Thus, I provide a theoretical rationale for the potential use of combined goals that is pertinent to the contemporary work world, and therefore highlight why combined goals is an important topic for future research.

My primary theoretical contribution is to articulate the ways in which the effects of combined goals differ from those of singular goals, why this is so, and the implications of these differences. I examine how people understand the relationship between learning goals and performance goals when they are assigned together. I introduce the concept of goal interpretation to explain why the way in which people pursue combined goals varies more than with singular goals, and to explain how this variation occurs. In my theoretical framework, I outline the dimensions of goal interpretation that influence how combined goals are interpreted. I also demonstrate how goal focus varies between-individuals and across time. Further, I relate these different goal focus patterns to task performance on a highly complex dynamic task. Overall, I provide a theoretical framework to understand the phenomenon of combined goals which posits that goal interpretation mediates the relationship between the combined goals that are assigned and the effective goals that are actually pursued. The framework argues that the effective goals will be more predictive of task performance than the assigned goals due to the goal interpretation process.

I also contribute more broadly to the literature on multiple goals by explaining why they are unlikely to be strong situations in the way that specific singular goals are. My theoretical framework argues that individual difference variables may moderate the relationship between goal interpretation and the effective goal(s) pursued. This is important to the study of multiple goals because it suggests that individual differences play a more important role than they do with singular goals. Since multiple goals are prevalent in organizations but most goal setting research has focused on singular goals, this further suggests that the role that individual difference variables play in the effects of goals in practice may be more important than previously recognized.

1.5.2 Practical

Coping with high dynamic task complexity, as well as the demands of multiple goals, are real challenges in today's business environment. The question of how to facilitate the constant learning required under dynamic conditions while simultaneously maximizing performance is an important question for employees, managers and organizations. This dissertation examines a largely unstudied but potentially powerful option – combined learning and performance goals – that may help practitioners do just that. Understanding the effect of combined goals on performance is an important practical question because setting combined goals may be more feasible and more appropriate for a dynamic environment than setting sequential learning and performance goals. Thus, understanding whether the potential benefits of combined goals are outweighed by the known benefits of singular learning goals is an important question for the organizational practice of goal setting. The results of the second study answer this question overall. They also provide guidance about the most effective combined goal difficultly levels, as well as combinations to be avoided to prevent performance deterioration. To the extent that combined goals are actually in organizational use now, the results of this study show whether that practice should be continued – and how best to do so – or discontinued depending on the particular combined goal in question.

Moreover, the results of these studies show the importance of understanding goal interpretation in relation to multiple goals like combined goals. This information will help managers recognize the need to manage employee goal interpretations in order to

support the effectiveness of multiple assigned goals. In the battle to cope with dynamic complexity in the workplace to remain competitive, today's businesses have a need for learning as well as performance goals. To make both kinds of goals effective, however, managers need to understand how employees perceive learning goals versus performance goals so a balance can be struck between the two imperatives.

Overall, the results of this dissertation provide insights and clear recommendations for an issue that is faced by managers in organizations on a daily basis: how best to promote high performance levels on dynamically complex tasks while still enabling high levels of learning through the use of goal setting, specifically combined goals.

1.6 Outline

Having laid out the rationale for studying combined goals and the specific research questions, the remainder of this dissertation is structured as follows. Chapter two reviews the relevant literatures in relation to combined goals. Chapter three outlines the conceptual model and rationale, methodology and findings of study one - the cognitive interview study - along with a discussion of the results. Chapter four outlines the rationale, hypotheses, methodology and findings of study two - the laboratory experiment - along with a discussion of the study results. Chapter five provides a discussion of the results of both studies taken together as well as their implications for the proposed model, and outlines potential future research areas. All study materials are contained in the Appendices.

Chapter 2

2 Introduction

This section reviews the literature relevant to the study of combined goals and complex task performance: goal setting theory, complex tasks, learning goals, multiple goals, combined learning and performance goals, and goal interpretation.

2.1 Literature Review

2.1.1 Goal setting theory

Goal setting theory is one of the most dominant – if not the most dominant – theory of work motivation (Latham & Pinder, 2005; Miner, 2003). In essence, a goal reflects a desire to achieve a certain end state (Locke & Latham, 1990). Goals are motivating because they create a discrepancy between the existing state of affairs and the desired state. Thus, goals prompt people to act to resolve this discrepancy, provided they have the requisite commitment and self-efficacy (Locke & Latham, 1990).

A goal condition is a state an individual experiences. In goal setting theory, goal conditions come in one of two goal types: performance or learning.[1] A performance goal condition is one that is defined by the desired outcome or performance level to be achieved according to an objective measure (Seijts & Latham, 2005). A learning goal condition is one that defines the goal by the identification and implementation of effective strategies to achieve an outcome (Winters & Latham, 1996). In short, performance goals describe the desired results directly, while learning goals describe the desired process necessary to develop the ability to eventually achieve results.

The central finding of goal setting theory is that performance is highest when a specific difficult goal is set rather than an easy goal, a "do best" goal, or no goal at all (Locke & Latham, 2002). This finding is robust across a broad spectrum of settings and has been

[1] Learning goals are sometimes also referred to as process goals (Frese & Zapf, 1994).

extensively replicated in laboratory and field studies. Moreover, this finding holds not just for individuals but also for teams and departments (Latham & Locke, 2007).

The effect of specific difficult goals on performance is explained by four mediating mechanisms: attentional focus (or direction), effort, persistence and task strategies (Locke & Latham, 2002). The primary benefits of specific difficult performance goals are motivational in that they serve to focus attention and increase effort and persistence towards goal achievement. Thus, people with specific difficult goals will focus more on their goal, put in more effort, and persevere longer than those with less difficult goals. They will also avoid putting attention and effort into non-goal areas since "goal setting results in a singleness of purpose" (Latham & Locke, 2013, p. 572).

The fourth mechanism, task strategies, is primarily cognitive. People with specific, difficult goals will draw on their existing knowledge and skills that are relevant to the task in order to attain their goals. The will also make greater use of general task strategies such as planning and strategy refinement (Locke & Latham, 1990). Thus, the effectiveness of the task strategies used when pursuing specific challenging goals mediates the effect of the goal on task performance (Locke & Latham, 2002).

Noteworthy moderators of the relationship between goals and task performance include goal commitment (Hollenbeck, Williams, & Klein, 1989), feedback, ability, and task importance (Locke & Latham, 2002, 2004). People perform better when they are committed to their goals, but commitment is especially important to performance when goals are difficult. Also, people who receive feedback about their performance perform better than those who do not (Earley, Northcraft, Lee, & Lituchy, 1990). The effect of goal setting on performance is limited by a person's ability level, so goals are more predictive of performance for people with high rather than low task ability. Goals that are perceived as important receive higher commitment and result in higher performance than those that are not.

Finally, self-efficacy also mediates the relationship between a specific difficult goal and task performance since people with higher self-efficacy have higher goal commitment and therefore achieve higher performance (Locke & Latham, 2002). Self-efficacy can

also moderate the relationship between a specific difficult goal and performance (Locke & Latham, 2002).

Overall, goal setting theory is considered by organizational researchers to be among the most valid and practically relevant theories in organizational behaviour (Miner, 2003).

2.1.2 Complex tasks

Research has shown that the effects of goals are moderated by the complexity of the task (Locke & Latham, 1990). Performance goals are highly effective at improving performance on tasks that are simple and draw on existing knowledge and known task strategies. This is because simple tasks that are familiar to us and that make use of automatic skills require only motivation to achieve specific difficult goals. People only have to give the task sufficient attention, effort and time to hit the goal.

This is not true of a highly complex task. A highly complex task is defined as one that meets all three dimensions of Wood's definition: component complexity, coordinative complexity, and dynamic complexity (Wood, 1986). Consider these terms with examples from the field of marketing. Component complexity refers to the number of different task elements, like for example the number of different decisions that need to be made to launch a new product. Coordinative complexity refers to the degree to which the task components must be coordinated. In a new product launch, for instance, tasks that must be coordinated include development, production, distribution, and advertising. Dynamic complexity refers to the degree to which the task components themselves and the way in which they need to be coordinated change over time as a result of task context changes. If a competitor launches a superior product in the midst of a new product development project, that may dictate changes to the product and to the required component tasks to prepare for the product launch. Since all the revised product components must also be coordinated again, dynamic change has a multiplicative effect on task complexity. Consequently, tasks that have component and coordinative complexity are typically labelled moderately complex, and those that also have dynamic complexity are highly complex (Wood, 1986).

Early research into the effects of performance goals on complex task performance showed mixed results with Chesney and Locke (1991) and Wood and Bandura (1989a) finding beneficial effects. Using a repeated measures highly complex computer simulation, Chesney and Locke found that MBA students with assigned specific difficult goals significantly outperformed those with easy goals. Similarly, using a managerial decision-making simulation task, Wood and Bandura found that MBA students who set high personal goals developed more effective strategies than those who set low goals, and that those strategies resulted in high performance.

In contrast, Kanfer and Ackerman (1989), Mone and Shalley (1995), and Winters and Latham (1996) found the effects of specific difficult performance goals to have detrimental effects on performance. Kanfer and Ackerman (1989) used a highly complex computer air traffic control task and found that military trainees assigned specific high performance goals performed worse than those urged to do their best. Likewise, Mone and Shalley found that on a complex staffing simulation business undergraduates with a specific, difficult goal performed worse than those with a do best goal. Furthermore, in a 1987 meta-analysis of goal setting studies, Wood, Mento and Locke found that the effect of goal setting on performance was inversely related to the complexity of the task, as evidenced by an effect size of d=0.76 for easy tasks and only d=0.42 for complex tasks like business simulations. Therefore, the higher the complexity of the task the less beneficial it is to use a performance goal.

2.1.3 Learning goals

The concept of learning goals was developed in response to what appeared to be a boundary condition of goal setting theory. When a task was novel and complex enough to require substantial learning, setting specific difficult performance goals versus do your best goals reduced task performance (Earley, Connolly, & Ekegren, 1989; Kanfer & Ackerman, 1989; Mone & Shalley, 1995). A learning goal is a goal whose content is to identify and implement effective strategies to complete the task successfully (Locke & Latham, 2006; Winters & Latham, 1996). Examples of learning goals in different domains include: (teaching) identify and implement three effective strategies to increase student learning, or (management) identify and implement five effective strategies to

reduce operating costs. Learning goals are thought to be effective for highly complex novel tasks because they shift the focus of attention and effort from already known strategies to behaviours which support the development of effective new strategies like "knowledge acquisition, environmental scanning, and seeking feedback" (Seijts & Latham, 2005, p. 127). Focusing on performance goals when the knowledge or ability to successfully complete the task is not yet acquired distracts from and interferes with the learning process (Seijts et al., 2013).

In the first management study on learning goals, Winters and Latham (1996) replicated the finding that specific difficult goals reduced performance on a complex task. Using a class scheduling task, they also found, however, that when the goal content was shifted away from outcomes and toward goals that called for the discovery and implementation of effective task strategies – or learning goals – such goals resulted in higher performance than "do you best" (hereafter "do best") goals. This finding is in keeping with a core tenet of goal setting theory that specific difficult goals improve performance and that ability is a moderator. Further, they found that the quality of task strategies used by participants in the learning goal condition was higher than those in the performance goal condition. The authors reasoned that for complex tasks a learning goal is effective because it directs attention to the learning process and "shifts the focus to task processes in terms of strategy development and away from outcome achievement" (Winters & Latham, 1996, p. 237). In other words, under a learning goal one is less bound by the demands of performance and hence able to focus on acquiring effective new strategies. Thus, it is the goal type in combination with highly complex goals that matters to performance rather than the goal difficultly level since difficult learning goals are beneficial to performance.

The benefit of learning goals over performance goals for complex tasks is explained by resource allocation theory which states that when people lack the requisite knowledge, a performance goal distracts cognitive resources from the learning process so they learn less effectively and hence perform worse (Ackerman, Kanfer, & Goff, 1995; Kanfer, Ackerman, Murtha, Dugdale, & Nelson, 1994). Learning goal researchers argue that performance goals, therefore, should only be set once the requisite knowledge or ability has been acquired (Seijts & Latham, 2005). They further argue that once ability has been

acquired learning goals are redundant and can even be detrimental to performance (Brown & Latham, 2002). This is because once the effective strategies are known, the continued focus on learning goals distracts attention away from performance. Hence, the current recommendation from goal setting researchers is that on complex tasks requiring learning, people should set learning goals first until the ability is acquired and performance goals should be set thereafter.

A meta-analysis by Seijts et al. (2013) (which included the 12 empirical studies conducted until 2011) found that the effect size of a learning goal versus a performance goal on task performance was small according to Cohen's classification (1992), but positive and significant *(d=0.28, p<0.05).* The effect size of a learning goal versus a 'do best' goal was medium and also positive and significant *(d=0.51, p<0.01).* On only highly complex tasks, the effect size was also medium as well as positive and significant *(d=.39, p<0.05).* Furthermore, the results showed that the benefit to performance of setting a learning goal increased as task complexity increased and as task length increased. Although they are based on few studies, these findings underscore the fact that learning goals are more effective than performance goals for complex tasks that require learning. The results of the meta-analysis also found that the difference in the effectiveness of learning goals over performance goals decreased over time with repeated trials. This finding supports the argument that learning goals are most relevant early on in the task.

Although most studies have been conducted in the lab, two studies have shown that learning goals - like performance goals - are also effective in the field. Latham and Brown (2006) conducted a field experiment with MBA students over the course of their program and found that students with a learning goal had significantly higher satisfaction with their program than those with performance goals. Porter and Latham (2013) examined departmental performance across a range of industries during the financial crisis and found that learning goals had a significant effect on organizational performance.

Researchers have also begun to uncover some of the mechanisms behind why learning goals lead to improved performance. For complex tasks, studies consistently show that self-efficacy and goal commitment are higher under learning goal conditions than under performance goal conditions (Noel & Latham, 2006; Seijts & Crim, 2009). Seijts et al. (2004) found that a learning goal prompted participants to request more information and to spend more time on the task overall, findings that speak to the influence of learning goals on cognitive processes. Seijts and Latham showed that goal commitment moderates the effect of learning goals on performance such that higher commitment led to higher performance (Seijts & Latham, 2011).

Noel and Latham (2006) examined how learning goals relate to task strategy development and implementation with entrepreneurs using a simulation task. Their results imply a reciprocal relationship whereby a learning goal increases self-efficacy which increases the use of effective strategies and increases task performance. The use of effective strategies then further increases self-efficacy and performance. Also using a simulation task, Seijts and Latham found a similar cyclical effect between goal commitment, self-efficacy and performance (Seijts & Latham, 2011). These findings suggest that learning goals encourage the use of effective strategies and that the positive results from those strategies further reinforce the identification and use of task-relevant strategies.

Lastly, studies have shown that learning goals are perceived differently than performance goals and that this difference is related to performance outcomes. Drach-Zahavy and Erez (2002) found that because learning goals are more likely to be perceived as a challenge rather than a threat, learning goals reduce the added stress of task changes and help facilitate adaptation. This is consistent with findings from a study on tension following negative feedback where those with a learning goal experienced less tension than those in the performance condition (Cianci et al., 2010). These findings suggest that learning goals may mitigate the negative effects of performance goals which detract from performance. Kozlowski and Bell (2006) found that when the goal type and the way the goal was framed were congruent (i.e. a learning goal was assigned and the need to learn the task was emphasized to people), task performance was higher due to more adaptive

self-regulation. This finding suggests that learning goals may enhance the positive effect of a learning goal orientation.

2.1.4 Multiple goals

The phenomenon of multiple goals has long been recognized as an important research topic (Latham & Locke, 2007; Locke & Latham, 1990). Yet, despite their prevalence in organizations (Locke, 2004; Young & Smith, 2013), the phenomenon of multiple goals remains understudied in goal setting research. Nevertheless, research into how multiple goals function compared to singular goals is critically important to understanding the effects of goals in practice.

In a rare comparative study of single vs. multiple goals, researchers found that people consider motivational factors like goal valence (i.e. attractiveness) and goal expectancy (i.e. perceived likelihood of achieving the goal) differently in the pursuit of single goals compared to multiple goals (Kernan & Lord, 1990). Through an experiment with undergraduate students doing clerical tasks, Kernan and Lord (1990) found that single goal performance was predicted only by goal discrepancies (i.e. the gap between performance and the goal level) and not by goal valence or expectancy. Multiple goal performance, on the other hand, was predicted by goal discrepancies as well as goal valences and expectancies. Furthermore, multiple goal performance involved the use of strategies like prioritization and resources allocation that were not used in singular goals. These findings indicate that not only are there additional practices involved in multiple goals that are not involved in single goals, but also that other variables like goal valence and goal expectancy may influence performance on single versus multiple goals differently. Hence, this study suggests that what we know about singular goals may not apply to multiple goals in a straightforward manner. The study of multiple goals may require attention to multi-level issues and methods as Austin and Vancouver (1996) have suggested.

Furthermore, research into multiple goals using multiple tasks has shown that multiple goals can have different antecedents from one another, but often depend on the same resources for completion (Trieschmann, Dennis, Northcraft, & Niemi, 2000). This means

that multiple goals may result in goal conflict which is known to be detrimental to performance (as discussed below). Once again, we can therefore conclude that multiple goals may not function in the same way as singular goals and must be investigated in their own right.

While we know relatively little about how multiple goals compare to singular goals, there are some key conclusions that can be drawn about multiple goals from prior studies. For instance, we know that multiple goals on separate tasks can be pursued simultaneously or sequentially over time (Emsley, 2003). In multiple goal environments, goal priority and resource division are affected by each goal's perceived importance including their relative valences and expectancies (Kernan & Lord, 1990). Goal difficulty level is also considered as part of the process of how goal conflict is resolved, with the more difficult of the two goals usually receiving more resources (Erez, Gopher, & Arzi, 1990). Other known factors in goal prioritization and conflict resolution include the current progress (Schmidt & Dolis, 2009), affect, planning, incentives (Schmidt & DeShon, 2007) and quality of feedback (Northcraft et al., 2011).

In their recent typology of multiple goals, Sun and Frese (2013) identify three categories of multiple goals. Firstly, there are multiple separate (i.e. unrelated) goals wherein independent goals compete for the same limited resources such as attention, time or physical resources. This is the most studied type of multiple goals and it exists when people have more than one task to do at once. The key question in this line of research is how limited resources are divided amongst the multiple, unrelated tasks, and how the allocation of resources impacts performance on these tasks (Northcraft et al., 2011). For example, dual task studies show that having multiple tasks typically results in lower performance due to the added information processing demands, higher switching costs, and over-arousal (Erez et al., 1990; Locke et al., 1994; Schmidt & DeShon, 2007; Schmidt & Dolis, 2009).

Multiple goals can result in either goal conflict or goal facilitation (Litchfield, 2008; Young & Smith, 2013), the former being the much more commonly studied of the two. Goal conflict has been shown to lead to reduced performance (Locke et al., 1994). It

occurs when multiple goals "cannot be reconciled" (Sun & Frese, 2013, p. 181) such that one must bend to the other due to their common reliance on the same limited resources. Under such conditions, research has shown that people attempt to resolve the goal conflict through prioritization, often in response to the affective experience of goal conflict (Plemmons & Weiss, 2013).

Goal conflict should be avoided when possible (Latham & Locke, 2013). This conclusion is supported by a study where goal conflict was significantly positively correlated with the experience of goal stress and dysfunctional goal effects, and significantly negatively correlated with perceived supervisor support, self-efficacy, understanding of goal rationale, perceived organizational support for goal achievement, goal difficulty, goal commitment, and goal clarity (Kwan, Lee, Wright, & Hui, 2013). In conclusion, goal conflict is consistently negatively related to task performance and negatively influences goal-related perceptions.

The second type of multiple goal in Sun and Frese's typology is the sequentially interdependent goal (2013). Sequentially interdependent goals imply a means-end relationship whereby the earlier goal is the means by which the later goal is achieved. The most commonly studied example of this is proximal and distal goal setting where succeeding at each of the proximal goals necessarily results in succeeding at the distal goal. In the study of simultaneous proximal and distal goals, research has shown that having both facilitates task performance by supporting higher motivation, self-efficacy, error correction, and learning (Bandura, 1997; Latham & Seijts, 1999; Steel & König, 2006). Dividing distal goals into more manageable proximal sub-goals appears to be most beneficial to task performance on complex tasks.

The final type of multiple goal is the reciprocally interdependent goal where the goals may be "mutually beneficial" (Sun & Frese, 2013, p. 188) in that progress on one goal can lead to progress on the other as well, but not in the simple linear fashion of sequentially interdependent goals. For instance, on highly complex tasks the relationship between task strategies and performance is unlikely to be linear since the strategies need to be coordinated as well, not just identified. To date, little is known about this type of

goal in terms of empirical findings. A possible example of this type of goal is the research on the effect of multiple goals on creativity where researchers have found that multiple goals do not always result in lower task performance (Carson & Carson, 1993; Madjar & Shalley, 2008; Shalley, 1991; Shalley & Koseoglu, 2013). This is because some kinds of multiple goals – such as simultaneous productivity and creativity goals - do not necessarily create goal conflict. When people are able to pay attention to both at the same time, or when they have the discretion to switch between tasks and goals as they deem appropriate, it seems that goal conflict can be avoided.

Sun and Frese theorize that understanding the nature of the interdependence between goals, and therefore how the pursuit of the goals should be coordinated, may lead to synergistic goal effects. Consequently, the potential for goal synergy may be due to how people perceive the goals – as facilitative or as conflicting (Freitas, Clark, Kim, & Levy, 2009). Due to their cognitive effects on strategy development (such as thinking about goal relationships, or planning how best to pursue them), Sun and Frese (2013) argue that learning goals may in fact play a role in enabling multiple goals to be synergistic rather than competitive. In concluding their commentary on reciprocally interdependent goals, Sun and Frese call for more research into synergistic relationship amongst multiple goals.

A central question of this dissertation – whether combined learning and performance goals improves or hinders complex task performance – relates in part to the way in which people understand the relationship between the two goals in combined goal conditions. Moreover, this dissertation investigates the outstanding question of what happens to goal focus when there are multiple rather than singular goals.

2.1.5 Combined learning and performance goals

To my knowledge, there is only one published study that explicitly addresses the topic of assigned combined goals on individual tasks (Masuda et al., 2014). The design of Masuda et al.'s study demonstrates the fact that learning tasks can vary according to the extent of learning required. Winters and Latham originally defined a learning goal as one that required the search for *and* implementation of effective task strategies (1996). The majority of studies on learning goals have been designed such that participants must

search for *and* implement effective task strategies as opposed to one that requires participants only to implement known strategies. It can also be the case, however, that the effective strategies are already known and provided to the individual, in which case the individual must only learn how to implement them effectively. For this type of task, search strategies are not as important to the accomplishment of the learning goal.

The topic of combined goals also raises the question of which order the goals are presented in. Masuda et al.'s study presented the goals only in the performance then learning goal order at all times (i.e. performance goal manipulation followed by learning goal manipulation). Their experiment used a moderately complex (i.e. not dynamic), implement only Excel task where participants were provided with a list of task strategies.[2]

In an experiment using undergraduate participants, Masuda et al. examined the effects of performance goals (specific difficult, do best, no goal) and learning goals (specific difficult, do best, no goal) and four trials using a 3X3X4 fully crossed factorial design.[3] The results showed a high rate of manipulation failures, however, which the authors speculated was due to the fact that participants were also asked to self-set proximal learning and/or performance goals as appropriate. The authors speculate that this appears to have resulted in participant confusion about their assigned goals. Consequently, the authors conducted the analysis using the self-set goals rather than the assigned goals.

Masuda et al.'s results showed that, compared to a learning goal only condition, performance was higher with a combined goal at the following three of the four possible levels: specific difficult performance & do best learning; do best performance & specific difficult learning; and do best performance & do best learning. This finding was the first

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[2] These significant differences in study design are important to consider in relation to the applicability of Masuda et al.'s (2014) findings to the design of the two studies in this dissertation, both of which employ a dynamically complex task and require participants to both search for and implement effective task strategies.

[3] Note that the study design also included both proximal and distal goals for all specific difficult and do best level goals. Hence, participants had a maximum of four goals in this study as opposed a maximum of two in the present studies.

empirical evidence that combined goals may indeed facilitate complex task performance compared to singular goals.

The one exception where a combined goal resulted in lower performance than a single learning goal was when both goals were at the specific difficult level. This finding supports the notion predicted by resource allocation theory that cognitive overload leads to lower performance. Resource allocation theory states that when people are in the first phase of learning (the declarative phase) the demands for cognitive and attentional resources are high, so performance is best if attention remains focused on learning during this phase (Kanfer & Ackerman, 1989). Only once the knowledge and skills have been acquired should cognitive resources be directed towards performance outcomes. This reasoning has lead goal setting researchers to argue that learning goals should be set first and followed by performance goals only once people have sufficiently mastered the task (Seijts & Latham, 2012).

However, Masuda et al. (2014) also found a curvilinear effect of combined goal difficulty level such that having both goals at the 'do best' level or both at specific difficult level resulted in lower performance than combined goals at unequal difficulty levels. The finding that having both goals at the do best level results in lower performance than the other combined goal conditions with specific difficult level goals is consistent with the fundamental tenets of goal setting theory.

Overall, Masuda et al. found that the best performance was in the specific difficult performance and do best learning condition. This finding suggests that, for an implementation only learning task, motivation is more important for task performance than learning, which is reasonable since the task strategies are already available and people need only learn how to implement them. Because three of the four combined goals outperformed the learning goal only, it also suggests that perhaps the motivational influence from the performance goal may enhance the implementation learning process.

Despite the limitations of their study, Masuda et al.'s findings indicate that combined goals may enhance task performance compared to singular goals. Because there are no other studies of combined goals at the individual level, however, we do not know whether

this is also the case with highly complex tasks, or whether it is also the case for tasks that require participants to search for as well as implement effective task strategies. One can speculate that the lower the task complexity and the lower the extent of learning required, the more goal setting theory (as opposed to resource allocation theory) will predict the results of combined goals on performance because the task demands motivation more than learning. Conversely, when the task is highly complex and requires extensive learning, one can speculate that the results will be predicted by both goal setting theory and resource allocation theory together because the task demands a focus on learning but still requires sufficient motivation. Thus, we would expect that both goals at the do best level will provide insufficient motivation, and both goals at the specific difficult level will result in cognitive overload. This reasoning is consistent with the curvilinear effects found by Masuda et al. (2014).

In summary, the question of whether assigning combined goals is beneficial or detrimental to performance on a highly complex individual task that requires participants to search for and implement task strategies remains unanswered. Answering this question is a central purpose of this dissertation.

2.1.6 Goal interpretation

At this point, I use the term *goal interpretation* to refer to the way an individual with multiple goals makes sense of those goals. There is very little theoretical or empirical work explicitly about goal interpretation processes in the goal setting literature. As I have speculated, this may be because most research has been done on singular goals where goal interpretation is less relevant.[4]

There is some empirical evidence, however, that the same goals can be interpreted differently for different reasons. For example, Brett and VandeWalle (1999) found that MBA students with the goal of passing an important presentation (a graduation

[4] The limited work that has been done on goal interpretation processes has focused on attributions for goal-performance discrepancies using attribution theory (Eberly, Liu, Mitchell, & Lee, 2013). This work, however, focuses on the interpretation of received feedback and does not address the interpretation of assigned goal conditions.

requirement) interpreted the goal content differently (as developmental, refining, comparative or avoiding) according to their trait goal orientation. Similarly, in a survey study of manufacturing managers, Nauta and Sanders (2001) found that the relative priority of multiple organizational goals (such as customer service, quality and efficiency) were perceived as having different priority levels across functional departments.

How goals are presented or framed to participants is also known to influence how they perceive and act on the goal. For example, to resolve conflicting findings related to the effect of goal participation on task performance and goal commitment, Latham, Erez and Locke found that the differences were related to whether the goals were simply "told" or "told and sold" (1988). Thus, how goals are presented and framed can be viewed as influencing how they are interpreted by participants. In summary, differences in how goals are interpreted can be due to individual difference variables, the specific task and task context, and the communication of goals to participants.

Conceptually, the concept of goal interpretation is related to the process of goal establishment and revision. In the case of assigned goals, in order to be established goals must first be accepted (Latham et al., 1988). One of the key predictors of goal acceptance is goal importance (Locke & Latham, 2002). According to Austin and Vancouver, goal redefinition "is the interpretation by the focal individual of an assigned goal" (1996, p. 348). Due to the goal interpretation process, Austin and Vancouver argue that assigned goal representations are in part idiosyncratic:

"The representation of the goal is partially unique for each individual as the external representation is translated to an internally meaningful representation tied to other goals in the individual's hierarchy (1996, p. 348)."

It is important to note that the goal interpretation process relates to an individual's *understanding* of a goal – how they make sense of it – and not to an individual's *preference* for a particular approach to goals. Goal orientation relates to individual preferences towards different achievement motivations and approaches to goals (Dweck,

1986; VandeWalle, 1997). I propose that goal interpretation and goal orientation are distinct constructs, although clearly the latter may influence the former.

The construct of goal orientation has been linked to the self-regulatory processes related to goal achievement (Cron, Slocum Jr, VandeWalle, & Fu, 2005). A learning orientation has been related to higher levels of effort and planning (VandeWalle, Brown, Cron, & Slocum Jr, 1999), as well as feedback seeking behaviour (VandeWalle & Cummings, 1997), self-set goal content and skill development (Brett & VandeWalle, 1999). Learning goal orientation has also been linked to improved performance in complex individual tasks (VandeWalle et al., 1999), and has been shown to moderate the effects of negative emotional responses on task performance (Cron et al., 2005). Importantly, these effects of goal orientation are distinct from the proposed effects of goal interpretation. (This will be outlined more thoroughly in chapter three.)

Overall, although there is some theoretical precedent and empirical support for the phenomenon of goal interpretation, it has not received much explicit attention by researchers. Due to the rarity of empirical studies related to goal interpretation in general and the lack of studies related to interpretation of combined goals, therefore, this aspect of the dissertation is largely exploratory. The purpose of exploring the concept of goal interpretation is to examine combined goals more comprehensively than just their relationship to task performance by considering what mechanisms may be at work that might explain how combined goals influence performance.

The above review of the findings from learning and performance goal studies, multiple goal studies, and combined goal studies collectively suggest that how people perceive and interpret combined goals are important factors in how combined goals influence goal pursuit behaviours and subsequent task performance. In particular, these factors stand out as important to interpreting combined goal conditions:

- how people understand the relationship between the learning and performance goal (i.e. as facilitative or conflicting),
- how people perceive the relative importance and priority of the learning vs. the performance goal, and

- how challenging the combined goal difficulty levels are perceived (i.e. not challenging enough to overly challenging).

In addition to understanding their goals, people must also develop an understanding of the nature of the task, in particular the degree of task complexity and whether the task is dynamic. Consequently, how people perceive and understand the task itself is also important to examine.

The following chapter focuses first on developing a conceptual model of goal interpretation and its effects. This section is followed by the method and findings of study one, a cognitive interview study. The chapter closes with a revised theoretical model as well as a general discussion of the study findings.

Chapter 3

3 Conceptual Model Development and Study One

As outlined in the previous chapter, goal setting theory is unclear about where people will cognitively focus when they have more than one goal as in the case of assigned combined goals. The first purpose of this chapter is to present a deductively derived conceptual model – the combined goal interpretation process. The conceptual model explains how people may respond in terms of cognitive focus to having combined goals, and how between and within-individual differences in cognitive focus may influence complex task performance. The model introduces two new constructs – the *effective goal condition* and the *goal interpretation process* – that I argue apply to assigned combined goals. The different ways people respond to assigned combined goals in terms of cognitive focus are represented by the construct of *effective goal condition.* The process by which these different effective goal conditions are developed from having assigned combined goals is represented by the construct of *goal interpretation.*

The second purpose of this chapter is to present the results of study one, a cognitive interview study that pilots the anticipated design of the laboratory experiment in study two. In addition to allowing the anticipated design of study two to be refined, the purposes of study one are 1.) to provide evidence that a larger scale study two is warranted, 2.) to enable improved theorizing about combined goals and the mechanisms involved, and 3.) to aid the development of study two hypotheses. The strengths limitations of the study and the implications of the findings are discussed at the end.

3.1 Conceptual Model Development

This section builds on the literature outlined in chapter two about multiple goals, combined goals, and differences in goal interpretation. The overall purpose of the conceptual model is to help explain the relationship between assigned combined goals and complex task performance.

3.1.1 Combined goals and goal focus

Why is a new conceptual model needed to explain how assigned combined goals may impact performance on a complex task? The straightforward answer is that goal setting theory does not clearly explain how the core mechanism of cognitive focus outlined in the previous chapter will function in the case of combined goals. In fact, goal setting theory presents a conundrum in terms of understanding goal focus when there is more than one goal. If, as Locke and Latham repeatedly argue, "goal setting results in a singleness of purpose" (Latham & Locke, 2013, p. 572) such that non-goal areas are ignored, what happens to cognitive focus when there is more than one goal? Examining the effect of combined goals on task performance requires us to think more deeply about how the mechanism of cognitive focus may function for complex goals because they present multiple rather than singular possible purposes.

Understanding how cognitive focus works when people have assigned combined goals is important because we can anticipate that the impact of combined goals on task performance will depend on which goal(s) people choose to focus on. For example, individuals who focus only on the performance goal component of a combined goal should have different task performance than individuals with the same combined goal who focus only on the learning goal component. This is because researchers know that learning and performance goals trigger different motivational and cognitive mechanisms which result in different task performance levels (Seijts et al., 2013). Thus, how people respond to combined goals in terms of goal focus is important because it will influence the goal mechanisms that are triggered, which in turn will influence task performance. Consequently, understanding the relationship between combined goals and performance requires an examination of how people cognitively focus on the assigned combined goals.

There are many reasons why individuals might respond to the same combined goal differently. For instance, people may think that only one part of the combined goal is important and therefore accept only one of the two goals. Furthermore, people who do accept both goals may differ in whether and how they prioritize the goals; some may focus on the goals separately in different sequences, while others may focus on the goals simultaneously. Which goal people prioritize may depend on factors like the perceived

relative goal difficulty, or on their perceived relative goal progress. Additionally, how people respond to assigned combined goals may depend on whether they understand the two goals to be related or independent. Thus, there are many possible reasons for between-individual variation in goal focus when combined goals are assigned.

When combined goals are assigned there may also be within-individual differences in goal focus as people pursue complex tasks over time. This is because as people get feedback on their performance they may change which goal(s) they focus on. For example, someone who initially focuses on the performance goal who receives poor performance feedback may switch to focusing on the learning goal in an attempt to improve. Similarly, someone who initially focuses on the learning goal who receives strong performance feedback may switch to focusing on the performance goal in order to maximize performance.

Furthermore, when tasks are dynamic within-individual changes in goal focus may be triggered by changes in the task over time. If people recognize that a task is changing, they may focus on the learning goal in order to learn how to meet the new task demands. Conversely, if people recognize that the task is stable, they may focus on the performance goal because they already understand the task.

Consequently, we can anticipate that goal focus may vary both between and within-individuals when combine goals are assigned. Moreover, we can also anticipate that the goal(s) people focus on will affect complex task performance because learning and performance goals trigger different mechanisms which lead to different performance levels on highly complex tasks. Knowing which goal mechanisms are being activated in combined goals (learning, performance, or both) is why understanding goal focus in combined goal conditions is necessary.

Goal setting theory has a long tradition of examining how people cognitively respond to goals and how those responses affect task performance. For instance, goal acceptance and goal commitment are both cognitive responses to goals that are positively related to task performance. In this sense, the approach taken in this dissertation is highly consistent with the broader tradition of goal setting theory, but newly applied to the

question of goal focus. Furthermore, the approach taken here builds on an existing but largely unstudied idea in the goal setting literature about a goal redefinition process that results in individual goal representations (Austin & Vancouver, 1996; Frese & Zapf, 1994). The importance of this idea is brought to the forefront in the case of assigned combined goals because they present multiple possible goal focus options.

The purpose of the conceptual model outlined below is twofold. The first purpose is to address the specific conceptual issues that are brought to the fore in the case of assigned combined goals but are not adequately addressed by goal setting theory. The second purpose is to outline the implications of these conceptual issues as it relates to explaining how assigned combined goals affect task performance.

3.1.2 Combined goals and the goal interpretation process

Multiple goal research has shown that multiple goals raise questions for people about the relative importance, the relative priority, and the logical sequence in which the goals should be pursued. Such studies show that people manage having more than one goal by using strategies like prioritization, sequencing, trade-offs, and even goal rejection or abandonment (Sun & Frese, 2013). As a type of multiple goal, combined goals are likely to prompt similar questions and the use of comparable strategies. Consequently, we can anticipate that when people pursue combined goals there will be between-individual differences in how they respond to their goals using these strategies. Individuals may prioritize the goals differently, sequence the goals differently, or accept different components of the goals when they are assigned the same combined goals. Since singular goals are less likely to raise such questions, they likely result in more consistent approaches across individuals.

But how do these between and within-individual differences in response to combined goals develop? What is the mechanism by which these differences come to exist? In order to explain how this variance develops, there must be an explanatory process that occurs in the case of multiple goals but not (or less so) for singular goals.

Since it is conceptually similar to the assigned goal interpretation process referred to by Austin and Vancouver (1996), I have called this process goal interpretation.[5] *Goal interpretation* is the individual cognitive process of interpreting an assigned combined goal condition wherein the individual determines the relative importance, the relative priority, and the logical sequence of the goals that will be used in goal pursuit. The goal interpretation process occurs because assigned combined or multiple goals are less clear than assigned singular goals. Thus, goal interpretation is less likely to be triggered with a simple, singular goal. However, goal interpretation may also be triggered in response to feedback about goal progress or by change over the course of a highly complex task.

The goal interpretation process varies by individual and is the process that determines if the person assigned a combined goal focuses on only the performance or the learning goal, focuses on both goals simultaneously, or focuses on both goals but at different times during the task. As such, when the task has repeated trials, goal interpretation can be an ongoing cognitive process people engage in throughout the task.

The outcome of the goal interpretation process is the individual's effective goal condition for the task at a particular point in time. The *effective goal condition* is the specific interpretation of the assigned goal that the individual develops at a point in time through the process of goal interpretation and then focuses on while performing the task. The effective goal condition an individual has for the task may differ from the assigned goal condition due to how the goal is being interpreted at that time.

In the case of assigned singular goals, the effective goal condition should vary little from the assigned goal because singular goals have high goal clarity. Goal clarity reflects the fact that a goal is clear and unambiguous, and therefore does not need to be interpreted

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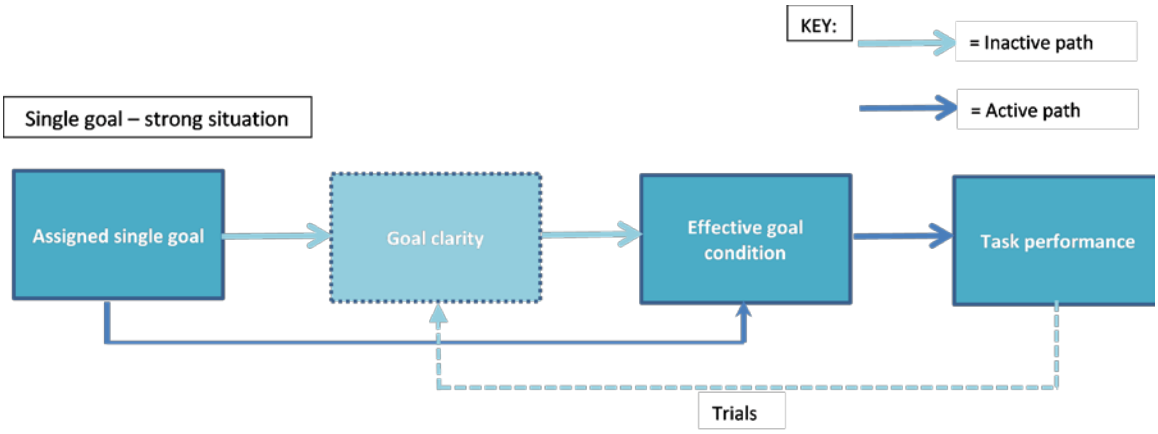
[5] Austin and Vancouver (1996) used the term "goal redefinition" to describe how an assigned goal is redefined as it is communicated from the assignor to the assignee. Their concept of goal redefinition applies to any assigned goal (including singular goals) because it stems from the process of communicating the goal from the assignor to the assignee. Their conceptualization does not include other possible sources of goal redefinition such as task dynamism. Consequently, I have chosen to use the term 'goal interpretation' to reflect the focus on the distinct characteristics of multiple goals (like combined goals), and to broaden the scope to include a person's interaction with the task over time and not simply the assigned goal.

during task performance. Thus, singular goals will tend to result in a consistent goal interpretation across individuals. High goal clarity, therefore, precludes the need for goal interpretation, while low goal clarity prompts the need for goal interpretation. Consequently, a singular goal at the specific difficult level is likely a strong situation that attenuates the influence of individual differences (Adler & Weiss, 1988; Seijts et al., 2004) and leads to a clear relationship between the assigned goal and the effective goal condition. See Figure 1 below for an illustration.

Figure 1: Single goal condition conceptual model



In the case of combined goals, a person's effective goal condition may vary from the assigned goal because of the goal interpretation process. This is because the appropriate response to the assigned goals in terms of goal focus is less clear - and thus less consistent - than with a singular goal. Therefore, combined goals lead to greater variance in goal interpretation than singular goals do. This variance results in different effective goal conditions which reflect different approaches to goal focus.

Furthermore, a person's effective goal condition may be different from another person's because a combined goal – which is expected to be more ambiguous than a singular goal – may not be a strong situation. This means that individual traits (such as goal orientation or need for achievement, for example) may also influence how combined goals are interpreted and the effective goal condition that results.

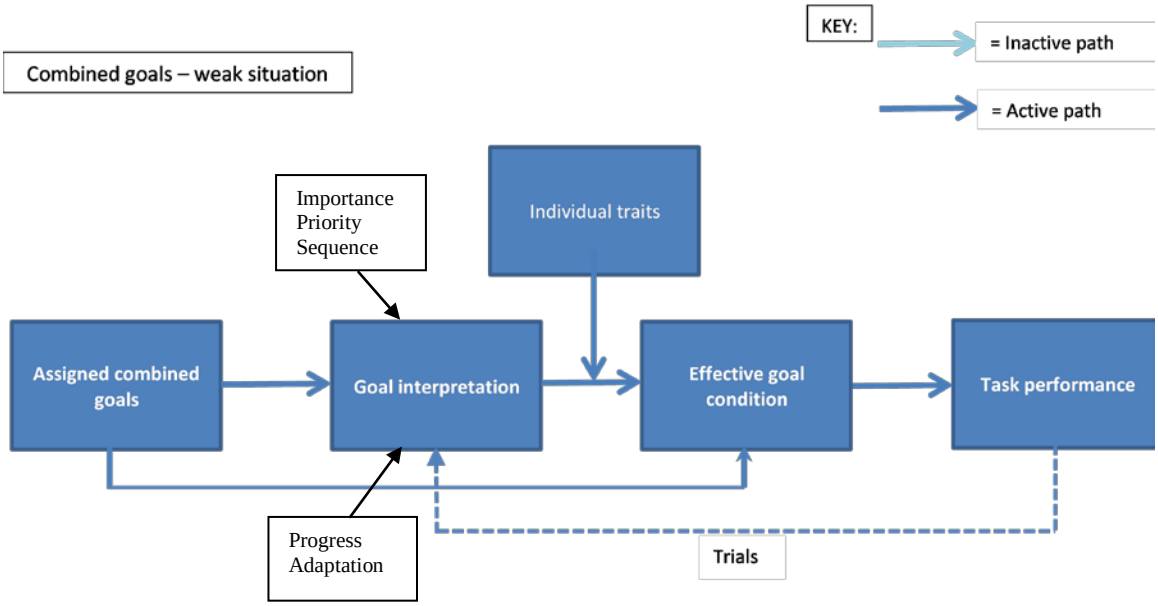
The dimensions which are expected to influence combined goal interpretation are goal importance, goal sequence, goal priority, goal progress, and goal adaptation. These five dimensions were derived from collective findings in the goal setting literature, the multiple goal literature, and the task complexity literature. Specifically, the dimension of importance stems from findings in goal setting theory that perceived goal importance moderates the relationship between a goal condition and task performance because people must first find the goal important in order to pursue it (Locke & Latham, 1990, 2002). In the case of combined goals, therefore, people would need to find both goals important in order to pursue both. The sequence and priority dimension both stem from the literature on multiple goals as both sequencing and prioritization are known strategies for handling multiple goals (Emsley, 2003; Northcraft et al., 2011; Sun & Frese, 2013).

The progress dimension stems from findings in the goal setting literature that feedback moderates the relationship between a goal condition and task performance. People who receive regular performance feedback perform better because they have more knowledge of their progress (Locke & Latham, 1990, 2002). Receiving feedback, therefore, may trigger a shift in perceived goal importance, priority or sequence depending on what the feedback received indicates about goal progress. Finally, when the task is dynamic, there may be changes in the task or task environment that prompt the need to adapt over time (Wood, 1986). Thus, the proposed set of goal interpretation dimension is grounded in the existing goal setting literature.

The five goal interpretation dimensions are theorized to reflect the different ways in which the two goals in a combined goal can be considered in relation to the other. The first three dimensions (importance, priority and sequence) are likely considered at the beginning as well as throughout the task. The *importance* dimension reflects a consideration of the importance of each part of the combined goals and their relative importance. The *sequence* dimension reflects a consideration of the logical order that the goals should be pursued in. The *priority* dimension reflects a consideration of which goal is the highest priority in terms of immediate action. These first three dimensions, therefore, are theorized to relate primarily to between-individual differences in combined goal interpretation, but possibly also to within-individual changes.

The next two dimensions (progress and adaptation) are thought to be triggered in the process of completing the task. The *progress* dimension reflects a consideration of the relative progress being made on each goal based on the performance feedback received. The *adaptation* dimension reflects the need to make adjustments in response to information about changes in the task or in the task environment. These last two dimensions are therefore theorized to relate primarily to within-individual changes in combined goal interpretation. See Figure 2 below for an illustration of the combined goal conceptual model.

Figure 2: Combined goal condition conceptual model



3.1.3 Effective goal conditions

At any given point in time there are four options with respect to goal focus. People can focus on only one goal or the other, on both goals simultaneously, or on neither goal. Thus, there are four possible effective goal conditions: the effective performance goal condition (performance goal only), the effective learning goal condition (learning goal only), the effective combined goal condition (both goals equally), or the effective no goal condition (neither goal). Over the course of a task, however, people's goal interpretations

– and their resulting effective goal conditions – can stay the same or change based on how they have interpreted the goals. Hence, an individual's effective goal condition pattern reflects the way they focused on their goals over time.

3.1.4 Summary

To summarize, goal interpretation is conceptualized as an individual cognitive process that results in a person's goal focus – or effective goal condition - at a point in time. The effective goal condition may or may not change over time depending on whether the person's goal interpretation changes. Unlike singular goals - which are expected to be clear and act as strong situations - combined goal are expected to be more ambiguous. Combined goals, therefore, are expected to lead to a broader range of interpretations and thus constitute weaker situations. The goal interpretation process is expected to be influenced by factors like goal importance, goal priority, and goal sequencing, as well as goal progress and the need for goal adaptation over time. Because of the goal interpretation process and the expected influence of individual differences, the relationship between assigned combined goals and effective goal conditions is proposed to be less straightforward than in the case of singular goals. This proposition has important implications for the expected relationships between assigned combined goals and task performance that will be examined in study two.

3.2 Study One Introduction

The purpose of study one was twofold. First, this study explored the goal interpretation process of individuals working on a highly complex task in order to better understand how assigned combined goals are interpreted and acted upon. Cognitive interviews provide a rich, in-depth method for understanding of how combined goals are interpreted and how they affect people pursuing highly complex tasks. This method was selected in order to aid theory development about assigned combined goals and to help identify the mechanisms involved in combined goal pursuit. The use of introspective methods like cognitive interviewing has been explicitly called for to advance the study of motivation (Locke & Latham, 2004). Importantly, the purpose of study one does not include the effect of combined goals on task performance. This will be examined in study two with a

larger sample size and an experimental method. Thus, the two studies in this dissertation are designed to complement one another.

Second, study one validated that a larger scale study about the effects of assigned combined goals on task performance was warranted. It also functioned as a pilot of the proposed experimental design, method and measures for study two. Findings from study one that have implications for the design of study two are discussed. Finally, findings from study one were also used to aid the development of the study two hypotheses.

The focus of study one was on the four research questions outlined at the end of chapter one: 1.) the perceived relationship between combined goals; 2.) the different interpretations of and approaches towards combined goals including effective goal conditions; 3.) any changes in the effective goal conditions over time, triggers for change, and patterns that emerge; 4.) and the mechanisms that operate in combined goal conditions.

3.3 Method

Study one followed the anticipated method for study two in that the same task was used, participants were from the same population, and the same assigned goal conditions were used. There are two main differences between study one and study two. First, different procedures were followed as appropriate to the different methods. Second, study one used preliminary single item measures for goal interpretation, while study two used multi-item measures that were developed in a pre-test between the two studies.

In study one a combination of cognitive interviewing and semi-structured interviewing was used in order to develop an in-depth understanding of participants' cognitive processes about the experience of having combined goals. Cognitive interviewing (also known as verbal protocol analysis) is an appropriate method to begin to understand cognitive processes (Ericsson & Simon, 1985; Willis, 2005) like the one involved in interpreting combined goals. It is a well-recognized technique for research questions related to cognitive processes, for use in the early stages of a research question, as well as for the early development of new measures (Presser et al., 2004; Willis, 2005). The

approach to cognitive interviewing here was a combination of the think aloud report method and the verbal probing method (Willis, 2004).

3.3.1 Design

The design of study one followed the planned design for study two. The purpose of the design of study one was therefore to pilot test the design of study two. The study included six goal conditions consisting of two single goals at the specific difficult level (performance and learning) and four combined goals at varying difficulty levels (do best vs. specific difficult). The specific difficult goal levels for both goal types were set according to previous studies using the same task (Seijts & Latham, 2011; Seijts et al., 2004).

The purpose of this design is threefold. The first purpose is to replicate previous findings that people with a learning goal outperform those with a performance goal on highly complex tasks. The second purpose is to allow a comparison between singular goal conditions and combined goal conditions to determine which results in better performance on a highly complex task requiring ongoing learning. The third purpose of this design is to explore which difficulty level combination of combined goals results in the best performance on a highly complex task. Combined goals can consist of goals at different difficulty levels. Hence, one of the key questions is which combinations of difficulty levels help or hinder complex task performance.

One of the questions related to combined goals is the order in which the learning and performance goals are presented (Locke & Latham, 2015). In study one, the order in which the goals in the four combined goal conditions were presented was reversed approximately half way through the study so that the first half of participants received the combined goals in performance then learning goal order (version A - conditions 3A-6A)[6], and the second half of participants received the combined goals in learning then performance goal order (version B - conditions 3B-6B). This was done to explore

[6] Note that version A (performance then learning) is consistent with the order used in Masuda et al.'s (2014) study.

whether there were any important difference based on the order in which the combined goals were presented. Goal conditions (B) were assigned as follows in the table below.

Table 1: Study one assigned goal conditions

Study One Assigned Goal Conditions (version B) DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG
(1) SD PG only Performance goal only - 21%
(2) SD LG only Learning goal only - 6 strategies
(3B) DB LG & SD PG Do best learning goal & 21% performance goal
(4B) DB LG & DB PG Do best learning goal & do best performance goal
(5B) SD LG & SD PG 6 strategies learning goal & 21% performance goal
(6B) SD LG & DB PG 6 strategies learning goal & do best performance goal

Conditions 1 and 2 were singular goals at the specific difficult level. Singular goals at the do best level were not tested. Conditions 3 to 6 consisted of combined goals at different difficulty levels combinations. The purpose of testing the do best difficulty level was to examine how do best goals affect performance compared to specific difficult goals when they are they are used in combination rather than as singular goals. In summary, the design tested in study one will allow for a comparison of performance between singular vs. combined goals, and between combined goals at different difficulty levels.

3.3.2 Task

The task selected for both studies was a computer simulation task called The Business Strategy Simulation (Perspectives Visuals & Audia, 1997). This task was selected

because it is a highly complex task that is very dynamic (Wood 1986) and draws heavily on participants' business skills and knowledge. In the simulation, participants play the role of the new CEO of Celecom21, a telecommunications company in the cellular phone market. The changes throughout the simulation parallel the events in the early US cellular phone industry.

The task has 13 rounds, although participants are told there are 15 rounds in order to avoid end of game effects such as price discounting. Participants make all of the company's strategic decisions in the following 13 categories: raising capital, reducing debt, undertaking research and development, buying licenses, selling licenses, forming alliances, dissolving alliances, managing sales force, offering new products, advertising, setting prices, managing capacity, and containing costs. There are five geographic markets that participants can elect to operate in. During each round, participants receive free market information, but can elect to buy more information for a fixed price. At the end of each round, participants receive a feedback report that details their market share performance overall and in each geographic region, as well as the company's financial position. The overall goal of the simulation is to increase the company's market share.

The task is appropriate for the study of highly complex tasks because it has 13 components – each of which has multiple options – that must be coordinated together to successfully run the company. Thus, it has a high level of component and coordinative complexity (Wood, 1986). The required coordination of the components draws heavily on participants' knowledge of key business principles.

The simulation also requires that participants learn how to succeed at gaining market share. Participants must search for and implement effective strategies to achieve their goals by the end of the simulation. The simulation follows the course of deregulation in the industry and so the strategies that are effective before deregulation (rounds 1 to 8) change for the remaining rounds (9-13). Thus, the task is also dynamically complex. Consequently, participants must respond to the deregulation and other changes - such as changing consumer preferences and evolving technology - by searching for and implementing new effective strategies for rounds 9 to 13, and by ceasing to use strategies

that are no longer effective. Because of these on-going changes throughout the simulation, the need to learn is continuous throughout all 13 rounds, as is the need to perform well enough to keep the company out of bankruptcy.

3.3.3 Goal manipulations

The goal manipulations were delivered verbally and in writing after a short training session. The full set of manipulations corresponding to the six goal conditions are outlined in Appendix A. The manipulations were taken from previous learning and performance goal studies (Seijts et al., 2004) and joined together to form combined goal manipulations at the required levels to match the study design.

3.3.4 Participants

The task required participants to play the role of the CEO and to make all of the strategic decisions for the company including financing, marketing, operations, sales, and strategic alliances. Consequently, participants had to have sufficient business knowledge to be able to learn the simulation properly. Thus, senior undergraduate business students were selected to participate in the study as they possess the required knowledge. Participants were paid $30 for participating in the two hour session.

The final sample size was 28 – 15 males and 13 females - representing four participants in each of the two single goal conditions, and five participants in each of the four combined goal conditions.[7] Of the combined goal condition cases, eight participants received the goals in performance then learning goal order (version A) and 12 participants received the goals in learning then performance goal order (version B).

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[7] I set a target of 24 (four sets of the six conditions) but was two participants short to complete the fifth set. The sample size was driven by the availability of participants at the time the study was being run. The sample had to be large enough to cover all the conditions and show variance in how participants interpreted and responded to their goals, but not so large as to compromise recruitment for study two which ran shortly afterwards and drew from the same participant population.

3.3.5 Procedure

Participants were recruited by email. Sessions were conducted with only a single participant at a time. Each participant was randomly assigned to one of the six goal conditions prior to each interview session.

A short case about the company (Appendix B) was distributed to participants by email before each session to provide them with the necessary background information to understand the simulation task. Before beginning each session, participants were asked a few short questions to ensure they had read the background case. The researcher then explained the study and obtained consent. Next a short training session was conducted on how to use the computer simulation.

Before participants began the task, the researcher explained that her role was to observe and take notes in order to better understand (but not evaluate or judge) how people went about doing the task. Also, the researcher explained and demonstrated to participants that they should express their thoughts out loud as they made their decisions. Finally, the researcher explained that she would be asking questions periodically to understand the approach the participant was taking in the simulation, and to ask the participant to complete the questionnaire booklet. Participants were provided with a notepad, a copy of the case, and a calculator.

Once the participant understood the process and how to use the task, the researcher began audio recording the session. Next the goal manipulations were introduced verbally and in writing in the questionnaire booklet. Once participants were given their assigned goals, they began the simulation. The researcher interrupted after rounds 2, 7, and 10 to ask the semi-structured interview questions (Appendix C), although there was often more frequent discussion as well. During the scheduled interruptions, participants answered the protocol questions first and then completed the measures in the booklet. After the final round, the researcher asked the post-task set of questions which referred directly to participants' assigned goals for the first time. Each session took approximately 2 hours and ended with the participant signing for payment. Participants were debriefed by email once all the interviews were complete.

3.3.6 Interview questions

Sessions followed a semi-structured interview protocol after rounds 2, 7, 10 and 13 (Appendix C). Periodically, impromptu questions were asked in response to participant statements, behaviours, unusual decisions, or emotional displays. Questions during the task did not ask directly about participants' assigned goals but focused instead on the approach they were taking to the task, the rationale for that approach, and their experience of the simulation. The final set of questions after the simulation was complete asked explicitly about participants' understanding of and approach to their assigned goals. After each interview, the recordings were manually transcribed verbatim by the researcher for analysis.

3.3.7 Measures

The purpose of the quantitative measures used in study one was to trial the newly developed items so they could be revised before study two. In particular, the single item goal interpretation measures from study one were used to develop multi-item measures that were pre-tested before study two.

3.3.7.1 Task performance measure

The dependent measure of task performance for the business strategy simulation is the total market share percentage the participant attains in each round. It is based on the decisions made by individual participants each round and is calculated objectively using pre-determined algorithms embedded in the simulation program. The final market share percentage at the end of the simulation is cumulative over the course of all 13 rounds. Each participant's market share and decision data for each round is captured in a text file throughout the task.

3.3.7.2 Preliminary goal interpretation items

After each round of interview questions (rounds 2, 7, 10 and 13), participants were asked to complete a set of written questions about how they were thinking about their goals at

that time. These items were measured on a 7-point Likert scale with anchors 1 "very unlike me" and 7 "very like me".[8] In the final round some additional questions were included about personal goals, experience with computer simulations, enjoyment of the task, and the goal manipulation checks. All the preliminary goal interpretation items (questions 1 to 7) used in study one are presented in Appendix D.

While the goal interpretation dimensions were grounded in the literature relevant to combined goals, the items used to capture these dimensions were developed for this study in order to make them applicable to combined goals. Questions 1 to 5 asked participants the extent to which they considered the five theorized goal interpretation dimensions - importance, priority, sequence, progress, and adaptation - at each point in time. Questions 6 and 7 asked participants their level of goal clarity at the time.

3.3.7.3 Dominant combined goal interpretation

In question 8 (a largely exploratory question), participants were asked to indicate which one of the goal interpretation dimensions most accurately reflects their approach to their goals at that point. Although several dimensions could be considered at once in the goal interpretation process, the dominant dimension at the time may be important in determining the effective goal condition at that time.

3.3.7.4 Effective goal condition

Finally, question 9 asked participants to indicate their effective goal condition - the goal(s) they were focusing on at each point in time. As outlined above, at any time people have four options with respect to which goal(s) they focus on: performance goal only, learning goal only, both goals equally, or neither goal. One of these four options is the effective goal condition the participant acts on as they perform the task during that round. The purpose of the effective goal condition question is to determine which goal(s) each person is focusing on at each point in time. By knowing the effective goal condition at

[8] These anchors were changed in study two to "1- strongly disagree" and "7 - strongly agree".

several points in time, each participant's combined goal interpretation pattern over time can be determined.

3.4 Data Analysis

Various methods were used to analyze the data. The specific data analysis method for each of the findings categories is described below. In general, all qualitative results are based on an analysis of the transcribed interviews as well as direct observation of the 28 participants. The interviews were examined according to both within and between assigned goal conditions. However, because this study was based on a conceptual model that was deductively derived, this is not a grounded theory approach. Rather, the interviews – like the quantitative data from the questionnaires – are used in this approach to fill gaps, check assumptions, and determine whether there are any issues that need to be addressed before proceeding with study two.

3.5 Findings

The findings are organized into four categories. The first category relates to findings relevant to the proposed design of study two. The second category relates to explicit findings about combined goals. The third category relates to observations about potential new mechanisms that may help to explain the effects of assigned combined goals on complex task performance. This section is broken down into two parts. The first part outlines findings that are consistent with the prior literature and speaks to the ways in which study one replicates and extends existing findings. The second part presents new observations in terms of the possible goal mechanisms behind combined goals. The fourth category relates to findings about the theoretical framework presented including the goal interpretation dimensions. This section is followed by a revised goal interpretation process model and revised definitions based on the findings of study one.

Few quantitative results are presented from study one due to the small sample size and single item preliminary measures.

3.5.1 Study design and task characteristics

Study one revealed that most of the study design elements were appropriate as planned. For instance, all of the participants correctly identified their assigned goal(s) when asked at the end of the simulation. Study one revealed a few elements that needed to be refined for study two, as well as an opportunity to improve the design by including additional variables. The findings in this section derive from a combination of researcher observation, participant direct quotations, and an analysis of the performance data.

Consistent with previous studies using the same task, participants clearly expressed that they perceived the task as challenging because of its complexity and dynamism. Representative participant quotes to this effect are shown in the table below along with the participant's assigned goal condition. These comments support that across assigned goal conditions the selected task was perceived as highly complex.

During the task participants learn how it works and their perceived task complexity drops somewhat, although the ongoing change keeps perceived complexity high. Interestingly, participants do not focus on the deregulation process as the key source of change in the simulation. Rather, because there are so many other key changes that happen, participants view task change as continuous instead of periodic.

Table 2: Perceptions of task complexity and dynamism

Perceptions of Task Complexity and Dynamism DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Task complexity	**Assigned goal condition**
"I didn't have a clue about what was going on or whether or not the decision I made made an impact – at least initially."	1 (SD PG only)
"I guess it's kind of challenging in that not everything you do will increase market share. It's kind of tricky."	2 (SD LG only)
"There are so many different variables that it's hard to identify the right ones. I feel like they are all important in a way, but which ones are more important?"	3B (DB LG & SD PG)
"There are so many moving parts and I don't really know like if you touch one what's going to happen to the rest."	4A (DB PG & DB LG)
"At the beginning there's so much going on."	5B

	(SD LG & SD PG)
"It was kind of guesswork. The hardest part was making correlations."	6B (SD LG & DB PG)
Task dynamism[9]	
"But in this case and the telecom industry, everything is changing so fast and… like it's hard to keep on top of things".	3B (DB LG & SD PG)
"In general there's a huge change in the market but some of it's irrelevant to me"	3A (SD PG & DB LG)
"It went from business to personal users, people were switching more frequently as the rounds went on. Yes, everything was basically changing."	4A (DB PG & DB LG)
"[Growth] is slowing down. It's getting more competitive."	5A (SD PG & SD LG)
"Well, it's just that the market is changing a lot"	6A (DB PG & SD LG)

All participants started the task with 7.4% market share in round 1. Final performance on the task was varied with approximately 40% of participants showing a mostly upward market share trend, 40% showing a mixed trend, and 20% showing a mostly downward trend. Excluding one extreme outlier, the mean performance at the end of round 13 was 11.92% (s=8.9), up 4.52% from the starting point. These results indicate that the task is indeed challenging for participants and that learning is required to succeed.

In terms of the goal difficulty levels, according to Wood and Bandura (1989b) a specific, difficult goal is one that only 10% of the population can achieve. Based on the results of previous studies using this task, the performance goal was set at 21% market share, meaning that participants need to increase market share by roughly 1% each round to attain the goal. A total of 4 participants (14%) met the performance goal. Since the extra 4% represents only one person in this sample (N=28), this suggests the performance goal level is appropriate for this population.

The learning goal level of 6 strategies was also set in accordance with previous studies using the same task (Seijts et al., 2004). It was clear based on participant comments, however, that participants in study one did not perceive this goal level as difficult. This

[9] Note that there were no representative quotations about task dynamism from participants in conditions 1 or 2. A possible reason for this will be discussed in a later section of the findings.

suggests it should be increased somewhat in study two which is feasible since the task contains a set of thirteen known strategies.

Furthermore, early on in the interviews it became evident that for this population the word "strategy" in the learning goal manipulation was interpreted as corporate strategy rather than operational or tactical strategy as intended. The learning goal manipulation was therefore adapted to clarify the meaning of "strategy" by including the following statement: "By strategies I mean operational, tactical strategies that you can use to increase market share like, for example, increasing advertising expenditure or the sales force."[10] This clarification appeared to resolve the confusion.

Fifteen participants indicated that they self-set either a learning or performance goal. Fourteen participants self-set a performance goal for the final round that ranged from 10-42%, eight of which were higher than the 21% and six were lower. There participants were distributed across all six assigned goal conditions. Six participants indicated that they self-set a learning goal that ranged from 2-4 strategies.

An unexpected finding from the study was the tendency for participants to set unassigned profit goals. In the interview discussions, 22 out of 28 participants explicitly mentioned monitoring profitability or having a profitability goal in addition to their assigned goal. This appears to be the result of their business training.

Of the participants who also considered profit, there were three different approaches to how they considered it. Some participants prioritized profitability and pursued the assigned goals on the condition that profitability was maintained. Others pursued the assigned goals but had profitability as a secondary consideration. Finally, others focused only on the assigned market share goals and ignored profit, although a few individuals expressed feeling conflicted about that approach since it was unrealistic and conflicted with their training. Illustrative quotes from each of these three approaches are provided in the table below.

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[10] These two examples of strategies to increase market share are repeated from the instructions in the background case so they were not new information.

Table 3: Different approaches to unassigned profit goals

Different Approaches to Unassigned Profit Goals DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Profit higher priority than assigned goals	**Assigned goal condition**
"I wouldn't be willing to get 21% and have a lot of debt because I spent a ton of money trying to attract people and then the company tanks. I was trying to build it up slowly so that the company was completely self-sufficient so I could put more and more money back into it." "Yes, so I wanted to get to 21% but I wanted to be somewhere that the company could stay for a long time as opposed to just getting there and then the company could just fall off."	1 (SD PG only)
"Yes, immediately it was like I can't be running a business that's not profitable. That's not a good business." "I definitely wanted to be profitable. I knew that I wasn't going to be in the red by the end of the simulation and if I was then I was going to walk out of here very disappointed."	2 (SD LG only)
"I just thought that the whole reason a company exists is to make money."	5B (SD LG & SD PG)
Profit secondary priority after assigned goals	
"No, I didn't really have a set profit goal. It was kind of like in the back of my head I need to monitor profitability."	3B (DB LG & SD PG)
"So I think it was the market share that was most important. For me the strategies was like a subset of market share and then the second goal was profit." "But one of the priorities is market share – not the profit – that's like the second priority for me – the profit."	6A (DB PG & SD LG)
Ignored profit to focus on assigned goals	
"[I felt] good in the sense that it was near the goal, bad in the sense that I didn't know whether [market share] was sustainable." "So the caveat is that as a player, I made a lot of decisions that I wouldn't necessarily in real life. Like the amount of equity I'm raising to fund my business, the pricing I'm using, the way I'm spending money."	1 (SD PG only)
"I also racked up an incredible amount of debt which in real	1

life I would never want."	(SD PG only)
"But just the mental image of having negative profits – Ugh, it grates on me. But I know that since the market share went up, it's good."	4B (DB LG & DB PG)

This unexpected finding about the existence of simultaneous profit goals has three implications for study two. First, the goal manipulations need to legitimize the market share goal by explaining the rationale for focusing on market share growth for the company. Second, the questionnaire needs to inquire about whether participants pursued a profit goal and, if so, how they prioritized it relative to the other goals. Finally, this finding suggests that, regardless of assigned goals, highly complex tasks may prompt highly complex goals including self-set goals in other areas which participants have to balance along with their assigned goals.

In summary, study one allowed several important conclusions to be drawn about the proposed design of study two. Firstly, it confirmed that participants perceive the task as a highly complex, dynamic one, and that this population has the required knowledge to complete the simulation. There was a wide range of initial ability amongst participants, however, because some participants quickly learned how to increase market share while other never did. Consistent with recommendations on laboratory studies on goal setting (Locke, 1986), a measure of ability should be taken in study two as a potential control variable. Since perceived task complexity drops over time, it should be measured twice – once early and again later in the task. The manipulation for learning goals must indicate that task strategies are "operational, tactical strategies" so participants do not think the learning goal refers to corporate strategy. Self-set goals should be measured again. Also, the goal manipulations need to provide a justification for the focus on market share as the key indicator of performance rather than profit. Finally, because participants may pursue profit goals nevertheless, study two needs to ask participants about whether they did so and how they prioritized the different goals.

3.5.2 Combined goals

This section describes participants' responses to and perceptions of combined goals. Next, this section describes the findings about goal focus and participants' effective goal

conditions. The data in this section stem from both researcher observation and from direct reports by participants in the study booklets and interview transcripts.

3.5.2.1 Responses to combined goals

First, the interviews supported that people understand and can pursue learning and performance goals assigned in combination. Participants understood and correctly reported what was being asked of them in all six goal conditions. Furthermore, participants did not appear to have difficulty understanding the draft goal interpretation and effective goal condition measures in the booklet.

Second, the study provided additional insights into why adding a performance goal to a learning goal may be beneficial. As expected, participants set personal performance goals as a way to stay motivated if their performance was significantly higher or lower than their assigned performance goal. However, I also found that top performing participants in conditions without specific difficult performance goals struggled to know how to feel about their performance because they were uncertain how to evaluate it in the absence of a specific goal. For instance, as one participant explained: "I have nothing to benchmark myself against so I don't really know [how I feel about my progress]. My market share is growing, so that's a plus" (Condition 2 - LG only).

While having only a learning goal was helpful to those who were doing poorly because it reduces tension and negative affect (Cianci et al., 2010), a learning goal alone prevented those who were performing well from experiencing the sense of satisfaction they would otherwise have had. Accomplishing a learning goal – even a specific difficult one – does not seem to result in the same sense of satisfaction because, compared to a "hard" outcome goal, learning goals are perceived as "soft," "vague" or "fluffy". Thus, setting a personal performance goal is a way to gain satisfaction from one's efforts. (The table below compares top performers' reactions with and without a performance goal.)

Table 4: Top performers' reactions with and without a performance goal

Top Performers' Reactions With and Without A Performance Goal DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Without a Self-set Performance Goal	**With a Self-set Performance Goal**
"It's like you finish, and like "ok, I'm happy," but there's no measure of happiness. It's just like, ok well, positive, I guess." "I think I would have felt better about my progress if I'd had an actual goal like achieve 30% by the end. Then I would think I did better. I'd feel a lot better about it than I do now." (Condition 4B - DB LG & DB PG)	"Honestly, it was like when you win the stock market. It's like wow. I can't believe it. It made me feel good because it told me that my assumptions were at least somewhat correct and I was able to interpret what the news was telling me, that I was doing it right and playing the game instead of just randomly guessing. It was nice." (Condition 6B - SD LG & DB PG)

This finding supports why studying the effect of combined goals is important as it suggests that they may be more satisfying and motivating than learning goals alone. Finally, the common practice of setting personal performance goals when a specific one is not assigned suggests that in practice true learning goal only conditions are likely rare since many people will self-set a simultaneous performance goal.[11]

Third, one of the key research questions for study one was how participants in combined goal conditions would understand the relationship between the two assigned goals. After completing the simulation, participants with combined goals were asked about the relationship between the two goals. With the exception of the one early case where the learning goal was interpreted as corporate strategy, my results show that participants understood combined goals as being closely and causally related such that strategies (or learning goals) lead to performance (i.e. market share). Representative answers to the question of whether the goals were related are shown in the table below.

[11] The frequency of self-set performance goals will be examined with a larger sample size in study two.

Table 5: Relationship between learning and performance goal when combined

Relationship Between Learning and Performance Goal When Combined DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Example	**Assigned goal condition**
"Yes, because the strategy is an integral part of how to achieve market share…[They are] symbiotic. You can't have one without the other."	5B (SD LG & SD PG)
"Yes, strategies would lead to market share."	6B (SD LG & DB PG)
"So they were related in that sense, in that you couldn't do one without the other."	4A (DB PG & DB LG)
"I think that if you were able to identify a good strategy then you can achieve a higher total market share."	4B (DB LG & DB PG)

These quotes show that most people understand the relationship between combined goals to be that learning goals (i.e. strategies) lead to performance goal outcomes. As intended, combined goals are understood as a linked process and outcome goal. Thus, learning goals are perceived as helpful in achieving performance goals rather than conflicting. As one participant explained:

> I feel like the strategy and market share should be kind of more linked instead of separate in my mind. I'm thinking I need to have more strategies because I want to increase my market share. It's not always like I'm dividing it like on the one hand I need to have more strategies and on the other hand I want to increase my market share. They are related.

As Locke and Latham point out, having multiple goals may be perceived as helpful rather than a hindrance: "Goals are often causally interrelated in a way so that actions taken to attain one goal help rather than hinder the attainment of other goals" (1990, p. 53). My findings from study one suggest that this appears to be the case when participants were assigned combined goals.

What did vary between-individuals was *when* they came to this understanding of the relationship between the two goals. Most participants realized the relationship between

the two goals early in task, while a few only realized it in later rounds or even after they were done the task. The pattern of not seeing this relationship between the two goals early on was associated with participants who had an exclusive focus on the performance goal. In essence, they ignored the learning goal and only realized later in the task - or even in retrospect - that it could have helped them attain their performance goal. This suggests that it is important to ensure people realize upfront the potentially helpful role of a learning goal even when combined with a performance goal.

I also found that participants consistently understood the goals to be hierarchically related such that the performance goal was the primary goal and the learning goal was the secondary goal. In this sense, performance goals appear to dominate combined goals since their outcomes are perceived as more important. Illustrative quotations are shown in the table below.

Table 6: Hierarchical relationship between learning and performance goals

Hierarchical Relationship Between Learning and Performance Goals DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Example	**Assigned goal condition**
"I think the strategy goal is probably more of a supporting goal or subgoal of market share. I think the market share was definitely the main goal. I think that using or trying out the different strategies - that was a subgoal that would help you get to the 21%."	3B (DB LG & SD PG)
"[The strategy goal] was more of a subgoal to support the main goal of reaching 21%. So in my opinion I would use as many strategies as I could to help me reach that goal."	3A (SD PG & DB LG)
"I just figured that the second goal was there to facilitate the first one. So those six strategies are ultimately – like I didn't see them as goals – I just saw them as strategies I used, whereas the goal was market share. And I just had that goal in the back of my mind and the six strategies were just going to help me get there."	6B (SD LG & DB PG)

The information about how combined goals are understood has an important implication for how they are used in practice, namely the order in which combined goals are presented. In study one, the order in which the goals of the four combined goal conditions were reversed approximately half way through so that the first half of the

combined goal participants received performance followed by learning goals (conditions 3A-6A), and the second half received learning goals followed by performance goals (conditions 3B-6B). However, it seemed to confuse some participants when the goals were given in the performance then learning goal order. As one participant commented: "It's funny. Market share came first and strategies came second, so I would flip the two and then…I would see a list of things to do in sequential order which is to develop strategies first."[12] Participants who received the combined goals in the learning then performance order seemed more comfortable, possibly because the presentation of the goals mirrored the underlying logic between them. Thus, it may be that combined goals are better presented in learning then performance goal order to ensure they are perceived as helpfully related, and to reduce the likelihood that the learning goal will be ignored in favour of the more dominant performance goal.[13] Notably, this is the opposite order in which the goals were presented in the study by Masuda et al. (2014).

In conclusion, I found that combined learning and performance goals were understood as closely causally linked, although only in retrospect by some participants. This relationship between the goals was perceived as facilitative and helpful rather than conflicting. Furthermore, I found that the hierarchy of the goals was clear and consistent as well with performance goals as the main goal and learning goals as the subgoal. None of the participants described the reverse hierarchical pattern, which suggests that performance goals clearly dominate learning goals when combined.

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[12] This perception of the appropriate order of the goals is consistent with arguments from learning goal researchers that learning goals should be set prior to performance goals being set (Seijts & Latham, 2005, 2012) to allow people to understand the task prior to focusing on outcome goals.

[13] While the question of combined goal order could be formally tested, doing so would require another four experimental conditions for a total of 10. Because of the increased sample size this would require, I concluded that there was sufficient rationale for presenting all the combined goals in learning then performance goal order only for study two. Goal order effects could be tested in a subsequent study.

3.5.2.2 Effective goal condition

Another important question examined in study one is how participants focused on their goal(s). In other words, what effective goal conditions did participants display: performance, learning, combined, or no goal? This question was explored using responses in the participants' booklets, as well as statements from the interviews. As expected, both sources of data revealed between and within-individual differences in how participants focused on their goals over time.

In the quantitative data participants' responses for effective goal condition were distributed across all four options regardless of assigned goal condition. Broken down by single or combined goal conditions, however, participants in the combined goal conditions showed a tendency to favour the performance goal over the learning goal. In the single goal conditions, on the other hand, participants indicated they focused on the learning goal or both goals equally over the performance goal (again, regardless of assigned goal condition). This may indicate that even in a singular performance goal condition participants recognized the need to learn in order to succeed with the task. Finally, only seven of the 28 participants (25%) reported that they focused on the same option across all four time periods. Thus, there was evidence of both within and between-individual variance in effective goal condition.

Consistent with the findings from the quantitative data, I found striking differences in the qualitative data in how participants understood the relative priority of the two goals, and therefore the goal(s) that they focused on. As anticipated, I found that the two main ways in which participants acted on their goals depended on how they interpreted them. The most common approach was to prioritize the performance goal. The rationale for this approach was that if you achieve the market share goal then you know your strategies are effective so both goals are accomplished. The table below provides illustrative examples.

Table 7: Prioritization of performance goals over learning goals

Prioritization of Performance Goals Over Learning Goals DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Example	**Assigned goal condition**
"I felt like…focusing on market share encompassed my other goals. Ultimately, if I had to prioritize, it would be my market share because the strategies I would have to adjust to get that market share."	6B (SD LG & DB PG)
"I definitely prioritized one [market share] over the other."	4B (DB LG & DB PG)
"I thought the 21% goal was definitely the more important because that seemed like the actual corporate goal, whereas the strategies one was more of a soft goal, to kind of, you know, ease you in."	3B (DB LG & SD PG)
"I felt like it encompassed – focusing on market share encompassed by other goals."	4B (DB LG & DB PG)
"I found [the strategies goal] unnecessary in that it kind of goes without saying."	4A (DB PG & DB LG)
"Ultimately, if I had to prioritize it would be my market share because the strategies I would have to adjust to get that market share."	6B (SD LG & DB PG)

Less commonly, participants looked at the combined goal the other way around and prioritized the learning goal. The rationale for this approach was that if you get the strategies right then the market share will follow. Thus, there were important differences between participants about which goal type was more important to focus on first. Examples of the learning goal focus approach are shown in the table below.

Table 8: Prioritizing the learning goal over the performance goal

Prioritizing the Learning Goal Over the Performance Goal DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Example	**Assigned goal condition**
"The strategies [was more important]. While the market share is the end goal, the strategies without them you can't get it. So that's why."	6B (SD LG & DB PG)

"I think the strategies was more important. Market share was really just like checking off whether I'm going the right strategies I guess. It was the affirmation, I guess. But I think the strategies were more important. Even in the end I started to let go of the strategies a little bit for the market share and immediately there were no results. I think strategies was definitely the most important."	4A (DB PG & DB LG)

In general, however, participants often reported valuing the role of the learning goal more in retrospect than during the simulation. Several participants reported that one thing they would do differently next time is to focus more on the strategy goal. The table below provides examples of this. These findings suggest that while people may see the value of the learning goal (if sometimes only in retrospect), the tendency is towards letting the performance goal dominate. This implies that when used in combination learning goals need to be supported by a strong rationale in order for people to pay attention to them.

Table 9: Retrospective valuing of the learning goal

Retrospective Valuing of the Learning Goal DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Example	**Assigned goal condition**
"I think that concentrating too much on the market share was a bad idea because I was just doing random things. But concentrating on strategies I actually had to think harder about what would make the company work better and add value to the clients which increases market share… So market share was the result, but it's just wrong to run after it."	5B (SD LG & SD PG)
"And in terms of using the six different strategies, I think that's kind of nice to get you thinking about there's more than one right way to do it. So, it kind of keeps you fresh."	5B (SD LG & SD PG)
"I think I should have listened more at the beginning because you even said to achieve higher market share you should concentrate on your operational strategies, and I was like OK. But then I just kept on looking at the market share number and I wasn't really thinking about what I was going to do differently. It was just kind of random. But I should have actually thought about it more."	5B (SD LG & SD PG)

Finally, in addition to the two main ways the goals were approached, I also found evidence that some participants focused on both goals simultaneously. One participant who did so stated that balancing both goals simultaneously was helpful and easy to juggle, while another found it distracting and difficult to juggle. The strategy of approaching the goals simultaneously, however, was less common than the approach to sequence them.

In conclusion, this study provided evidence of both within and between-individual variance in how people focus on combined goals. It also showed that performance goals tend to dominate learning goals when they are combined. While people may see the value of the learning goal (if only in retrospect), the tendency seems to be to prioritize the performance goal. The next most common approach was to focus on the learning goal, although with experience people tend to value the learning goal more highly. This suggests that when used in combination learning goals need to be supported by a strong rationale to ensure they are paid attention to. The combined goal approach where the two goals are focused on simultaneously seems to be rare, which may be due to the additional cognitive demands it presents. Consequently, the combined goal focus approach may be a risky strategy for all but the most high ability people. Finally, these results provide support for the argument that because combined goals are a type of multiple goal and are more ambiguous than singular goals (Kernan & Lord, 1990), combined goals are subject to differences in interpretation that can effectively alter the goal condition a person actually pursues. Thus, people's assigned goal conditions and their effective goal conditions may not always align – an observation that has implications for predicting the effect of combined goals on task performance.

3.5.3 Goal mechanisms

An analysis of the interview transcripts found support for the different ways single learning and performance goals work as described in the existing literature. In addition, the transcript analysis revealed how these mechanisms extend to combined goals. Finally, the interviews also revealed potential new mechanisms specific to combined goals.

3.5.3.1 The effects of single learning and performance goals

The interviews showed clear support for some of the existing explanations about why single performance and learning goals influence complex task performance differently. These are summarized in the table below. These patterns were identified through observation as well as through a comparison of the transcripts for these two conditions.

A single performance goal was associated with a clear focus on achieving the market share goal. Participants in this condition focus on the performance goal to the exclusion of other potentially valid goals. In fact, some participants knowingly traded-off other company financial concerns (e.g. profit) in pursuit of the performance goal. For example, one participant opined that his exclusive pursuit of market share prompted him to pursue the market share goal too aggressively without concern for the associated consequences.

Participants in the performance goal only condition displayed more emotions than those in the learning goal condition. For instance, a lone performance goal was also associated with comments about failure and worrying about not being able to achieve the goal. In this condition when the task was not going well it was discouraging. This is consistent with studies that have found that performance goals are associated with higher tension (Cianci et al., 2010). When results were good, performance goals were associated with expressions of relief such as “I increased! Thank god. I was scared to see another red number.” When people were satisfied with their performance in this condition they expressed it, making impromptu comments like “I made $94 million in profits this year!”

Overall, the performance goal resulted in a clear goal focus that excluded other relevant criteria, as well as stronger and more frequent affective expressions which were mostly negative but sometimes positive. Performance goals seem to result in strong attentional focus and more affective investment in that goal.

A single learning goal, by contrast, has a different influence on participants. Most noticeably, this condition is associated with a systematic and thorough approach to the task. Participants in this condition expressed a willingness to consider a range of options and spoke about testing or experimenting with different possible options. Some

participants even recognized the benefit of the systematic approach related to learning goals: "I think it's good to be explicit. It [the strategy goal] probably was beneficial." This systematic information processing may have caused participants to realize that they needed to develop a more sophisticated understanding about how the simulation worked.

Participants in the sole learning goal condition were less affectively expressive than those in the performance goal condition. Rather, they tended to use neutral words like 'notice' and 'observe' and to express a calm, patient approach to the task.

Finally, while participants in the learning goal condition understood the importance of market share, they were less inclined to pursue it to the exclusion of other valid goals, like quality and profitability. For instance, reflecting on their experience after the simulation a few participants commented that they wanted to get their market strategies right and that market share may not be the most important criterion.

In summary, learning goals were associated with a more systematic approach to the task. Learning goals were also associated with more neutral affective evaluation, and less susceptibility to a single goal criterion to the exclusion of other criteria.

Table 10: Effects of performance and learning goals

Effects of Performance and Learning Goals DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal		
	SD PG only (Condition 1)	**SD LG only (Condition 2)**
Focus of attention	"*Market share*. None of the other numbers I look at, I'm not going to lie." "Yes, because [*market share*] was the goal, so I'm not even really looking at anything else." "This isn't super useful to me because I'm worried about *market share*, right?" "So the caveat [to my goal performance] is that as a player, I	"I was constantly taking notes about what was happening – market share, profits, etc. I tried to really *isolate the different factors* about what was *causing* what." "I did *different* things in different rounds. In some rounds I did only a few but other times I did the whole set." "The first [round] was a bit of a *test*. I was playing it safe just to see how my *assumptions* were going to play out."

	made a lot of decisions that I wouldn't necessarily in real life. Like the amount of equity I'm raising to fund my business, the pricing I'm using, the way I'm spending money."	"I think I've just gotten a better understanding of the mechanics and how things work." "I still don't know if I would have gotten in to more markets though. I wanted to do the ones I was in *right*." "I think I was playing more of a profitability game and making sure there were returns, but then *maybe market share wasn't as important."*
Affect/ Tension	"I feel aggressively that 21% is not going to be in my limits." "Oh, I totally failed. I feel like a business failure!" "What happens if I don't make it?"	"I notice that I'm losing share in market A and so going forward I'm probably going to react to that." "When you only have 15 years to play you can't keep switching strategies each year. You have to give it time to play out."

Overall, these findings are consistent with the characterization of the differences between learning and performance goals in the current literature. This result supports that the study design is effectively capturing the expected differences between the goal types.

3.5.3.2 New mechanisms or observations

This section discusses new observations and potential new mechanisms related to learning and performance goals. Most of these new observations arise for two reasons. Firstly, the choice of the cognitive interview method within the literature on learning and performance goals is unusual and hence can provide new insights. Second, including combined goals in the analysis reveals how the known patterns for singular learning and performance goals extend to combined goal conditions.

There are two main categories of findings within this section. The first relates to participants' goal focus in comparison to their assigned goal condition. This section draws on participants' answers to the effective goal condition questions in the booklets as well as the interview discussions. The second category relates to themes that emerged from the interview transcripts based on thematic coding of participants' answers from the

interview protocol. *Due to the small sample size, however, these findings should be regarded cautiously.*

3.5.3.2.1 Effective goal condition by assigned goal condition

To my knowledge, few if any goal setting studies have asked participants to indicate what they focused on while they completed their assigned goal(s).[14] Rather, in keeping with a core tenet of goal setting theory that goals focus attention on the goal (Locke & Latham, 1990, 2013c), researchers have assumed that participants focus primarily on their assigned goal(s). In this study, participants were asked to report their goal focus (e.g. effective goal condition) at four time points, and to discuss their goal focus once the task was complete. A few interesting observations arose from an analysis of the reported effective goal conditions in comparison to participants' assigned goals.

In condition 1 (PG only), three of the four participants reported focusing on learning at some point throughout the task. Only one participant (who performed extremely poorly) did not report ever focusing on learning in this condition. The others, therefore, reported that they focused on learning and performance at different times throughout the task. Thus, while these participants had no learning goal assigned – not even at the do best level – they nevertheless reported focusing on learning at some point despite having only an assigned performance goal. Similarly, in condition 2 (LG only), three of the four participants indicated that they also focused on performance despite having only an assigned learning goal. Overall, in the singular goal conditions six of the eight participants focused on both goal types at some point despite being assigned only one.

These observations are interesting because it shows that participants may focus on both learning and performance even though they are only assigned one or the other goal type. This may be due to the practice of setting personal goals. Effectively, therefore, some participants in condition 1 (PG only) may actually be like those in condition 3 (SD PG & DB LG) in terms of how they pursue the goal because they may also have a do best

[14] It is important to note that manipulation checks assess participants' awareness of assigned goals but they do not assess the object of participants' cognitive focus during a task.

learning goal. Likewise, some participants in condition 2 (LG only) may be similar to participants in condition 6 (SD LG & DB PG) because they may also have a do best performance goal. The inclusion of an unassigned focus on learning or performance may be prompted by the high task complexity and difficulty. While the unassigned goal focus reported may not be the equivalent of assigned do best level goals, these observations show that singular assigned goals are not necessarily associated with singular goal focus, at least not when it comes to a highly complex task like this one. Finally, once again these observations support the argument that assigned goals may not be consistent across participants due to variation in how each one interprets and acts on those goals.

In the four combined goal conditions there was also within and between condition variance in goal focus. In a reversal of what happened in the two singular goal conditions, three of the four combined goal conditions (conditions 3, 5 and 6) had participants who reported focusing on only one of the assigned goals. In condition 3 (SD PG & DB LG), two of the five participants reported focusing only on the learning goal and never the performance goal, likely due to low performance. One participant focused on both goals simultaneously and the final two focused on the goals in sequence. In condition 5 (SD LG & SD PG), two of the five participants also reported focusing on only one goal but in this case it was the performance goal only. In this condition as well one participant focused on both goals simultaneously and the final two focused on both goals in sequence. In condition 6 (SD LG & DB PG), two of the five participants also reported focusing on only the performance goal, two other focused on the goals simultaneously and the remaining two focused on the goals in sequence. Only in condition 4 (DB LG & DB PG) did all participants focus on both goals so none of the goals were simplified to a singular goal. Instead, participants in condition 4 (DB LG & DB PG) used a combination of sequencing and approaching the goals simultaneously.

Overall in the combined goal conditions, six of the 20 participants simplified to a singular goal focus. The remaining 14 were split between sequencing the goals and focusing on them simultaneously, with sequencing the more common approach. The findings are summarized in the table below. Again, these observations show that assigned combined goals do not necessarily result in combined goal focus. Hence, these results underscore

why it is important to empirically investigate how cognitive focus works in combined goal conditions in particular and in multiple goal conditions more broadly.

Table 11: Participant reported goal focus (single or dual) by condition

Participant Reported Goal Focus (Single or Dual) By Condition DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal		
(Condition 1) SD PG only: PG only – 1 participant PG & LG – 3 participants	(Condition 3) DB LG & SD PG: LG only – 2 participants PG & LG – 3 participants	(Condition 5) SD LG & SD PG: PG only – 2 participants PG & LG – 3 participants
(Condition 2) SD LG only: No response – 1 participant PG & LG – 3 participants	(Condition 4) DB LG & DB PG: PG & LG – 5 participants	(Condition 6) SD LG & DB PG: PG only – 2 participants PG & LG – 3 participants

3.5.3.2.2 Interview themes by condition

In order to uncover any potential patterns that were not directly asked or observed, the transcripts were analyzed systematically following established processes for qualitative data analysis (Golden-Biddle & Locke, 2007). First, all of the interviews were thematically coded line by line using open coding. This process was followed by a series of data reduction steps in which the key themes from the interviews were summarized in order to allow between condition comparisons. Next, a short thematic description of each interview was developed. Then, these descriptions were used to develop a general thematic description of each condition based on within condition comparisons. Finally, the general descriptions of each condition were compared and contrasted against those of other conditions to evaluate differences between conditions on these thematic dimensions. Differences were assessed both in terms of the presence or absence of specific themes, and in some cases according to the frequency with which participants referred to different themes during the interviews. From this process, several new themes emerged from the data, as well as further support for some of the previously observed differences between the effects of learning and performance goals.

The observations that support previous findings and extend them to combined goals are summarized in the below. For example, in terms of previously proposed differences between learning and performance goals, the analysis supported that learning goals are associated with higher strategy focus and usage than performance goals. Participants with learning goals focused more attention on strategy search, development and implementation than those with performance goals who tended instead to focus their attention on their performance and their level of satisfaction with that performance.

One key question about combined goals is how this general pattern extends when these two goal types are combined. In the combined goal conditions, the analysis showed that the pattern of focusing on strategy usage associated with learning goals extended to all four of the combined goal conditions. Thus, the only condition where participants showed little focus on strategy search, development and testing was condition 1 (PG only).[15] This observation suggests that the effect of learning goals on strategy search and implementation functions even in the presence of a simultaneous performance goal. While this finding is somewhat surprising given that performance goals appear to dominate learning goals, it suggests that learning goals may be able to exert an influence on participants nevertheless. If so, this would help explain how combined goals could produce higher task performance than singular goals.

Also consistent with previous research, participants in the learning goal condition expressed higher goal commitment and self-efficacy than those in the performance goal condition (with one exception - a high performer in condition 1 – PG only). In condition 3 (DB LG & SD PG), participants showed mixed goal commitment and self-efficacy levels (the low performers showed low levels and the higher performers showed higher levels). In condition 4 (DB LG & DB PG), participants showed high goal commitment and high self-efficacy (with the exception of one low performer). In condition 5 (SD LG & SD PG), participants showed the lowest goal commitment and self-efficacy of all the

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[15] Note that this is despite the fact that most participants in condition 1(PG only) reported focusing on learning as well at some point in the task; however, they nevertheless displayed the behaviours associated with learning goals less than participants in other conditions.

conditions including condition 1 (PG only - with the one exception of a very high performer). In condition 6 (SD LG & DB PG), participants showed high commitment and self-efficacy (again with one exception of a low performer). Overall, consistent with prior research, these results suggest that goal commitment and self-efficacy are partly a function of task performance. The results also suggest, however, that the conditions without a specific, difficult performance goal (conditions 2, 4 and 6) are associated with higher goal commitment and self-efficacy. Furthermore, it suggests that of the three conditions with specific difficult performance goals, condition 5 (SD LG & SD PG) is associated with the lowest expressed goal commitment and self-efficacy.

The analysis showed that participants' goal conditions influenced how they perceived and described the task. Those with only a performance goal (condition 1) described the task as "difficult" whereas those with only a learning goal (condition 2) described the task as "challenging". This subtle contrast suggests a possible difference in participants' motivation type relative to the task, with the performance goal prompting avoid motivation and the learning goal prompting approach motivation. When extended to the combined goal conditions, the analysis showed that the task perceptions were mixed within conditions. In conditions 3, 4 and 6 participants generally described the task as challenging, although those with low performance described it as difficult. In condition 5 (SD LG & SD PG), most participants described the task as difficult except for the one high performer who called it challenging. These observations suggest that in the case of combined goals perception of the task is partly a function of the assigned goal condition and partly of task performance.

Table 12: Previous thematic findings extended to combined goals

Previous Thematic Findings Extended to Combined Goals DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal						
Condition	**1 SD PG only**	**2 SD LG only**	**3 DB LG & SD PG**	**4 DB LG & DB PG**	**5 SD LG & SD PG**	**6 SD LG & DB PG**
Strategy usage	low	high	high	high	high	high
Goal commitment	low – except 1	high	mixed – low for	high – except 1	very low – except 1	high – except 1

and self-efficacy	high performer		low performers	low performer	high performer	low performer
Task perception	difficult	challenge	mixed – mostly challenge	mixed – mostly challenge	mixed – mostly difficult	mixed – mostly challenge

The four new themes that emerged from the thematic data analysis included the following: goal conflict, evaluation of performance and of self, noticing and adapting to change, and using learning techniques. The observations about these new themes are summarized in the table below. These observations represent general patterns that occurred within and between conditions. The designation of high, medium or low in each category was based on comparative rankings of frequency between conditions. Like in the previous themes above, there were exceptions within goal conditions which seem to be due to large differences in task performance. However, only one exception case within a condition was allowed to establish a new theme (i.e. 4/5 or 3/4 participants had to demonstrate the same pattern or the theme was not included).

One of the first themes to emerge was the expression of goal conflict by participants. The conflict related to the goal participants were assigned to pursue – market share percentage – relative to other possible performance considerations such as profit and debt, the long-term vs. short term interests of the company, the potential for bankruptcy, and any self-set goals participants set.[16] Interestingly, the level of concern participants expressed about the need to consider other outcomes in addition to the assigned performance goal was highest in condition 1 (PG only) followed by condition 5 (SD LG & SD PG) and condition 3 (DB LG & SD PG). In the other three conditions participants expressed a lower level of concern about other outcomes such as profit and debt. This pattern suggests that specific difficult performance goals are associated with higher goal conflict than learning goals are even when the learning goals are specific.

[16] There was no goal conflict expressed by participants between the assigned learning goal and the assigned performance goal, except in one case of a poorly performing participant in condition 5 SD LG & SD PG who focused on both goals simultaneously.

The next theme that emerged was the tendency for participants to evaluate their performance and themselves based on their task performance. Because of the difficulty of the task, these evaluations were most often negative; however, if the participant performed well they could be positive. The conditions where participants were most prone to making evaluations of their performance and themselves during the task as a result of their performance were condition 5 (SD LG & SD PG) followed by condition 1 (SD PG only) and condition 3 (DB LG & SD PG). The other three conditions were associated with low levels of such evaluative comments by participants. This pattern of finding suggests that specific difficult performance goals are associated with a stronger tendency for participants to evaluate their performance and themselves (usually negatively) than learning goals are even when the learning goals are specific.

Because this task is a highly dynamic one, an important factor in terms of task performance is the ability to notice and adapt to change. This emerged as an important theme in the interview analysis. The condition where participants expressed the least noticing and adapting to change was condition 1 (PG only). Participants in condition 2 (LG only) expressed higher recognition and adaptation to change than those in condition 1 (PG only). Participants in condition 5 (SD LG & SD PG) expressed noticing more change than those in either of the singular goal conditions; however, they seemed to struggle adapting to the change effectively. Conditions 1 (PG only) and 5 (SD LG & SD PG) were the only conditions where any participant showed a clear failure to recognize and adapt to change. Participants in the remaining conditions (3, 4 and 6) showed the highest level of noticing and adapting to change appropriately. This pattern of results suggests that participants with combined goals (except when both are at the specific difficult level) may be more effective at noticing and adapting to ongoing dynamic change.[17]

Finally, the last new theme that emerged from the interview data was participants' use of learning techniques. This relates to the use of different kinds of techniques to facilitate

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[17] This may be why the examples of perceived task dynamism in Table 2 are all from participants in combined goal conditions.

learning how to succeed in the task including the following: identifying and correcting mistakes, determining causal relationships, making clear choices, asking clarifying questions, and testing new strategies. These are all learning techniques that participants know and have the ability to use if they choose. The condition that expressed the lowest usage of these kinds of learning techniques was condition 1 (PG only). Participants in this condition expressed using fewer of these techniques and using them less often than participants in other conditions. Participants in conditions 2 (LG only) used more of these techniques and used them more often than those in condition 1. Participants in conditions 3, 4 and 6 used a lot of different learning strategies frequently. Participants in condition 5 (SD LG & SD PG), however, used more of these learning techniques more frequently than those in any other condition. This pattern of results suggests that combined goals encourage and motivate participants to use the various learning techniques at their disposal more than singular goals do. It also supports the argument that combined goals may prompt higher motivation than singular goals because the learning techniques are already known to participants so they simply need to choose to use them.

Table 13: New themes by goal condition

New Themes By Goal Condition DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal						
Condition	**1 SD PG only**	**2 SD LG only**	**3 DB LG & SD PG**	**4 DB LG & DB PG**	**5 SD LG & SD PG**	**6 SD LG & DB PG**
Goal conflict	high[18]	low	medium	low	medium	low
Evaluation – performance and self	high	low	medium	low	very high	low

[18] Goal conflict was high in this condition because participants were uncomfortable with the sole market share criterion. They felt that other criteria should also be considered.

Noticing and adapting to change	low	medium	high	high	medium to high	high
Learning techniques used	low	medium	high	high	very high	high

3.5.4 Goal interpretation process

Overall, the findings of study one supported the proposition that combined goal interpretation can change over time. Participants described that their approaches to their goals changed over time. Study one also found support that their goal interpretation changes are related to the proposed dimensions (importance, priority, sequence, progress and adaptation), although somewhat differently than originally proposed. Finally, participants described one additional unanticipated dimension – task stage – which relates to how far along the individual is in the task.

As shown in figure 2 above, the five goal interpretation dimensions were proposed to trigger changes in goal interpretation. The illustrative quotes in the table below show that in general the importance, sequence, and stage dimensions were more influential in the early rounds of the task, while the progress and adaptation dimensions become more influential in later rounds. New information received by participants through information requests and performance reports were also associated with triggering changes in goal interpretations.

Finally, it became clear that the goal priority dimension is reflected in how participants act on their goals each round based on how they interpret the goals. In other words, the priority dimension captures the participant's effective goal condition in each round. I outline below how these dimensions influenced the way participants interpreted and acted on their goals throughout the simulation. Illustrative examples of the goal interpretation dimensions are provided in the table below.

3.5.4.1 Importance

The first dimension that can trigger a change in goal interpretation is goal importance. Participants often initially dismissed the importance of the learning goal in a combined condition and focused immediately on the performance goal alone. When participants took this approach there was effectively only a performance goal and therefore no need to consider how to sequence the goals.

After a couple of rounds of performance feedback, however, participants often realized that they had underestimated the difficulty of the task. At that point, some individuals realized that perhaps the learning goal might be necessary after all and might help them figure out how to perform better. Then these individuals typically slowed down, started being more systematic in their approach (e.g. taking notes), and started seeking out more information. Once their results improved, then they would refocus their efforts on the performance goal. Not everyone made this shift, however, and several participants reflected afterwards that they wished they had realized the need to focus on the learning goal earlier.

In summary, the importance dimension captures participants' assessment of whether or not each goal is necessary and therefore accepted. Thus, it determines whether or not one or both goals are pursued. Note that none of the participants dismissed the performance goal in favour of only the learning goal.

3.5.4.2 Sequence

When participants viewed both goals as important, then the next question was the sequence in which they should be pursued. Because of the common understanding of the causal relationship between the two goals (i.e. strategies lead to performance), once participants thought both goals were important the sequence they selected was usually learning goals followed by performance goals. Therefore, sequence only becomes a consideration if both goals are deemed important first. Then, the perceived relationship between the two goals determines the sequence in which combined goals are pursued.

Lastly, the option of pursuing both goals simultaneously throughout (i.e. no sequence) seems to be less common than the sequencing approach, although participants sometimes focus on both goals temporarily during the task.

3.5.4.3 Task stage

This study revealed one additional dimension not previously considered: the stage of the task that people are at. Participants considered which goals they should be focusing on in relation to the stage they were at. For instance, as participants moved towards the later rounds their focus shifted towards the performance goal which they started to pursue more aggressively. Although the task stage dimension is closely related to the progress dimension, task stage is relative to completing the task whereas progress is relative to completing the goal.

3.5.4.4 Progress

When participants received their performance feedback at the end of each round, they evaluated their goal progress. In early rounds participants showed less concern about progress, but towards the later rounds it became their primary concern. When participants were dissatisfied with their progress in relation to their task stage (particularly when their market share dropped), they considered changes to their approach and/or changes to the level of aggressiveness.

In general, when participants were satisfied with their progress they either kept the status quo or became more aggressive. Overall, progress became a more dominant concern for participants in the later rounds of the task.

3.5.4.5 Adaptation

Because the task was dynamic, participants had to recognize the need to adapt how they were pursuing their goals in response to changes in the task or the task environment. The need for change was typically identified through new information received over the course of the task. Overall, however, most participants found the degree of change challenging to cope with.

Participants also struggled with how much they should be adapting to change versus maintaining their approach. This is because participants found it difficult to know whether change was causing their strategies to become ineffective, or whether they were simply ineffective strategies.

Adaptation was one of the most influential and challenging aspects for participants. While it factored throughout, it was a stronger concern later in the simulation than earlier, likely because participants had learned the basics by then. Because adaptation was clearly related to new information, those participants who did not purchase the available information were at a disadvantage.

3.5.4.6 Priority – effective goal condition

Unexpectedly, participants did not discuss the priority of one goal over the other except in relation to sequence. By watching participants and hearing them talk about how they decided what to focus on next, it became clear that priority is determined by considering the other dimensions. Priority is then demonstrated through the action taken that round. Priority, in other words, appears to be the outcome of the goal interpretation process. Priority is determined by considering the other dimensions, and then it is reflected in how the person acts on their goals. Thus, priority each round is demonstrated through the participant's selected effective goal condition.

3.5.4.7 Joint consideration of several dimensions

Finally, some participants articulated how they considered several of the goal interpretation dimensions at once. One participant clearly considered how goal sequence, stage and adaptation influenced her decisions at the same time.

Table 14: Examples of goal interpretation dimensions

Examples of Goal Interpretation Dimensions DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal Version A= PG then LG; Version B=LG then PG	
Importance	**Assigned goal condition**
"Initially I did not think about the strategy goals at all. I just thought about market share, because in order to get the market share you have to get the strategies. It's a given."	5B (SD LG & SD PG)
"I tried to see what worked. At the beginning I wasn't happy because of the lack of progress I was making, so I decided that what I was doing wasn't good."	4B (DB LG & DB PG)
"So I think what I probably should have done is just really dug down in the first few rounds and said how do you really increase you market share – advertising or sales force, and then really make sure I had all those licenses lined up ready to go, and then maybe fine-tuned. So, really spend the first couple rounds learning what are the drivers there, and then stop with my strategy and just fine-tune it."	5B (SD LG & SD PG)
Sequence	
"a list of things to do in sequential order which is to develop strategies first."	4B (DB LG & DB PG)
Task Stage	
"Yes, so things are in the right direction. In the first few years I wasn't really concerned about that, but as we get closer I get more and more concerned about hitting that number. Whereas in the first couple years I thought we just had to get some things done in order to ever get to that number."	1 (SD PG only)
"So in the first 7 rounds I was kind of feeling it out and seeing how the system would react, and the last 7 I was like well don't worry about dropping half a million in to R&D if that's where you think the market is going in a couple rounds."	4B (DB LG & DB PG)
Progress	
"You gave me 21% and thought I could do 25%, but then year 8 hit and I thought, crap, this is aggressive."	1 (SD PG only)
"Not great. Five years left and I'm not even close to that 21%."	5B (SD LG & SD PG)
"I think it forced me to change – something. Because the way it was it was never going to work."	5B (SD LG & SD PG)

"I think [triggers for change] would be drastic changes in market share one year after another. I think there were two years there when I saw quite a drop in market share, so I kind of had to go back and rewrite the books."	3B (DB LG & SD PG)
"I think that when you did have a negative market share it encouraged you to a more drastic change, right. That's what I kind of saw. When I had a negative market share, the other competitors were doing more than I did from this year to that year. So usually after a negative market share year I would spend way more on ads and sales than I usually did."	5B (SD LG & SD PG)
Adaptation	
"Um, well, I had to adapt. So usually, I would see a certain trend and say well, maybe what I'm doing isn't right for the certain time. So I would make decisions based on the changing environment – with the end goal of always trying to attract as many subscribers as possible."	4B (DB LG & DB PG)
"I didn't realize how fast it was growing when I first started which is why I didn't expand as aggressively as I am now. Now that I realize it, the past few years I was taking on a lot more debt just to expand."	2 (SD LG only)
"So it just changed all the time and that was pretty difficult to adapt to and remain flexible."	3B (DB LG & SD PG)
"The most challenging thing is having a main goal and then having to alter that strategy. Because you develop a couple strategies at the beginning and then you have to change those strategies as you get yearly updated information as you go along. So you try something and then you have to alter that strategy because it's not working. And because you don't know where the game is going to go."	4B (DB LG & DB PG)
Joint consideration of several dimensions	
"You know market share change, I wasn't expecting to see increases until half way through. The market was changing and there were opportunities for companies to steal from other markets, so I thought well maybe this is the chance to get in the green market share wise. Strategies, I mean you have the long-term strategies but then you have to adapt them as the environmental factors come into play."	4B (DB LG & DB PG)

In conclusion, I found there were five dimensions overall that influenced goal interpretation and triggered changes or deliberation, including one new dimension called task stage. I also found that the priority dimension was influential but that it was most evident in the way participants went about pursuing the task. Thus, a participant's priority was reflected in the effective goal condition. I found that the importance and sequence dimensions were related in that both goals needed to be viewed as important before sequence could be considered. Lastly, I found that the progress and stage dimensions were related in that progress is evaluated relative to the task stage at the time.

3.6 Revised combined goal interpretation process model

Based on the results of study one, the combined goal interpretation process model was revised accordingly. See Figure 3 below.

3.6.1 Revised definitions

The following definitions have been revised or added based on the findings from study one.

3.6.1.1 Effective goal condition

The *effective goal condition* is the specific interpretation of the assigned combined goal that the individual develops through the goal interpretation process and then acts on while performing the task. The effective goal condition relates to the perceived goal priority at a specific point in time, and thus there are four possible options: performance, learning, both goals together, or neither goal.

3.6.1.2 Goal interpretation

Goal interpretation is the individual cognitive process of interpreting an assigned combined goal condition wherein the individual determines the relative *importance* of the goals, the *sequence* in which they will be pursued, and the *task stage* the individual is at. Over time, the process is repeated and incorporates an assessment of goal *progress* as well as goal *adaptation* in response to new information and change. Goal interpretation results in the individual's effective goal condition for the task (or goal priority at that point in time) which may differ from the assigned goal condition.

3.6.1.3 Goal interpretation dimensions

Goal interpretation dimensions are the factors that are commonly considered in the goal interpretation process including goal importance, sequence, task stage, progress, and adaptation.[19]

3.6.1.4 Goal interpretation patterns

There are various goal interpretation patterns over time which stem from the four possible effective goal conditions at each point in time. If the goal interpretation pattern remains the same throughout the task, the four possible options are performance goal only, learning goal only, both goals together, or neither goal. If the goal interpretation pattern is dynamic, there are many possible goal interpretation patterns that can occur. These patterns could involve the two singular effective goal conditions in either order (performance then learning, or learning them performance), or include the both goals equally option at any point, or shift continuously throughout out the task. Thus, over multiple rounds there are numerous possible effective goal condition patterns. Since the effective goal condition is not manipulated, the distribution of these patterns within a sample will vary.

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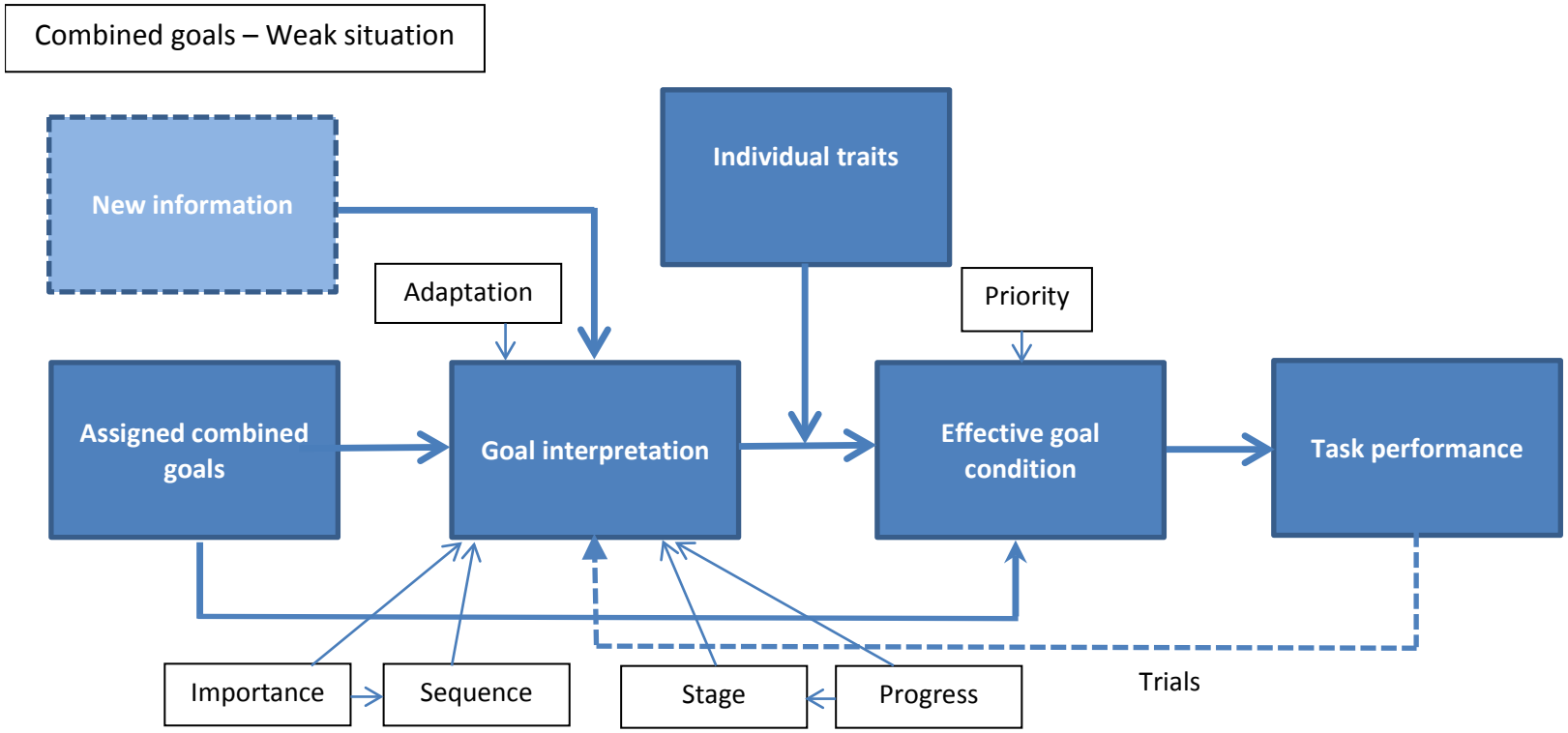
[19] Based on feedback from the supervisory committee, these dimensions were revised for study two as follows: goal clarity, goal ambiguity, goal approach uncertainty, goal progress, and goal adaptation. The details of the changes are provided in the study two method section.

Figure 3: Revised combined goal interpretation process conceptual model



3.7 Discussion

The purposes of study one were to justify conducting a larger scale study and to test the design of that study. The findings from study one were also intended to help theorize about combined goals and their effects on complex task performance, and to aid the development of hypotheses for study two. The discussion of study one is therefore divided into two sections. The first section relates to the implications of study one for study two. The second section relates to how study one develops our understanding of combined goals and their expected effect on task performance.

3.7.1 Implications for study two

The purpose of study one was to explore how people understand combined goals, how they interpret and act on combined goals, how that may change over time, and what mechanisms are involved in combined goals. The findings show that the relationship between the learning and performance goals in combined goals is typically understood as causal in that learning goals facilitate the achievement of performance goals. The results of both the quantitative and qualitative data analysis, however, show variation between-individuals and within-individuals in how combined goals are interpreted and acted upon. I found that several different factors can trigger changes in goal interpretation and approaches over time. Overall, this study provides a thorough examination of the state of having learning and performance goals assigned simultaneously. Furthermore, it provides new insights into how that state is different from a singular assigned goal condition.

In terms of the proposed study two design, study one showed that many of the design components are appropriate as planned. For instance, it is clear that the design of the experimental conditions reveals differences between learning and performance goals, between singular and combined goals, and between different difficulty levels of combined goals. Thus, all of the six conditions included in the design will help to develop a better understanding of how and why combined goals affect task performance.

While it would be interesting to also be able to test combined goal order effects by adding conditions, doing so would be prohibitive for recruitment. Since performance goals appear to dominate in combined goals, and also because the underlying logic of combined goals is that learning leads to performance, presenting the performance goal first may result in the learning goal being ignored or participants being confused. Thus, of the two possible orders combined goals can be presented, the more likely to reveal differences in task performance over singular goals is the learning then performance goal order. Consequently, this is the order that will be examined in study two. Subsequent studies can examine the effect of combined goal order on task performance.

Study one showed that the participant population has the knowledge and ability level to successfully learn the task. Nevertheless, it is also clear that there is a wide range of performance levels within the population. Consequently, a measure of individual ability should be included in study two as a possible control for the effect of initial ability on task performance. As expected, the task was clearly perceived as highly complex and dynamic by participants, although perceived complexity drops as participants learn the task. While participants showed the ability to learn the task, it was also clear that they did not know immediately how to be successful but had to learn over time how to gain market share.

Study one also showed that the assigned goal manipulations need to be clarified to ensure that the term “strategies” is understood as operational decisions and not corporate strategy. Also, a rationale for the learning goal and for the market share goal should be provided in the manipulations so participants know why they are being assigned. Because the level of the learning goal was not perceived as difficult, the number of strategies should be increased somewhat in order to be perceived as a challenging goal. As expected, self-set goals are common and that data should be collected in study two as well. As discovered in study one, self-set profit goals are also common and should also be measured. This measure should include how participants prioritize their profit goals relative to their assigned goals.

The results from study one show the influence of individual differences in combined goals, both in terms of goal interpretation differences and in terms of the way in which people go about the task. For example, based on observation alone, individuals who are focused on performance achievement may be more likely to ignore the learning goal until such time as something – such as their dissatisfaction with their performance – triggers them to reconsider that approach. Also, people who are financially risk-adverse may be at a disadvantage in the simulation since their cautious approach delays the identification of effective and ineffective strategies. These individual differences may directly affect combined goal interpretation.

Individual differences which have a clear bearing on subsequent goal-related action are the characteristics that are most worth focusing on in relation to combined goals. This is because they are most likely to be the characteristics that influence action in the effective goal condition. Personality characteristics related to cognition (e.g. need for cognition) may moderate the relationship between assigned combined goals and goal interpretation by increasing or decreasing the extent of goal interpretation the individual performs. However, it is the action-oriented personality characteristics that are more likely to moderate how goal interpretation leads to the effective goal condition. Because the research focus is on how and why combined goals are acted on and how that translates into task performance (rather than the extent to which people interpret their combined goals), action rather than cognition focused characteristics are more appropriate for study two. Trait goal orientation is an obvious candidate because it relates to how people approach goal pursuit.

The purpose of the study two is to examine the effect of combined goals vs. singular goals on complex task performance. In order to justify conducting study two, therefore, we would expect to find enough evidence in study one of differences between singular goals and combined goals, as well as between combined goals, which could lead to potential performance differences in a larger scale study.

In general, the findings from study one support the conclusion that study two is justified. Despite the fact that performance goals appear to be more dominant, combining learning

and performance goals appears to be perceived by participants as complementary rather than conflicting. Adding a performance goal to a learning goal can contribute to participant satisfaction and, as expected, increase motivation. Finally, examining combined goals from the perspective of goal interpretation also seems to be justified since study one found evidence of both within and between-individual differences in combined goal focus. Moreover, goal focus was not explained by assigned goal condition. Overall, study one provided the justification for study two as well as the opportunity to make enhancements beforehand.

3.7.2 Implications for understanding of combined goals

Study one sought to examine how people understand the relationship between combined goals, whether people have different interpretations of combined goals and how that affects goal focus, whether goal focus changes over time and why it changes, and whether there are important differences between singular and combined goals.

The finding that participants viewed the relationship between the learning and performance goals in a combined goal as a means-end relationship provides some support for goal systems theory. Goal systems theory is about how the motivational concepts of means (process) and ends (outcomes) relate to one another through cognitive processes (Kruglanski et al., 2002). A 'means' is the way in which a goal is achieved, which is similar to how many participants described the learning goal in a combined goal: as a means to achieving the performance goal. Goal systems theory is a theoretical perspective that specifically addresses the issues of the relationship between simultaneous multiple goals or *goal systems*. Goal systems are "the mental representations of motivational networks composed as interconnected goals and means" (Kruglanski et al., 2002, p. 333). In this view, the strongest goals become *focal* goals, while weaker goals are *background* goals. This model is consistent with how many participants viewed the hierarchical relationship between the learning and performance goals: learning goals were the background means goal while performance goals were the focal end goal.

Typically, however, goal systems theory relates only to subconscious rather than conscious goals, and uses implicit rather than self-reported measures. Nevertheless,

because the findings in study one about combined goals are quite consistent with some of the main aspects of goal systems theory, it may be beneficial to consider how aspects of the theory may be related to conscious goals as well.

According to goal systems theory (Kruglanski et al., 2002), goal systems consisting of goals and means are hierarchically interrelated. The cognitive linkages between goals and means may be either *inhibitory* (i.e. conflicting) or *facilitative*. Facilitative linkages are those between goals and the corresponding means by which the goals can be achieved, while inhibitory linkages are those between either competing goals or competing means. Like other cognitive processes, goals and means compete for the same limited resources. Recent research into multiple goal conflict suggests that when goals and means are perceived as facilitative, multiple goals can be pursued successfully without encountering goal conflict (Bélanger, Lafrenière, Vallerand, & Kruglanski, 2013). This facilitative relationship is consistent with how participants described understanding combined learning and performance goals. Whether this perception of a facilitative relationship between a simultaneous learning and performance goal repeats in a larger sample - and whether it translates into higher task performance – will be examined in study two.

These concepts of background and focal goals with either facilitating or inhibitory linkages may help explain some of the observations from study one about how learning and performance goal characteristics extend to combined goals. For instance, the fact that high strategy usage from a learning goal appears to extend to all four combined goal conditions (even though performance goals tend to dominate goal focus) suggests that the learning goal operates as a facilitative background goal when used in combination.

This kind of goal structure and relationship would help explain why combined goals could lead to better performance than singular goals. This is because means and ends goals work together in a facilitative manner. Similarly, this model would help explain why different goal conditions showed similar and different patterns (for example, different task perceptions and levels of goal commitment and self-efficacy). It may be that the characteristics of the dominant focal goal may extend to the combined goal.

This framework may also be helpful in explaining some of the patterns observed amongst conditions in terms of the new themes explored such as goal conflict, performance evaluation, noticing and adapting to change, and learning techniques. For instance, the pattern for goal conflict and performance evaluation suggest that the difficult performance goal is dominant and inhibits the learning goal, whereas the pattern for noticing and adapting to change and using learning techniques suggests that the learning goal may be facilitative as a background goal. How these patterns extend to task performance will be examined in study two.

Another important conclusion from study one – recognizing the important limitation of the small sample - is that it appears that not all combined goals are created equal. The four combined goals examined seem to be associated with different levels of expressed goal commitment and self-efficacy, different ways of perceiving the task, different levels of expressed goal conflict and performance evaluation, and different levels of expressed noticing change and using learning techniques. All the combined goal combination are therefore unlikely to have the same effects on task performance. In particular, condition 5 (SD LG & SD PG) stands out as being different from the other combined goals on several important dimensions including goal commitment and self-efficacy, task perception, and performance evaluation. This suggests that predictions and analyses in study two may have to consider condition 5 (SD LG & SD PG) separately. As Masuda et al. (2014) found, it may be that combined goals facilitate task performance in a curvilinear fashion such that when both goals are at the specific difficult level the effect on task performance is detrimental. My findings from study one about condition 5 (SD LG & SD PG) help explain why this may occur.

The unexpected finding in study one that those in singular goal conditions also focused at some point in the task on the opposite goal than the one they were assigned suggests that goal clarity may not in fact be what participants are most comfortable with. Rather, it suggests that the complex demands of the task prompted them to recognize the need to both learn and perform. Hence, that prompted them to focus on both goal types during the task. Goal clarity from a singular goal may not be beneficial to performance but rather detrimental because the demands of a singular goal do not fully reflect the actual

demands of the task. If so, then the complexity of a combined goal may be perceived as a better match to the task demands rather than the oversimplification of a singular goal. Thus, a combined goal may be seen as more appropriate for a highly complex task like this simulation. This may result in lower goal conflict with combined goals since they are perceived as appropriate for the task, and hence result in better performance. Consequently, goal clarity should be explored further in study two.

Finally, while in this study I have examined combined goals as a particular case of multiple goals, the goal interpretation process model developed may well generalize in whole or in part to other types of multiple goals where goal interpretation occurs with highly complex tasks. For example, while this study was a case of two simultaneous goals related to the same task, the goal interpretation process developed here may also apply to cases of simultaneous goals related to two different tasks, to cases of more than two goals relating to the same task, or to cases of simultaneous goals related to multiple different tasks. Although it is unlikely each of these scenarios will follow the identical process, it is possible that these other cases of multiple goals also demand a goal interpretation process that draws on a similar set of dimensions in order to determine the appropriate action. Likely each of these scenarios involve unique considerations similar to the finding here that performance goals tend to dominate learning goals when combined. In-depth studies will need to determine what the comparable considerations are for other multiple goal scenarios.

3.8 Strengths and limitations

There are several important limitations to this study. Firstly, the total sample size was only 28 participants. Thus, the study may suffer from range restriction and may misrepresent findings in the sample that may not be true of the larger population. Secondly, with a total sample size of only 28 participants, each condition had only four or five participants. While the participants were randomly assigned to conditions, the sample size was not large enough for randomization to distribute participant characteristics that might influence the results evenly across all conditions. Therefore, some of the patterns found in the study may reflect the particular participants in that condition more than the common effects of the condition. Thirdly, the small sample size

did not permit any hypothesis testing of the quantitative results. Fourthly, as a dissertation, the interviewer, coder, and data analyzer were the same person and therefore not blind to the assigned conditions.

Despite these limitations, however, this study provides a fuller picture and a more in-depth understanding of the effects of combined learning and performance goals than previous studies on this topic which have been only quantitative. Consequently, this study will be valuable for future theory building, as well as helpful in explaining the findings of study two in more depth than might otherwise be possible. Thus, an overall strength of this dissertation is the application of two distinct methods to the topic of combined goals.

Chapter 4

4 Study Two Introduction

Building on the findings from study one, the purpose of study two is threefold. First, it is to investigate whether performance on a complex, dynamic task is higher in singular or combined assigned goal conditions, and whether performance depends on the specific combination of learning and performance goals. In order to advise practitioners about the effective use of learning and performance goals, it is important to know how different combined goal combinations may facilitate, inhibit, or have no impact on task performance compared to singular goals. The primary purpose of study two is therefore to conduct a between-condition analysis of task performance in six different assigned goal conditions (2 singular and 4 combined).

Second, this study explores how the constructs theorized in the previous chapter influence task performance: namely, the effective goal condition and goal interpretation. This study examines how the effective goal condition varies between-individuals, how it relates to assigned goal condition, how it changes within-individuals over the course of the task, and how it relates to task performance. Further, this study examines how the dimensions of goal interpretation (e.g. goal clarity, goal ambiguity, goal approach uncertainty, and goal adaptation)[20] relate to task performance, assigned goals, and other important variables such as goal commitment and self-efficacy. The effective goal condition and the goal interpretation process are important constructs to understand because the relationship between assigned combined goals and task performance may depend on how the combined goal is interpreted and acted upon by the individual.

Thirdly, this study allows many of the key theoretical arguments outlined in chapter three to be explicitly tested. This examination is important because it allows for the revision of the conceptual model based on empirical findings. Furthermore, since there is little

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[20] See the goal interpretation measure section under Method below for details about how the goal dimensions changes from study one to study two. The new definitions are provided in section 4.2.6.5.2 (goal interpretation measures).

empirical research on combined goals to date, this study allows exploratory analyses to be conducted. Together with the results of the formal hypotheses, exploratory findings may help develop a theory of combined goals inductively as well as deductively. This process can be particularly helpful to researchers in the early stages of a line of inquiry (Locke, 2007).

4.1 Hypotheses

The hypotheses are organized into three categories and are presented with the least exploratory topics first. The first category is the relationship between assigned goals and task performance. This category is discussed first because it is most closely linked to the existing literature on combined goals, and because it is most relevant to developing potential managerial interventions. The second category is the relationship between effective goal condition and first assigned goal condition and then task performance. This category is presented next to allow for easy contrast with the previous category as well as to motivate the following category on goal interpretation. The final (and most exploratory) category examines the relationships between goal interpretation and key goal constructs including task performance, goal commitment, self-efficacy, effective goal condition, and assigned goal condition. This section is presented to examine how the specific facets of goal interpretation individually influence these various goal-related constructs.

For the purpose of clarifying the hypotheses that refer to specific goal conditions, the six assigned goal conditions - along with their shorthand descriptions in bold - are outlined below. Details about the condition design are explained below under the method section.

Table 15: Study two assigned goal conditions

Study Two Assigned Goal Conditions DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal
(1) SD PG only SD Performance goal only - 21%
(2) SD LG only

SD Learning goal only - 8 strategies
(3) DB LG & SD PG Do best learning goal & 21% performance goal
(4) DB LG & DB PG Do best learning goal & do best performance goal
(5) SD LG & SD PG 8 strategies learning goal & 21% performance goal
(6) SD LG & DB PG 8 strategies learning goal & do best performance goal

4.1.1 Assigned goals and task performance H_1

The following hypotheses examine how assigned combined goals are expected to affect performance on a highly complex task. The key research questions with respect to combined goals are how they affect performance relative to single goals, and how various combinations of combined goals affect performance differently.

The first hypothesis is a replication hypothesis to determine whether the results of the study are consistent with those of previous studies. As discussed in chapter two, the learning goal literature developed from an apparent boundary condition of goal setting theory where specific, difficult performance goals resulted in lower performance on complex tasks than do your best goals (Kanfer & Ackerman, 1989; Mone & Shalley, 1995). Winters and Latham (1996) found that by shifting the focus of the goal towards the process of developing effective task strategies instead, the effect of setting a specific difficult goal on complex task performance became beneficial. Subsequently, approximately a dozen studies have replicated this effect using a variety of complex tasks. The results of a meta-analysis of these studies found that the performance benefits of learning goals over performance goals increase as the complexity of the task increases and as the length of the task increases (Seijts et al., 2013).

Based on these findings – including a study that compared learning vs. performance goals using the same simulation task (Seijts et al., 2004) – I expect that participants assigned only a learning goal will outperform those assigned only a performance goal (Seijts et al., 2004; Seijts et al., 2013). This is because the task is a highly complex one where participants must learn by searching for and implementing effective strategies that help achieve their goals. Thus, this study was designed to permit a direct test of this replication hypothesis.

H_{1a}: Individuals assigned a single learning goal (condition 2 – LG only) will achieve higher task performance than individuals assigned a single performance goal (condition 1 – PG only).

The next consideration is how combined goals impact performance relative to singular goals and whether it depends on the combined goal difficulty level. One possibility is that having more than one goal will cause performance to deteriorate relative to having a singular goal. The research on combined goals to date suggests that this may happen under certain conditions. Specifically, Masuda, Locke & Williams (2014) found that complex task performance deteriorated when both the learning and performance goals were at the specific difficult level. This finding is consistent with findings in the multiple goal literature which show that having multiple specific goals for different tasks can result in decreased performance (Erez et al., 1990; Locke et al., 1994; Schmidt & DeShon, 2007; Schmidt & Dolis, 2009).

This detrimental effect on performance is typically explained by resource allocation theory which states that cognitive resources are limited which leads to lower performance when they must be divided between tasks (Kanfer & Ackerman, 1989). In the case of novel complex tasks, individuals must split their limited cognitive resources between the task of learning how to perform and the task of achieving performance goals. When both goals are at the specific difficult level, they both demand a lot of attention and effort. Consequently, people may be unsure which goal to focus on and split their effort between the goals, leading to lower performance overall. Furthermore, because they demand a lot of effort, simultaneous high goals may lead to depletion effects (Welsh & Ordóñez,

2014). Moreover, having two difficult goals may make people more likely to perceive the goals as a threat rather than a challenge since it is more difficult to accomplish two difficult goals than one (Drach-Zahavy & Erez, 2002).

A detrimental effect on performance of two goals at the specific difficult level could also be explained by the negative effects of pressure and tension (Emsley, 2003). Individuals may face additional pressure from having two specific difficult goals while being equipped with the same limited resources to achieve the goals. If having two challenging goals results in additional pressure, then people may experience increased tension leading to performance detriments (Cianci et al., 2010). The increased pressure from having two challenging goals may lead people to view the task as one where they need to avoid showing incompetence (performance avoid motivation) rather than as an opportunity to demonstrate competence (performance approach motivation). Performance avoid motivation is known to result in lower performance on complex tasks (Darnon, Butera, Mugny, Quiamzade, & Hulleman, 2009). Furthermore, pressure and tension may also increase in response to negative performance feedback from splitting limited cognitive resources between two goals. Negative feedback is known to cause people to adjust goals downward (Ilies & Judge, 2005). Thus, splitting cognitive resources between two difficult goals may lead to increased pressure and tension, resulting in performance deterioration compared to a singular goal.

Thus, consistent with prior studies, I anticipate that combined goals where both goals are at the specific difficult level will be detrimental to task performance relative to a singular goal. Furthermore, I expect that combined goals where both goals are at the specific difficult level will result in worse performance than combined goals where only one goal is specific and difficult.

It is important to note, however, that while this may appear to be a replication of the Masuda et al. (2014) findings, it is in fact an extension. There are three important design differences between this study and Masuda et al.'s (2014). Firstly, according to Wood's criteria (1986), the simulation task is significantly more complex because it has more components that have to be coordinated to be successful. Second, the simulation is also

dynamic as the rules that determine performance shift significantly over time. For both of these reasons, the learning demands of the simulation task in this study are substantially higher than those of the Excel task used by Masuda et al. (2014). Thirdly, in the design of the Masuda et al. (2014) study, participants were given a list of effective task strategies that they had to learn how to implement in order to perform the task. Lastly, Masuda et al. presented the combined goals in performance then learning goal order. In contrast, this study requires participants to learn the effective task strategies on their own first and then also determine how to implement them successfully. Thus, this study examines whether Masuda et al.'s (2014) findings extend to a more complex task and a more in-depth learning process. This question is important because workplace tasks where combined goals may be applied are often highly complex and dynamic. Furthermore, rarely in the workplace do such tasks come with a list of effective task strategies to implement. Finally, this study presents the combined goals in learning then performance goal order. For these reasons, testing this hypothesis in the current design will provide a more practically useful conclusion and determine whether Masuda et al.'s finding extends to the current context. Thus, I hypothesize that:

H_{1b}: Individuals assigned a combined goal with both goals at the specific difficult level (condition 5 - SD LG & SD PG) will have lower task performance than individuals assigned a singular performance goal (condition 1 – PG only) or a singular learning goal (condition 2 – LG only).

H_{1c}: Individuals assigned a combined goal with both goals at the specific difficult level (condition 5 - SD LG & SD PG) will have lower task performance than individuals assigned any of the other combined goal combinations (condition 3 – DB LG & SD PG, condition 4 – DB LG & DB PG, or condition 6 – SD LG & DB PG).

Tasks that are novel and highly complex mean that people cannot simply rely on known, pre-existing strategies (Winters & Latham, 1996). Rather, they must learn and implement new strategies that are effective in achieving results. Hence, researchers have recommended learning goals that focus people on learning new task strategies over performance goals intended to motivate (Seijts & Latham, 2005, 2012).

However, while there is limited research in the area of conscious assigned goals, research in related areas suggests that a focus on both learning and performance may be beneficial. For instance, in the educational field, research into mastery and performance achievement goals (which are non-specific goals similar to do best learning and do best performance goals) has consistently found that people who pursue both achievement goals outperform those who pursue only one (Barron & Harackiewicz, 2001; Beenen, 2014; Butler, 2006; Darnon, Dompnier, Delmas, Pulfrey, & Butera, 2009; Darnon, Dompnier, Gilliéron, & Butera, 2010; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Pintrich, 2000). In psychology, having both types of achievement goal has also been found to result in superior performance on creativity outcomes (Miron-Spektor, 2012; Miron-Spektor & Beenen, 2015; Miron-Spektor, Gino, & Argote, 2011). Moreover, in the nascent literature on subconsciously set goals using photographic primes, having both goals simultaneously has been found to improve task performance (Chen & Latham, 2014). In all of these related contexts, researchers have speculated that the increase in performance from having both goals is due to two reasons. First, people can gain the separate beneficial effects of each goal type. Second, having both goals allows people to adapt better to task demands. Other than the one published study on conscious assigned combined goals (Masuda et al., 2014), however, we know little about whether the benefit of having both goals extends to conscious assigned goals in the goal setting theory tradition.

In summary, the research in related fields suggests that having both goal types at the same time benefits performance (except when both goals are specific and difficult as previously discussed). If we extend this idea to conscious assigned goals and consider it from a goal setting theory perspective, why might combined goals lead to better performance than singular goals?

Firstly, complex tasks unfold over time and therefore require motivation in the form of on-going attention, effort and persistence to complete successfully. Motivation is recognized as a requirement for effective learning because learning itself requires effort and perseverance (Zimmerman & Risemberg, 1997). Thus, adding a performance goal to a learning goal may increase motivation and lead to higher perseverance, which may in

turn increase the effectiveness of the learning process and lead to higher task performance. Therefore, a key reason for expecting that combined goals may enhance performance on a novel, complex task is the inherent learning and motivational demands of that task itself (Hackman, 1969). Consequently, setting goals that trigger the mechanisms for both processes may enhance task performance beyond what a singular goal can accomplish alone. Like in the achievement goal literature, this may happen even if the conscious assigned goal(s) is a do best goal.

Secondly, it may be that the ability to acquire new task strategies is aided by the use of known strategies. Research on the differences in the effects of learning versus performance goals has found that they operate on different processes: learning goals on ability acquisition behaviours, and performance goals on motivation which should include the use of previously known strategies (Noel & Latham, 2006; Seijts et al., 2013; Winters & Latham, 1996). While previously known strategies may not be *sufficient* to succeed at the task, utilizing previously known strategies – particularly those that relate to the process of learning itself - may be helpful to the acquisition of new strategies. For example, methods that people already know – such as trial and error, for instance – can be used to test the effectiveness of new strategies. Thus, providing motivation to use known task strategies via the inclusion of a simultaneous performance goal may also assist in the learning process. This argument is supported by research that shows that learning itself is a motivated activity (Zimmerman & Risemberg, 1997). Furthermore, research on assigned learning goals and complex tasks has found that people often self-set a performance goal and that doing so is associated with higher performance (Seijts & Latham, 2011). Therefore, since increased motivation may enhance learning, combined goals may improve complex task performance.

Moreover, a combined goal may provide people with a flexible way to customize their goal focus however they deem appropriate at any given time during the task. Unlike a singular goal, a combined goal may allow people to switch focus between the two goals – and therefore to switch between the two different mechanisms of motivation and learning. This ability to switch freely between multiple goals has been shown to improve performance on creative tasks (Madjar & Shalley, 2008). By providing an explicit goal

for both processes, a combined goal may legitimize the dedication of attention and effort to both the learning and performance aspects of the task, whereas a singular goal legitimizes one and not the other. A combined goal may therefore allow people to customize how and when they focus on the two goals. Consequently, combined goals may allow people to pursue the goal focus option that work best for them, including options like switching back and forth between the goals, sequencing the goals either way, or focusing on both goals at the same time. This flexibility in goal focus and timing may therefore enhance task performance.

The flexibility of goal focus offered by combined goals may be an advantage compared to a singular goal, particularly for a highly complex task. On a highly complex task, focusing on learning effective goal strategies is especially important. A combined goal may help people recognize that they need to take time to learn the task first and then shift to focusing on performance. Because we know that once the task has been mastered a continued focus on learning results in lower performance (Brown & Latham, 2002), a goal that encourages learning but also enables a switch away from learning to performance is important. Therefore, a combined goal may allow people to adjust their goal focus appropriately as they learn task strategies and enable them to a focus on performance when they are ready.

Similarly, when people encounter performance difficulties, a combined goal may help them adaptively switch back to a focus on learning new effective strategies. This shift in focus may also help prevent or reduce the drop in self-efficacy which people experience when performance is lower than expected (Bandura, 1997; Bandura & Locke, 2003). Once performance improves, people can switch back to focusing on the motivating performance goal. Because highly complex tasks are dynamic, the need to focus on learning may resurface later in the task. Therefore, a combined goal that allows the switching back and forth from a focus on learning or performance as the task changes should be beneficial to task performance over time. In summary, combined goals may allow people to switch their goal focus appropriately throughout the task to optimize performance.

Once again, because the effect of having two specific difficult goals appears to be detrimental to task performance (Masuda et al., 2014), the above arguments are not expected to apply to condition 5 (SD LG & SD PG). Therefore, subject to that restriction, I hypothesize that:

H_{1d}: Except when both goals are at the specific difficult level (condition 5 – SD LG & SD PG), individuals assigned a combined goal (condition 3 – DB LG & SD PG, condition 4 – DB LG & DB PG, and condition 6 – SD LG & DB PG) will outperform individuals assigned a singular goal (condition 1 – PG only, or condition 2 – LG only).

The next question to consider is how the specific combined goal difficulty level combinations will affect task performance.

An important consideration is the effect of the performance goal in combined goal conditions. The literature on complex tasks shows that specific difficult performance goals result in lower task performance because, rather than focusing attention and effort on systematically developing effective task strategies, people focus on the desired outcome and scramble to achieve the performance goal (Kanfer et al., 1994; Mone & Shalley, 1995). I therefore expect that combined goals with specific difficult performance goals (condition 3 – DB LG & SD PG, and condition 5 – SD LG & SD PG) will result in lower performance than combined goals with do best performance goals (condition 4 – DB LG & DB PG, and condition 6 – SD LG & DB PG). I predict this outcome because do best level performance goals are less likely to result in participants' focusing all their attention and effort on the outcome goal, which means they are more likely to dedicate attention and effort to learning effective task strategies. In contrast, performance goals at the specific difficult level are highly salient and are therefore more likely to distract attention away from less focal goals like learning (Shah, Friedman, & Kruglanski, 2002).

Furthermore, if performance goals do tend to dominate learning goals in combined goal conditions, having a do best level performance goal may reduce the likelihood of that occurring. This is because a do best level performance goal is a weaker situation than a specific difficult one, and therefore has a less powerful effect on behaviour (Johns, 2006;

Mischel, 1977). If participants interpret the do best level performance goal as a signal that focusing heavily on the performance goal is not required, then they may be less likely to succumb to the detrimental effects of performance goals. Such participants are also more likely to act in an effective goal condition that does not focus exclusively on the performance goal. Therefore, a do best level performance goal may prevent the exclusive focus of attention and effort on outcomes - thereby allowing attention and effort to also be devoted to strategy development - while still having the intended motivational effect. A do best level performance goal is therefore more likely to result in an effective combined goal condition rather than an effective singular goal condition, and thus more likely to lead to higher task performance.

A specific difficult level performance goal, on the other hand, signals the importance of the performance goal. Since performance goals may dominate learning goals in combined goal conditions, performance goals at the specific difficult level may overpower learning goals at either difficulty level. This means that when combined goals include specific difficult performance goals, people will be more likely to interpret them in a way that leads to an effective singular goal condition rather than a combined goal condition because the performance goal is perceived as the goal that really matters. Thus, because they lead to effective singular goal conditions, combined goals with specific difficult level performance goals should result in lower task performance than combined goals with do best level performance goals. Therefore, I hypothesize the following:

H_{1e}: Individuals assigned a combined goal with a do best level performance goal (condition 4 – DB LG & DB PG, or condition 6 – SD LG & DB PG) will outperform individuals assigned a combined goal with a specific difficult performance goal (condition 3 – DB LG & SD PG, or condition 5 – SD LG & SD PG).

Another important consideration is the demands of the task itself. The task in this study is a highly complex, dynamic one that requires learning throughout. Participants need to identify and implement effective task strategies continually in order to succeed at the task.

Previous studies have shown that performance on such tasks is higher when learning goals are at the specific difficult level than at the do best level because more difficult learning goals result in the identification of more effective task strategies (Seijts & Latham, 2011). I therefore expect that combined goal conditions a specific difficult learning goal (condition 5 – SD LG & SD PG, or condition 6 – SD LG & DB PG) will result in higher task performance than condition with a learning goal at the do best level (condition 3 – DB LG & SD PG, or condition 4 – DB LG & DB PG). A specific difficult learning goal in a combined goal condition will help to focus participants' attention, persistence and effort towards the necessary task of learning because the goal may signal to participants the importance of focusing on strategy development. If participants interpret the high difficulty level of the learning goal as a cue to its importance, they may be more likely to act in an effective learning or effective combined goal condition. Since the effective goal condition is the one that is directly acted upon, a focus on the learning goal should increase performance on a highly complex task. Therefore, I hypothesize the following:

H_{1f}: Individuals assigned a combined goal with a specific, difficult learning goal (condition 5 – SD LG & SD PG, or condition 6 – SD LG & DB PG) will outperform individuals assigned a combined goal with a do best learning goal (condition 3 – DB LG & SD PG, or condition 4 – DB LG & DB PG).

Summing the predicted effects of the learning goal and the performance goal difficulty levels, I predict that condition 6 (SD LG & DB PG) will result in the highest task performance. This is because condition 6 (SD LG & DB PG) may signal to people to focus on the development of effective task strategies through the specific difficult learning goal. At the same time, condition 6 (SD LG & DB PG) may signal through the do best performance goal that performance is not more important than learning (Emsley, 2003). This difference in the difficulty level of the two goals may therefore encourage people to interpret the goals in a way that ensures both goals are represented in the effective goal condition they act on. Thus, people in condition 6 (SD LG & DB PG) may be more likely to experience an effective goal condition that is a combined rather than singular goal. Therefore, they may be better able to adaptively adjust the focus of their

attention and effort between the two goal types as required throughout the task. In summary, I predict that condition 6 (SD LG & DB PG) provides the best combination of the better learning goal for the task and the better performance goal for the task. Furthermore, condition 6 (SD LG & DB PG) provides a relative difference in the goal difficulty level between the two goals that may help prevent the dominance of the performance goal over the learning goal.

It is important to note that this prediction is different from the results of Masuda et al.'s study (2014). That study found that combined goals at the specific difficult level for performance and the do best level for learning (closest to this study's condition 3 – DB LG & SD PG) resulted in the highest performance. I expect that the results of this study will be different from Masuda et al.'s (2014) because of the design differences in this study explained above: higher coordinative complexity, higher dynamic complexity, and more in-depth learning demands. Due to these differences in design, in the current study I expect that the learning goal is much more important for task performance than it was in the Masuda et al. study (2014). Consequently, in contrast to Masuda et al.'s (2014) findings, I predict that condition 6 (SD LG & DB PG) and not condition 3 (DB LG & SD PG) will result in the highest performance. Therefore, I hypothesize the following:

H_{1g}: Individuals assigned a combined goal with a specific, difficult learning goal and a do best performance goal (condition 6 – SD LG & DB PG) will outperform individuals assigned any of the other five goal conditions (conditions 1 – 5).

4.1.2 Summary of H_1

The following table summarizes hypotheses $1_{a\text{-}g}$. The check mark denotes higher performance and the "x" denotes lower performance.

Table 16: Summary of H_1

Summary of H_1 DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal ✓= higher performance; × = lower performance						
	Condition 1 SD PG only	Condition 2 SD LG only	Condition 3 DB LG & SD PG	Condition 4 DB LG & DB PG	Condition 5 SD LG & SD PG	Condition 6 SD LG & DB PG
H1a	×	✓				
H1b	✓	✓			×	
H1c			✓	✓	×	✓
H1d	×	×	✓	✓		✓
H1e			×	✓	×	✓
H1f			×	×	✓	✓
H1g	×	×	×	×	×	✓

4.1.3 Effective goal condition H_2

The next set of hypotheses explores the relationship between effective goal condition and assigned goal condition, followed by the relationship between effective goal condition and task performance. Recall that the *effective goal condition* is the specific interpretation of the assigned combined goal that the individual develops through the goal interpretation process and then acts on while performing the task. The effective goal condition relates to a person's goal focus at a point in time. Thus, there are three possible

options for combined goals: effective performance goal, effective learning goal, or effective combined goal.[21]

According to goal setting theory, cognitive focus is one of the main mechanisms by which goals function because goals direct attention and effort towards goal areas and away from non-goal areas (Locke & Latham, 1990, 2002). As Locke & Latham explain, "goal setting results in a singleness of purpose" (2013, p. 572) – that is, a focus on the goal. Goal setting theory argues that assigned goals are effective because they focus people's attention and effort on attaining the assigned goal (Locke & Latham, 1990). In contrast, effective goal conditions are not assigned but rather arise in response to how individuals interpret their assigned goals which then determines which goal(s) they will focus on.

In the case of singular assigned goals, goal setting theory would therefore predict that people will focus on their assigned goal and not on other options. In other words, from a goal setting theory perspective we would expect that people assigned singular performance goals will focus predominantly on their performance goal and therefore have an effective performance goal condition. Similarly, goal setting theory would predict that people assigned a singular learning goal will focus predominantly on their learning goal and therefore have an effective learning goal condition. Thus, in the case of singular goals, goal setting theory predicts that assigned and effective goal conditions will correspond (i.e. performance to performance, and learning to learning).[22]

Importantly, however, to my knowledge this assumption behind goal setting theory has not been explicitly tested. Studies typically do not ask people what they focused on after

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[21] Focusing on neither goal reflects goal non-acceptance or abandonment (Erez & Kanfer, 1983) and is therefore eliminated as a valid option.

[22] It is important to note that goal setting theory does acknowledge that people can self-set goals; however, to the best of my knowledge goal setting theory does not explicitly outline how the goal focus mechanism functions in situations where there are multiple goals like proximal and distal goals, or assigned and self-set goals, or learning and performance goals.

being assigned a goal.[23] Of course, studies frequently ask people to confirm their assigned goal as a manipulation check. But, people's awareness of their assigned goals and their actual goal focus at a point in time may not reflect the same information. Awareness of assigned goals does not necessarily mean that people focused on those assigned goals. It is possible that people may know what their assigned goal was and therefore pass a manipulation check, but that the goal they actually acted upon was different from what they were assigned. An example of this would be when people pursue self-set goals over their assigned goals, which occurred in the only published study on combined goals to date (Masuda et al., 2014). The distinction between awareness of goal assignment and goal focus is important because the latter relates to the goal mechanism of cognitive focus whereas the former may not. Therefore, to see if the relationship between assigned goal condition and effective goal condition for singular goals is as predicted by goal setting theory, I will test the following hypothesis:

H_{2a}: Individuals assigned singular goals will report having the corresponding effective goal condition (performance to performance; learning to learning).

In the case of assigned combined goals, however, it is unclear how the "singleness of purpose" effect - that is, goal focus - will function. When people are assigned combined goals, what goal(s) will they focus on? Will they focus on one goal in priority over the other, or will they focus on both goals equally? Goal setting theory offers no clear prediction for the object of goal focus in the case of combined goals, so the relationship between assigned combined goals and effective goals is unclear. On one hand, an individual's assigned goals should determine the set of possible effective goal conditions (which, for combined goals, is performance, learning, or both). In that sense, the assigned goal condition and effective goal condition are related because the latter is a choice from within the former set.

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[23] A possible exception would be studies where people were assigned both proximal and distal goals and asked which they prioritized. Studies on multiple goals using multiple tasks typically do not ask participants their goal focus, but rather infer it from the time spent on one task versus the other. In these studies, the goals are all performance goals relating to different tasks.

On the other hand, however, people assigned the same combined goals could elect to focus on any of the three possibilities from within that set (i.e. performance only, learning only, or both). Hence, we would expect to see variation between-individual in effective goal condition even when people are assigned the same combined goal. Moreover, people with different assigned combined goals may elect to focus on the same effective goal condition. As a result of these two sources of variation, I do not anticipate a clear relationship between specific assigned combined goal conditions and specific effective goal conditions, other than I expect that participants' effective goal conditions will be from among the set established by the assigned combined goal. Thus, there is no hypothesis based on goal setting theory relating specific assigned combined goal conditions to effective goal conditions. However, in conjunction with the analysis for H2a, the following research question will be examined: *what is the relationship between assigned goal condition and effective goal condition for combined goals?*

The relationship between assigned combined goals and effective goal condition is an important one to understand because participants' effective goal conditions reflect how they cognitively respond to their assigned goals. Thus, the effective goal condition has a more proximal and therefore potentially stronger influence on task performance than the assigned goal condition. Participants' effective goal conditions, therefore, should be predictive of task performance because they relate closely to the behaviours that determine performance.

Furthermore, the possible dominance of one effective goal condition over the others is important to understand since it may limit the efficacy of combined goals in practice. For instance, if assigned performance goal conditions simply dwarf assigned learning goal conditions that would explain why people with different assigned combined goals can have similar performance results. Effectively, different assigned combined goals (e.g. SD LG & DB PG vs. DB LG & SD PG) may be rendered more similar if performance goals dominate over learning goals since the difference in the learning goals would be ignored. Similarly, dominance of one goal type over the other could explain why

performance in assigned combined goal conditions may not differ significantly from performance in assigned singular goal conditions since the less dominant goal may simply be ignored. Thus, assigned combined goals could be rendered effective singular goals through the goal interpretation process, rendering assigned combined goals ineffective.

Finally, dominance of performance goals over learning goals may also explain why people with the same assigned combined goals could have different performance results. This is because goal dominance may occur in some individuals but not in others, or more strongly in some individuals than in others. For instance, this could happen due to variance in individuals' trait goal orientation or other trait characteristics. Therefore, we would expect to see variation in performance between-individuals with the same assigned combined goals. Consequently, while goal setting theory may not allow us to predict the nature of the relationship between assigned and effective goal condition clearly, another perspective – specifically the perspective of goal interpretation – may provide new insight.

From a goal interpretation perspective, the relationship between assigned combined goals and effective goal condition will depend on how the individual interprets the goals. One possibility is that since combined goals provide two separate goals, they could result in people focusing on both goals simultaneously while ignoring non-goal areas.

Another possibility, however, is that if there is an imbalance in the perceived characteristics of the two goals (for example, the relative strength, priority or importance of the goals), then the goal that is perceived as dominant will become the goal that is focused on, while the less dominant one may be focused on only temporarily, secondarily, or not at all. Thus, the goals may exist in goal hierarchy (Austin & Vancouver, 1996). Consequently, while it is unclear from a goal setting perspective how combined goal focus will operate, the process of goal interpretation may help explain whether and how assigned combined goal conditions and effective goal condition are related.

Based on the goal interpretation perspective and the findings from study one, I therefore predict that people assigned combined goals will focus on performance goals more commonly than learning goals or both goals equally. In other words, I expect that the effective performance goal condition will dominate over the effective learning goal condition and the effective combined goal condition. This is likely to occur because people perceive the final outcome (performance goal) to be more important than the means or process by which the outcome is obtained (learning goal). In short, most people are socialized to focus on the end result over the process.

This prediction is also consistent with goal systems theory which argues that goals exist in a hierarchical order with the more dominant goals taking priority over background goals (Kruglanski et al., 2002; Shah, Kruglanski, & Friedman, 2003). In this perspective, goals associated with the desired end result are typically the focal goal, while goals associated with the means to achieving the focal goal are typically background goals (Kruglanski et al., 2002; Shah et al., 2003). Thus, in the case of combined goals the performance goal is more likely to be the focal goal while the learning goal is more likely to be the background goal. Similar hierarchical effects of achievement goals have also been found in the achievement motivation literature (Elliot & Church, 1997)

Finally, I also predict that that the dominance of the effective performance goal condition will extend to those in assigned singular goal conditions as well. This is because, despite being assigned a singular learning goal, people may nonetheless perceive the task outcome as more important than the process. This prediction is consistent with findings that the majority of people assigned a singular learning goal also self-set a personal performance goal (Seijts & Latham, 2011). This indicates that people assume that performance outcomes are important even when they are assigned only a learning goal. I therefore hypothesize that:

H_{2b}: Individuals will pursue an effective performance goal condition more frequently than an effective learning goal condition or an effective combined goal condition (both goals equally).

4.1.3.1 Effective goal condition and task performance

The next question is how the use of specific effective goal conditions affects task performance. Both the effective goal condition at different stages of the task, as well as any change in the effective goal condition over the course of the task, may influence task performance. This is because focusing on one goal over the other at certain points in time may be adaptive or maladaptive depending on the demands of the task at that time.

It is important to note that the effects of effective learning and effective performance goal conditions on task performance are expected to parallel the known effects of assigned learning and performance goals on complex tasks. In other words, whether a person's specific goal focus stems from goal assignment or from goal interpretation, it is assumed that the effect on task performance of an effective learning goal condition will parallel the effect of an assigned learning goal, and the effect of an effective performance goal condition will mirror the effect of an assigned performance goal. This is a reasonable assumption because the effects that the goals induce should be the same whether a person's goal focus stems from goal assignment or from goal interpretation. Thus, an effective learning goal condition should produce the same effects as an assigned learning goal (i.e. a greater emphasis on learning effective task strategies, higher self-efficacy and higher commitment), and an effective performance goal condition should produce the same effects as an assigned performance goal (i.e. higher tension and 'mad-scramble' behaviour, lower self-efficacy, and lower goal commitment) (Seijts & Latham, 2012; Seijts et al., 2013).

Based on the complexity and novelty of the task in this study, goal setting theory predicts that focusing on a performance goal will lead to lower performance because people first need to learn effective strategies (Kanfer & Ackerman, 1989; Seijts et al., 2013; Winters & Latham, 1996). Thus, when people are assigned combined goals, using an effective performance goal condition should be related to lower task performance.

H_{2c}: Individuals assigned combined goals who have an effective performance goal will perform worse than individuals who have an effective learning or effective combined goal condition.

It is less clear what the effect will be on task performance of an effective learning goal condition compared to an effective combined goal. On the one hand, an on-going focus on learning is beneficial for mastering a dynamic task, so using an effective learning goal condition should enhance performance. On the other hand, once people have learned effective task strategies, persisting with an effective learning goal condition should decrease task performance (Brown & Latham, 2002). Rather, once people have learned effective task strategies a shift to an effective performance goal should improve motivation and performance. Thus, the exclusive use of an effective learning goal condition throughout the task should lead to lower performance than an approach that includes both the effective learning and performance goals. An effective goal condition that includes both goals, therefore, should lead to higher task performance.[24]

H_{2d}: Individuals assigned combined goals who have an effective combined goal condition will perform better than those who have an effective learning or effective performance goal condition.

Another reason why combined goals may improve task performance over single goals is that being assigned both a learning and performance goal may allow people to adaptively switch goal focus appropriately during the task based on their performance feedback (Gopher, Kramer, Wiegmann, & Kirlik, 2007). People who do not switch effective goal condition should have lower performance since they are less likely to appropriately adapt their goal focus. Thus, people who switch effective goal condition over the course of the task should perform better than those who only use the same effective goal condition. Continuing to use the same effective goal condition rather than adaptively switching goal focus should therefore be associated with lower task performance. This is particularly true of a dynamic task where the need to learn is ongoing. Therefore, I hypothesize that:

H_{2e}: Switching effective goal conditions will be associated with higher task performance.

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[24] I note that testing the impact of specific patterns of effective goal condition over time (e.g. learning, performance, both, performance) on performance is not possible in this study since effective goal condition is not manipulated and there are many permutations.

4.1.4 Summary of H_2

The following table summarizes hypotheses 2_{a-e} and the research question.

Table 17: Summary of H_2

Summary of H_2			
	Assigned goal condition	**Effective goal condition**	**Task performance**
H2a	Singular goal	Same as assigned goal	
RQ1	Combined goal	? (unknown)	
H2b	All – singular and combined goals	Performance > learning or combined (both)	
H2c	Combined goal	Performance	Lowest
H2d	Combined goal	Combined (both)	Highest
H2e	All – singular and combined goal	Change between rounds	Increase

4.1.5 Goal interpretation H_3

Recall that the effective goal condition is theorized to arise from the process of interpreting an assigned goal condition. If the effective goal condition does indeed influence task performance, then it is important to understand the goal interpretation process that gives rise to the effective goal condition. The purpose of the following section is to learn more about the goal interpretation process for assigned combined goals and its component dimensions, and in particular how those dimensions influence people pursuing goals.

Consequently, the next set of hypotheses investigates the relationships between the goal interpretation dimensions and task performance, goal commitment, self-efficacy, and

effective goal condition. In addition to understanding how the goal interpretation dimensions affect task performance, it is important to examine the relationships between the dimension and other important goal-related constructs because those relationships may help explain *why* goal interpretation affects task performance.

The goal interpretation dimensions from study one were simplified based on feedback to the following five dimensions for study two: goal clarity, goal ambiguity, goal approach uncertainty, goal progress, and goal adaptation.[25] The dimension definitions developed for the purpose of this study are outlined below. These definitions were based on prior research as well as input from study one.

Table 18: Goal interpretation dimension definitions for study two

Goal Interpretation Dimension Definitions for Study Two	
Goal interpretation dimension definitions for study two:	**Study one dimensions**
Goal clarity: The extent to which a person has a clear, unambiguous understanding of his or her assigned goal(s).	n/a
Goal ambiguity: The extent to which a person has to cope with missing or incomplete information about his or her assigned goal(s) in order to try to understand it/them.	n/a
Goal approach uncertainty: The extent to which a person has to cope with uncertainty about how best to go about completing his or her assigned goal(s).	n/a
Goal progress: The extent to which a person reassesses his or her interpretation of, or approach to, the assigned goal(s) based on performance feedback.	Goal progress
Goal adaptation: The extent to which a person reassesses his or her interpretation of, or approach to, the assigned goal(s) due to changes in the market conditions.	Goal adaptation

[25] The goal interpretation dimensions were revised after study one based on feedback from the supervisory committee. Goal clarity was added in study two. Goal importance was broadened to include any kind of goal ambiguity. Goal sequence was broadened to include any uncertainty about how to approach the task. Goal progress and task stage were combined together since they were closely related. Goal adaptation was unchanged.

The first three goal interpretation dimensions (clarity, ambiguity, approach uncertainty) come into play from the beginning of the task when goals are assigned. Goal clarity is an existing construct that relates to how clear and specific goals are, which allows them to be well understood (Kwan et al., 2013). Goal ambiguity relates to missing information that people might want in order to understand combined goals better (Chun & Rainey, 2005; Locke & Latham, 2013a). An example from study one of such missing information is relative goal importance.

Goal ambiguity is important to understand because it "allows leeway for interpretation" (Chun & Rainey, 2005, p. 2). When goals are ambiguous they enable "competing interpretations" (Feldman, 1989, p. 7), resulting in a variety of perceptions of what the goal means (Feldman, 1989). The corollary of this idea is that when goals are clear they lead to greater uniformity of interpretation, as argued in chapter three. While goal ambiguity could be conceptualized as a lack of goal clarity rather than a separate factor, study two included both dimensions to test whether they are in fact opposite ends of the same dimension or whether they are related but separate constructs. It is possible, for example, that the information people know about their goals is clear (high goal clarity) but somehow insufficient or incomplete (high goal ambiguity). Goal clarity and goal ambiguity, however, are clearly related dimensions (Locke & Latham, 2013a). Consequently, the hypotheses for goal clarity and goal ambiguity are presented together rather than separately.

Goal approach uncertainty relates to indecision about how to proceed pursuing the goals including the sequencing options from study one. Thus, these three dimensions are not inherently dynamic, although they could potentially change over the course of the task. Separate hypotheses have been developed for these three constructs.

The latter two dimensions (progress and adaptation), however, relate to how people integrate new information they received during the course of the task. Hence, these two dimensions are inherently dynamic. One source of new information during the task is performance feedback which provides participants information about how they are progressing towards their goal. This new information may change how people view their

progress towards their goals. Consequently, such performance feedback may change how people interpret their goals. For instance, people who receive poor performance feedback may switch from focusing on the performance goal to focusing on the learning goal. This source of feedback may therefore impact how participants interpret their goals and thus is called goal progress.

The other source of new information that comes during the course of the task is the changes to the task environment as it evolves. Participants receive information about how the task context changes over time as they complete the simulation. This new information may also change how people interpret their goals because the shifting task environment requires participants to continuously adapt to the new context. The new information may therefore prompt participants to change their interpretation of their goals accordingly. For instance, if participants recognize that the business context has changed significantly, they may recognize the need to adapt and switch to focusing on their learning goal in order to learn new strategies to perform better instead of continuing to focus on their performance goal. This source of new information obtained over the course of the task has been called goal adaptation.

Both goal progress and goal adaptation, therefore, reflect how participants integrate new information obtained throughout the task and how that new information may influence their goal interpretation. While these two sources of new information have separate origins – task feedback and environmental change – it is unclear whether participants will differentiate between the two sources. It is possible that all new information will simply be perceived as the same regardless of its source. If that is the case then goal progress and goal adaptation will form one factor reflecting the need to adapt one's goal focus to new information rather than two separate factors. Since this was unclear after study one, the questionnaire for study two included the two factors separately. It is possible, however, that the exploratory factor analysis of the study two goal interpretation items will show that goal progress and goal adaptation are one factor. In anticipation of that possibility, the hypotheses for goal progress and goal adaptation are presented together.

Overall, examining these relationships between important goal related constructs and the dimensions of goal interpretation may provide insights into how the goal interpretation process works.

4.1.5.1 Goal interpretation and task performance

The first set of hypotheses relate to how the dimensions of goal interpretation affect task performance. As discussed in chapter three and in previous hypotheses, how people interpret the goal should influence task performance. This section examines the effects of specific goal interpretation dimensions on performance.

Studies have consistently found that goal clarity is positively related to task performance (Kwan et al., 2013; Locke & Latham, 1990). This is because clear goals focus attention and effort on the task, which leads to better performance. I expect that on this highly complex task goal clarity will be positively related to task performance as well. A clear goal should help focus participants on the desired outcome and may therefore help them manage the complexity of the task. Thus, as in previous research, I expect that higher goal clarity will lead to better performance.

H_{3a}: Goal clarity will be positively related to task performance.

Contrarily, because goal clarity is associated with higher task performance (Kwan et al., 2013; Locke & Latham, 1990), goal ambiguity should be related to lower task performance. This may be because while goal clarity allows people to focus their attention and effort on the task itself, goal ambiguity means that people must also focus attention and effort towards trying to understand the goals rather than focusing on the task. Trying to understand the goals is an off-task thought that may detract limited cognitive resources from performance the task (Beal, Weiss, Barros, & MacDermid, 2005). This prediction is therefore consistent with resource allocation theory.

H_{3b}: Goal ambiguity will be negatively related to task performance.

Goal approach uncertainty refers to the extent to which participants have to cope with uncertainty about how best to complete the assigned goals. Uncertainty about how to

complete a task will be associated with lower task performance. This is because uncertainty about how to complete a task means that people must learn appropriate strategies or routines (Drach-Zahavy & Erez, 2002; Kozlowski & Bell, 2006). Hence, they are likely to make mistakes during the learning process which delays their progress and reduces overall task performance.

H_{3c}: Goal approach uncertainty will be negatively related to task performance.

4.1.5.2 Goal interpretation and effective goal condition

The next hypothesis relates to how the dimensions of goal interpretation may affect people's effective goal condition. The impetus to switch effective goal condition is likely to happen in response to performance feedback or new information during the course of the task. For instance, when performance is improving people may switch from an effective learning goal condition to an effective performance goal condition. Likewise, when performance is deteriorating people may switch from an effective performance goal condition to an effective learning goal condition. Similarly, people may change their effective goal condition in response to changes in the task environment. For instance, when people see that the rules of the task are changing due to deregulation, they may switch back to an effective learning goal condition until they master the new rules. Consequently, changes in effective goal condition during the task should be positively associated with the goal interpretation dimension of goal progress/adaptation.

H_{3d}: Goal progress/adaptation will be positively related to switching effective goal conditions.

4.1.5.3 Goal interpretation and goal commitment

The next set of hypotheses relate to how the dimensions of goal interpretation affect goal commitment. Goal commitment has been called the 'sine qua non' of goal setting since without commitment a goal is ineffective (Locke & Latham, 1990). Exploring how the dimensions of goal interpretation influence goal commitment, therefore, is important to understanding the broader influence of goal interpretation on the goal setting process.

In order to commit to a goal, people need to understand what the performance standard is for meeting the goal (Locke & Latham, 2013a). When goals are clear and people understand what is expected of them they are more likely to commit attention, effort and persistence towards the goal (Kwan et al., 2013). When goals are unclear, however, they will be less likely to commit such resources towards the goals because they are unsure about the performance level required to meet the goal. This is also why specific goals are more effective than do best goals as the performance standard is defined objectively, thus removing any ambiguity about what must be done to achieve the goal (Locke & Latham, 2013a). Therefore, I hypothesize that:

H_{3e}: Goal commitment will be positively related to goal clarity.

H_{3f}: Goal commitment will be negatively related to goal ambiguity.

I expect that uncertainty about how to go about completing assigned goals will be associated with lower goal commitment. This is because people commit to goals that they feel they can achieve (Klein, Cooper, & Monahan, 2013; Klein, Wesson, Hollenbeck, & Alge, 1999; Locke, Latham, & Erez, 1988). Feeling uncertain about how to achieve assigned goals will therefore be associated with lower goal commitment.

H_{3g}: Goal approach uncertainty will be negatively related to goal commitment.

4.1.5.4 Goal interpretation and self-efficacy

The next set of hypotheses relate to how the dimensions of goal interpretation affect self-efficacy. Self-efficacy is a mediator of the relationship between goals and performance as it is necessary for goal achievement. People with higher self-efficacy tend to have higher goal commitment and consequently higher performance (Locke & Latham, 2002). Investigating how the dimensions of goal interpretation influence self-efficacy, therefore, is important to understanding the broader influence they may have on goal setting.

The perception that there is missing information about one's assigned goals should reduce self-efficacy. This is because missing information makes it less clear exactly what one is to achieve, and therefore more difficult to believe one can achieve it (Locke &

Latham, 2013a). Therefore, I expect that goal ambiguity will be negatively related to self-efficacy.

H_{3h}: Goal ambiguity will be negatively related to self-efficacy.

Uncertainty about how to accomplish assigned goals should also lead to lower self-efficacy. This is because self-efficacy reflects the level of confidence one has in accomplishing a task (Bandura, 1982, 1997). Uncertainty about how to accomplish the task should therefore reduce one's confidence in being able to achieve it. Therefore, goal approach uncertainty will be negatively correlated with self-efficacy.

H_{3i}: Goal approach uncertainty will be negatively correlated with self-efficacy.

4.1.5.5 Assigned goals and goal interpretation

The final pair of hypotheses investigates the relationship between assigned combined goals and the clarity and ambiguity dimensions of goal interpretation. The purpose of these hypotheses is to test the theoretical arguments laid out in chapter three about how singular goals compare to combined goals in terms of clarity and ambiguity. Following the final hypotheses, a more detailed exploration of goal clarity and ambiguity by assigned goal condition will be conducted using research questions instead of hypotheses. This is in keeping with appropriate practice for early stage research (Locke, 2007).

Whereas goal clarity reflects a clear understanding about one's assigned goals, goal ambiguity reflects having to cope with missing information about assigned goals. One of the key assumptions of the proposed goal interpretation process is that assigned combined goals are less clear than assigned singular goals. Thus, singular goals are expected to act as strong situations, whereas combined goals are expected to be more ambiguous and therefore constitute weaker situations (Johns, 2006; Mischel, 1977). This lower goal clarity of combined goals is what prompts the need for the goal interpretation process.

Goal ambiguity refers to the need to cope with incomplete information about assigned goals in order to understand and pursue them. While we know it is important, goal clarity may be necessary but not sufficient to fully understand one's goals. Considering goal

ambiguity as well may therefore capture the degree of explanatory sufficiency that goal clarity overlooks. Combined goals are expected to be less clear than singular goals because they raise such questions as the relative goal importance, whether goals should be pursued sequentially or simultaneously, etc. (Sun & Frese, 2013). Furthermore, because no additional information is provided for combined goals compared to single goals, multiple goals like combined goals should be more ambiguous than singular goals (Chun & Rainey, 2005). Consequently, assigned combined goals should result in higher goal ambiguity levels than singular assigned goals.

H_{3j}: Assigned combined goals will have lower goal clarity than assigned singular goals.

H_{3k}: Assigned combined goals will have higher goal ambiguity than singular assigned goals.

Because there is so little research on combined goals and on goal interpretation, it is difficult to make clear, theory-driven predictions beyond these two hypotheses. Consequently, my investigation of goal clarity and goal ambiguity in combined goals will proceed inductively through the use of research questions rather than formal hypotheses (Locke, 2007).

The first question is whether combined goals at the same difficulty level (i.e. condition 5 – SD LG & SD PG, or condition 4 – DB LG & DB PH) are clearer or more ambiguous than combined goals at different difficulty levels (i.e. condition 3 – DB LG & SD PG, or condition 6 – SD LG & DB PG)? On one hand, a difference in difficulty level may signal which goal is the priority or more important and therefore lead to higher clarity and lower ambiguity. On the other hand, however, people may not know how to interpret what the difference in goal difficulty level means, in which case goals at the same difficulty level may be clearer and less ambiguous. Consequently, this question will be explored inductively.

The next question is which of the combined goal conditions leads to the highest and lowest goal clarity and goal ambiguity. These are practically important questions for the use of combined goals if indeed goal clarity is associated with high performance and goal

ambiguity is associated with low performance. Conditions that lead to high clarity should be preferred over conditions that lead to low clarity or high ambiguity.

However, it is difficult to predict which combined goal conditions will be perceived as the clearest or the most ambiguous. On the one hand, we know that with singular goals specific difficult level goals are perceived as clearer, whereas do best level goals are more ambiguous (Locke & Latham, 2013a). When goals are combined, however, does that mean that the condition with both goals at the specific difficult level will be perceived the clearest, while the condition with both goals at the do best level will be the most ambiguous? The impact of goal difficulty level on clarity and ambiguity may also depend on whether it is the learning or performance goal since performance goals in general are likely clearer than learning goals. Consequently, it is difficult to predict which combined goal conditions will have the highest or lowest clarity, and the highest or lowest ambiguity. These questions will therefore be explored inductively as well.

4.1.6 Summary of H_3

The following table summarizes hypotheses 3_{a-k} and the two research questions.

Table 19: Summary of H_3

Summary of H_3 + = positively related; - = negatively related					
Goal interpretation dimension	**Task performance**	**Effective goal condition**	**Commitment**	**Self-efficacy**	**Assigned goal condition**
Clarity	+ H_{3a}		+ H_{3e}		Combined < singular H_{3j} Condition 1-6? RQ2
Ambiguity	- H_{3b}		- H_{3f}	- H_{3h}	Combined >

					singular H_{3k} / Condition 1-6? RQ3
Approach uncertainty	- H_{3c}		- H_{3g}	- H_{3i}	
Progress/ Adaptation		+ switching H_{3d}			

4.2 Method

The primary purpose of study two – a laboratory experiment - is to examine the between-individual effects of different goal conditions on task performance under controlled conditions. In general, study two follows the design and procedure of study one with the design improvements incorporated and excluding the cognitive interview component.

4.2.1 Design

Goal conditions were assigned as outlined in the table below. All combined goals were presented with the learning goal first followed by the performance goal based on the findings from study one which showed that performance goals tended to dominate learning goals when combined.[26] Furthermore, study one found that the most commonly understood relationship between the two goals was that learning strategies lead to performance. Hence, presenting the goals in learning then performance order seemed most appropriate to support successful combined goal manipulations.

Because study one showed that 14% of participants achieved the 21% market share performance goal (only one more case than the expected 10%), the specific difficult performance goal remained at 21%. This level is consistent with Wood and Bandura's

[26] Note that this is the opposite order in which Masuda et al. (2014) presented the goals.

(1989b) recommendation, as well as with previous studies using the same task (Seijts & Latham, 2011; Seijts et al., 2004).

The level of the specific, difficult learning goal, however, was increased from 6 to 8 strategies in study two. This is because in study one the goal of identifying 6 strategies was achieved by 30% of participants, which indicates that it was not sufficiently challenging to be considered at the difficult level (Wood & Bandura, 1989b). Comments from study one participants supported that the difficulty level of the learning goal was not high enough to be perceived as challenging. This is likely due to the existing knowledge and ability of the participant population. Consequently, the difficulty level of the learning goal was increased to 8 strategies for study two, the level achieved by only 10% of study one participants. This increase in the number of strategies to discover and implement is appropriate because the task includes a total of 13 possible strategies that participants can use.[27] No other required changes to the design of the experimental conditions were identified in study one. Thus, the goal conditions for study two were as outlined below.

Table 20: Study two assigned goal conditions

Study Two Assigned Goal Conditions DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal
(1) SD PG only Performance goal only - 21%
(2) SD LG only Learning goal only - 8 strategies
(3) DB LG & SD PG Do best learning goal & 21% performance goal
(4) DB LG & DB PG

[27] Each round participants had the option to make changes to the following managerial strategies: customer rates, advertising spend, research and development spend, radio wave capacity, number of products available, administrative cost reduction, strategic alliance creation, sales force spend, new licence purchase, raise capital, reduce debt, sale of licences, and strategic alliance dissolution.

Do best learning goal & do best performance goal
(5) SD LG & SD PG 8 strategies learning goal & 21% performance goal
(6) SD LG & DB PG 8 strategies learning goal & do best performance goal

4.2.2 Experimental task

The task for study two is the same computer simulation that was used in study one, The Business Strategy Simulation or Celecom21 (Perspectives Visuals & Audia, 1997), which is completed individually. Study one confirmed that upper year business students perceived the task as highly complex and dynamic. A major advantage of this task is that it provides an objective measure of task performance over 13 rounds - the total market share participants attain each round.

4.2.3 Goal manipulations

As in study one, the goal manipulations were delivered verbally and in writing after the task training was complete. The full set of goal manipulations for the six experimental conditions in study two are outlined in Appendix E.

4.2.4 Participants

Participants were third and fourth year undergraduate business students in two different programs at the same university. As in study one, the primary requirements were that participants possess the knowledge and ability to complete the simulation task and were available for a two hour laboratory session. Participants were recruited by email, posters, and classroom announcements.

4.2.5 Procedure

Students interested in participating in the study signed up for the session of their choice via the laboratory registration system. Each session had a maximum of 12 participants.

As in study one, approximately five days prior to each scheduled laboratory session registered participants were sent the background case via email. They were asked to read

and ensure they understood the case prior to coming to their session. To encourage compliance, participants were told they would be asked two comprehension questions about the case in order to be eligible to participate.

The email instructions also included a link to a short online survey which included the goal orientation items and demographic variables. Goal orientation was collected to see if it influenced how participants interpreted goals, and it was collected in advance in order to reflect trait rather than state goal orientation. In the survey participants were asked to provide the last four digits of their phone number to serve as an anonymous unique identifier so the data collected online could be matched with the data collected in the lab. A reminder to read the case and complete the online survey was sent to all participants the day prior to their scheduled session.

Upon arrival at the lab, participants were asked if they had read the case and completed the online survey. They were then asked two case comprehension questions to ensure they had in fact understood the case. Once seated at a computer, participants read the letter of information and signed the consent form.

All participants then completed the 12 minute online version of the Wonderlic Contemporary Cognitive Ability Test, a measure of general cognitive ability. This was collected to serve as a potential control variable. Participants entered their program and year (e.g. Program 1 Year 3) and the last four digits of their phone number so the data could be matched.

Participants were then introduced to the simulation task by the experimenter. Participants were shown all the components of one full round of the simulation. This included the set of strategic choices they had to choose from in each round, how to indicate their choices, how to read the feedback report they received, and how to access the information available to them about the company, market and industry.

Participants were randomly assigned to one of the six goal conditions based on the session they attended. The experimental condition for each session was set in advance of the participants' arrival. Once the task training was completed, participants were asked

to write the last four digits of their phone number on their task booklet (which corresponded to their assigned goal condition) and to enter the same code into the simulation program. Participants then followed along in their booklet as the goal manipulations were delivered verbally as written in the booklets. Each participant had a notepad, a calculator and a copy of the case at their station. When most participants were nearing the end of round 2, they were reminded verbally of their assigned goal(s).

As in study one, participants were asked to complete the measures in the task booklet after rounds 2, 7, 10 and 13. These time periods were selected to have one measure early in the task, one at the mid-point prior to industry deregulation, one post-deregulation, and one final measure at the end of the task. The final set of questions included the manipulation checks and demographic variables, as well as any self-set goals.

When participants had completed the simulation and the task booklet, they were paid $30 for their participation and urged not to discuss details about the study or task with anyone who had not yet participated. All participants were debriefed by email once all sessions were completed.

4.2.6 Measures

4.2.6.1 Manipulation checks and exclusion criteria

To ensure the study's assigned goals and the task were perceived by participants as intended, the following manipulation checks were included. Also, two potential exclusion criteria were identified and collected since they could bias the results of the study: prior knowledge of the study or task, and the level of effort participants gave to the study. Manipulation check and exclusion criteria items are included in Appendix F.

4.2.6.1.1 Assigned goals

At the end of the simulation participants were asked to indicate what their assigned learning and/or performance goal(s) were to ensure they understood them correctly. A sample item is "My assigned goal as the new CEO for Celecom21 was to achieve _____ percent or more total market share by the end of the simulation."

4.2.6.1.2 Perceived goal specificity

Perceived goal specificity was measured at the end of the simulation. For combined goal conditions two separate measures of goal specificity were taken: one for the learning goal and one for the performance goal. For each goal type, a three item measure adapted from Winters and Latham (1996) that has shown good reliability in other studies (Seijts et al., 2004) was used. The items were measured on a seven point Likert scale with anchors "not at all" and "very much so." A sample item is "The market share goal assigned at the beginning of Year 1 was specific."

4.2.6.1.3 Perceived task complexity

Perceived task complexity was measured after round 2 and again at the end of the simulation. This is because perceived task complexity typically drops as participants learn how the simulation works. The two measures of task complexity were averaged to provide a mean level across the task. Task complexity was measured with five items on a seven point Likert scale adapted from Wood's task complexity scale (1986) with anchors "strongly disagree" and "strongly agree." A sample item is "The simulation requires me to use many different types of information."

4.2.6.1.4 Prior knowledge

In order to screen out individuals who had prior knowledge of the task or experiment that may have influenced their performance, participants were asked three questions about any details of the study that they knew about prior to participating themselves.

4.2.6.1.5 Study effort

In order to screen out individuals who did not take the study seriously, participants were asked two questions at the end of the task about their level of effort. A sample item is "How seriously did you take this study?" with anchors "not at all seriously" to "very seriously".

4.2.6.2 Dependent variable

As in study one, the dependent variable – task performance – was measured as the total market share percentage the participant accumulates over the 13 rounds.

4.2.6.3 Control variables

The following variables were collected as potential control variables. Items for the control variables as included in Appendix G.

4.2.6.3.1 Demographics

Demographic variables including year of study, program of study, gender, and a variety of other demographic data were all collected in the booklet at the end of the simulation.

4.2.6.3.2 Cognitive ability

The business simulation is a computer mediated task that draws heavily on participants' cognitive abilities. Ability is a known moderator of goal effects on task performance and therefore may need to be controlled for (Locke & Latham, 1990). A measure of participants' general cognitive ability was taken prior to the start of the simulation. The measure used was the Wonderlic Contemporary Cognitive Ability Test (WonderlicInc.), a 12 minute test of a set of 50 possible mathematical, linguistic, and spatial reasoning questions. The Wonderlic is a validated and reliable measure of general cognitive ability that has been used in other goal setting studies (Latham et al., 2008; Seijts & Crim, 2009). The test has shown good internal consistency, test-retest reliability and high predictive validity. A sample item from this test is "What is the next number in the series? 29 41 53 65 77."

4.2.6.3.3 Goal commitment

Goal commitment was measured once after round 2 and again after round 10. Participants in all conditions except condition 4 were asked their commitment to

achieving various levels of market share performance. Participants in condition 4 were not asked about goal commitment since they only had no specific goals.[28]

Goal commitment was measured using a seven item scale from Klein, Wesson, Hollenback, Wright and DeShon (2001) on a seven point Likert scale with anchors "1 - strongly disagree" and "7 - strongly agree". A sample item is "I am strongly committed to pursuing this [market share] goal."

4.2.6.4 Moderating variables

The following variable was collected as a potential moderating variable. Items are included in Appendix H.

4.2.6.4.1 Goal orientation

Goal orientation was measured through a short online survey sent to participants by email prior to their scheduled laboratory session. The measure used was a 16 item scale from Button, Mathieu and Zajac (1996) which measures learning goal orientation (8 items) and performance goal orientation (8 items) using a 7-point Likert scale with anchors of "strongly disagree" and "strongly agree". A sample performance goal orientation item is "The things I enjoy the most are the things I do the best." A sample learning goal orientation item is "The opportunity to learn new things is important to me."

4.2.6.5 Mediating variables

The following variables were collected as potential mediating variables. Items are included in Appendix I.

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[28] The original design included two separate measures of goal commitment for combined goal conditions – one relating to learning a certain number of strategies, and one relating to achieving a specific market share. To stay within a two hour lab session, however, several measures were dropped including the learning goal commitment measure since goal commitment is typically measured in relation to a performance goal. That both measures were not included is a limitation of this study.

4.2.6.5.1 Self-efficacy

Self-efficacy strength and magnitude were measured after rounds 2 and 10 in relation to achieving market share by the end of the simulation. Self-efficacy strength was measured using a 0 to 100 scale where 0 is 'no confidence at all' and 100 is 'complete confidence'. Participants indicated their level of confidence that they would achieve the indicated level of market share performance for each of nine different difficulty levels in increasing order. Self-efficacy magnitude was indicated by a yes or no answer for each of the different difficulty levels. The strength and magnitude ratings at each time period were summed, converted to Z-scores, and then added together to arrive at total self-efficacy scores for each time period (Locke & Latham, 1990).

4.2.6.5.2 Goal interpretation

A simplified but more robust measure of goal interpretation than the one used in study one was developed for study two. A set of 50 items intended to capture the most important dimensions of goal interpretation - goal clarity, goal ambiguity, goal approach uncertainty, goal progress, and goal adaption - was pre-tested by doctoral students prior to study two through an online survey. The definitions of these five dimensions that were provided to the pre-test participants are listed in the table below. Survey participants were asked to indicate which category each item best fit according to the definitions.

Twenty-seven responses were received to the survey. The pre-test determined how well the doctoral students felt the items fit the definitions of the goal interpretation dimensions. The items that most clearly fit each of the goal dimension definitions were retained in the final set. The average level of agreement for the final items was 95%. The final set of 17 pre-tested items used in study two to measure the five dimensions of goal interpretation is found in Appendix I.

Table 21: Goal interpretation dimension definitions from pre-test

Goal Interpretation Dimension Definitions from Pre-test	
Goal interpretation dimension definitions from pre-test:	**Study one dimensions**
Goal clarity: The extent to which a person has a clear, unambiguous understanding of his or her assigned goal(s).	n/a
Goal ambiguity: The extent to which a person has to cope with missing or incomplete information about his or her assigned goal(s) in order to try to understand it/them.	n/a
Goal approach uncertainty: The extent to which a person has to cope with uncertainty about how best to go about completing his or her assigned goal(s).	n/a
Goal progress: The extent to which a person reassesses his or her interpretation of, or approach to, the assigned goal(s) based on performance feedback.	Goal progress
Goal adaptation: The extent to which a person reassesses his or her interpretation of, or approach to, the assigned goal(s) due to changes in the market conditions.	Goal adaptation

Goal interpretation was measured after rounds 2, 7, 10 in relation to each specific point in time, and after round 13 in relation to participants' overall approach to the simulation. Items were measured on a seven point Likert scale with anchors "strongly disagree" and "strongly agree".

4.2.6.5.3 Effective goal condition

Participants were asked to indicate their effective goal condition by identifying which goal they were focusing on at each specific time during the task. Participants' effective goal condition was measured after rounds 2, 7 and 10 in relation to each specific point in time, and after round 13 in relation to participants' overall approach to the simulation. Participants had the choice to focus on one goal or the other, both goals simultaneously, or neither goal. Thus, there is a set of four mutually exclusive options for a participant's effective goal condition at each point in time. This set was used to measure effective goal condition. (Italics not shown.)

1. I am currently focusing on my market share percentage goal. *(performance)*
2. I am currently focusing on my strategy development goal. *(learning)*

3. I am currently focusing on my market share percentage goal and my strategy development goal equally. *(combined)*
4. I am not focusing on either of my assigned goals. *(no goal)*

4.2.6.6 Other goal-related variables

In order to follow up on the findings from study one, the following goal-related variables were also collected. Items are included in Appendix J.

4.2.6.6.1 Personal goals

At the end of the task participants were asked whether they had set any personal or self-set learning or performance goals and, if so, at what level. Personal goals are important to consider since they can be more predictive of task performance than assigned goals (Masuda et al., 2014), and they are commonly set in addition to assigned goals (Seijts & Latham, 2011). A sample performance goal item is "I had a specific personal goal of attaining a market share of _____ %." A sample learning goal item is "I had a specific personal goal of implementing _____ strategies (enter number)."

4.2.6.6.2 Relationship between goals

To build on the findings from study one about the perceived relationship between learning and performance goals in combined goal conditions, participants were asked four questions at the end of the simulation with categorical responses: a) whether or not the goals were related, b) if yes, what the causal relationship was between the goals, c) their perception of how having both types of goals impacted their task performance, and d) why they felt the combined goal affected their performance that way.

4.3 Results

The results are organized with the evaluation of the new goal interpretation measures first, followed by the study descriptive statistics, the manipulation check results, the correlation matrix, and finally the hypotheses tests.

4.3.1 Goal interpretation measures

Because the goal interpretation items were exploratory and the measures not yet validated, the factor structure and reliability of the goal interpretation items were examined first. Goal interpretation was measured after rounds 2, 7, 10 and 13 (for the overall task). The factor structure and reliability of the scales were examined at all four time periods. Since the factor structure and reliability were almost identical across the four rounds, the results for only round 13 representing the overall task are presented here and used below for hypothesis testing.

A principal components analysis (PCA) was conducted on the 17 goal interpretation items with an oblique rotation using the direct oblimin method. This method is most appropriate for factors that are theorized to be related rather than unrelated. All of the pre-requisites for a PCA were met including sufficient sample size (Field, 2009).

The results showed that four components had eigenvalues over Kaiser's criterion of 1. Together the four components explained 71.85% of the variance in the data. The scree plot was consistent with the conclusion that there were four principal components. Thus, four components were retained in the final analysis.

The table below shows the pattern matrix and the factor loadings after the rotation. The first component relates to the theorized ambiguity of the assigned goals. The second component consisted of the theorized goal adaptation items as well as two of the three goal progress items. This pattern is reasonable as the goal progress and goal adaptation items both refer to reacting to change or feedback during the task. This result that adaptation and progress relate to the same factor suggests that participants do not differentiate between receiving new market information and receiving performance feedback; they simply recognize the need to reconsider their assigned goals.

The third component referred to the theorized goal clarity items. The final component consisted of the theorized goal approach uncertainty component plus the one remaining progress item. Thus, the final solution consisted of four of the theorized components (clarity, ambiguity, adaptation, and approach uncertainty) with the three goal progress items (shown in italics below) divided between the goal adaptation (two items) and goal approach uncertainty (one item) components. Overall, the PCA revealed that the goal interpretation items were reasonably close to the expected factor structure.

Table 22: PCA pattern matrix results for original goal interpretation items

PCA Pattern Matrix Results for Original Goal Interpretation Items

Pattern Matrix[a]

Goal interpretation items from round 13 (D)	Component			
	1	2	3	4
Ambiguity D 2 - I would have liked more information about what my assigned goals meant.	.93			
Ambiguity D 1 - I did not have all the information I needed to fully understand my assigned goals.	.84			
Ambiguity D 4 - I was missing information that I needed to fully understand my assigned goals.	.80			
Ambiguity D 3 - I had questions about how I should have interpreted my assigned goals.	.75			
Adaptation D 1 - Seeing the market change makes me reconsider the assumptions I made about my assigned goals.		.84		
Adaptation D 2 - When the market changed it made me think about my assigned goals.		.82		
Adaptation D 3 - When I saw the market change it made me try to make sense of my assigned goals.		.80		
Progress D 3 - Getting feedback helps me understand the rationale behind my assigned goals.		*.77*		
Progress D 2 - When I got my feedback I tried to make sense of my assigned goals.		*.63*		
Clarity D 2 - I understood clearly what my assigned goals were.			.97	
Clarity D 3 - My assigned goals were clear to me.			.96	
Clarity D 1 - I had clear assigned goals on this task.			.92	
Clarity D 4 - I understood clearly what was expected of me to meet my assigned goals.			.50	
Approach D 3 - At some point I was not sure how to go about completing my assigned goals.				-.80

Approach D 2 - I was unsure whether there was a right or wrong way to complete my assigned goals.				-.75
Progress D 1 - Seeing my results made me reconsider the assumptions that I made about my assigned goals.				*-.74*
Approach D 1 - I was wondering whether there was a correct way to complete my assigned goals.				-.65

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 9 iterations.

The structure matrix shown in the table below, however, revealed that three items had cross-loadings over 0.4 (the recommended cut off), and one item did not meet the minimum loading of 0.7 (Field, 2009). Consequently, these four items (*in italics below*) were dropped from the analysis. This resulted in three of the factors being measured with three items each (ambiguity, clarity and approach) and the last factor with four items (adaptation).

Table 23: PCA structure matrix results for original goal interpretation items

PCA Structure Matrix Results for Original Goal Interpretation Items

Structure Matrix

Goal interpretation items from round 13 (D)	Component			
	1	2	3	4
Ambiguity D 2 – I would have liked more information about what my assigned goals meant.	.90			
Ambiguity D 4 – I was missing information that I needed to fully understand my assigned goals.	*.87*		*-.43*	
Ambiguity D 1 – I did not have all the information I needed to fully understand my assigned goals.	.85			
Ambiguity D 3 – I had questions about how I should have interpreted my assigned goals.	.82			
Adaptation D 1 – Seeing the market change makes me reconsider that assumption I made about my assigned goals.		.84		
Adaptation D 2 – When the market changed it made me think about my assigned goals.		.82		
Adaptation D 3 – When I saw the market change it made me try to make sense of my assigned goals.		.80		

Progress D 3 – Getting feedback helps me understand the rationale behind my assigned goals.		.77		
Progress D 2 – When I got my feedback I tried to make sense of my assigned goals.		*.66*		
Clarity D 2 – I understood clearly what my assigned goals were.			.97	
Clarity D 3 – My AG were clear to me.			.96	
Clarity D 1 – I had clear assigned goals on this task.			.92	
Clarity D 4 – I understood clearly what was expected of me to meet my assigned goals.			*.63*	*.44*
Approach D 3 – At some point I was not sure how to go about completing my assigned goals.				-.81
Approach D 2 – I was unsure whether there was a right or wrong way to complete my assigned goals.				-.79
Approach D 1 – I was wondering whether there was a correct way to complete my assigned goals.	*.54*			-.75
Progress D 1 – Seeing my results made me reconsider the assumptions I made about my assigned goals.				-.75

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

The table below shows the item distribution and reliability of the original five factor goal interpretation scales, the unadjusted four factor solution, and the final adjusted four factor solution without the four poor items. The final adjusted four factor solution is the component structure and set of scales used for all subsequent analysis and hypothesis testing.

Table 24: Round 13 goal interpretation factors and reliability

Round 13 Goal Interpretation Factors and Reliability					
Cronbach's alpha	**Clarity**	**Ambiguity**	**Approach Uncertainty**	**Progress**	**Adaptation**
Original scales (five factors)	0.90 (4 items)	0.89 (4 items)	0.81 (3 items)	0.60 (3 items)	0.84 (3 items)
Four factors (unadjusted)	0.90 (4 items)	0.89 (4 items)	0.80 (4 items)	n/a	0.84 (5 items)
Final solution *N*=183	**0.96 (3 items)**	**0.84 (3 items)**	**0.73 (3 items)**	**n/a**	**0.84 (4 items)**

In conclusion, the final goal interpretation dimensions for study two were reduced to the following four dimensions: goal clarity, goal ambiguity, goal approach uncertainty, and goal adaptation. The revised dimension definitions are outlined in the table below.

Table 25: Final goal interpretation dimension definitions

Final Goal Interpretation Dimension Definitions:
Goal clarity: The extent to which a person has a clear, unambiguous understanding of his or her assigned goal(s).
Goal ambiguity: The extent to which a person has to cope with missing or incomplete information about his or her assigned goal(s) in order to try to understand it/them.
Goal approach uncertainty: The extent to which a person has to cope with uncertainty about how best to go about completing his or her assigned goal(s).
Goal adaptation: The extent to which a person reassesses his or her interpretation of, or approach to, the assigned goal(s) based on new information like changes in the market conditions and performance feedback.

4.3.1.1 Goal interpretation descriptive statistics

All goal interpretation dimension items were measured on a 7-point scale. The four measures (after rounds 2, 7, 10 and 13) were then averaged to create an overall score.

Participants reported overall goal clarity of 5.7 (s= 1.0). This indicates that participants found the goals clear. There were no significant differences in goal clarity by assigned goal condition.

Participants reported overall goal ambiguity of 4.5 (s = 1.5). This suggests participants found the goals moderately ambiguous. There were no significant differences in goal ambiguity by assigned goal condition.

Participants reported overall goal approach uncertainty of 5.3 (s = 1.2). This suggests participants were uncertain about how to approach achieving their goals. Once again, there were no significant differences in goal approach uncertainty by assigned goal condition.

Finally, participants reported overall goal adaptation of 5.2 (s = 0.99). This suggests participants experienced the need to reassess their goals based on new information as the task progressed. Once again, there were no significant differences in goal adaptation by assigned goal condition.

Overall, participants reported moderate to high levels of each of the four goal interpretation scales; however, there were no significant differences in any of the goal interpretation items by participants' assigned goal conditions.

4.3.2 Descriptive statistics

4.3.2.1 Final sample

In total, 231 undergraduate business students participated in the study. For various reasons, however, 47 participants were removed from the dataset. Four individuals indicated they had been told details about the task that helped them perform better. Two individuals were graduate students and therefore ineligible. One individual accidentally erased his performance data. There were three outliers whose performance was more than 3 standard deviations above the mean (>43%) and were therefore excluded (Osborne & Overbay, 2012; Tabachnick & Fidell, 2001).[29] Thirty-one individuals were not able to correctly identify any of their assigned goals and failed both of the assigned goal manipulation checks. Seven individuals were removed because they either indicated a very low level of effort on the task (i.e. less than 3 on a 7 point scale), or because they spent less than 30 minutes on the task (which typically takes 60-90 minutes). Thus, the final sample size was 183 (N=183) broken down by condition as follows:

[29] Of the three outlier cases, one was in Condition 2 (LG only) and two were in Condition 4 (DB LG & DB PG).

Table 26: Final sample size by condition

Final Sample Size by Condition DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal	
Condition	***n***
(1) SD PG only Performance goal only - 21%	*n*=32
(2) SD LG only Learning goal only - 8 strategies	*n*=27
(3) DB LG & SD PG Do best learning goal & 21% performance goal	*n*=33
(4) DB LG & DB PG Do best learning goal & do best performance goal	*n*=31
(5) SD LG & SD PG 8 strategies learning goal & 21% performance goal	*n*=28
(6) SD LG & DB PG 8 strategies learning goal & do best performance goal	*n*=32
Total	***N=183***

The gender breakdown of the final sample was 41% male and 59% female. The average age of participants was 21 years. By program year, 56% of the participants were in third year and 44% were in fourth year.

4.3.2.2 Post-hoc power analysis

I conducted a post-hoc power analysis using G*Power3 (version 3.1.9.2) (Faul, Erdfelder, Lang, & Buchner, 2014). G*Power3 is a statistical power analysis program that can be used for *a priori* or post-hoc power analysis (Faul, Erdfelder, Lang, & Buchner, 2007). Based on a sample size of 183, a 6 condition design, a significance level of p=0.05, and assuming a medium effect size, the statistical power for ANCOVA is 73%. Assuming thirteen repeated measures correlated at r = 0.70, the statistical power for ANCOVA is approximately 88%. Therefore, repeated measure analyses were used where possible to increase statistical power.

4.3.2.3 Task performance by condition

The table below outlines the average market share performance achieved by round 13 by condition without any controls. Note that the difference in sample size (*N*=178) reflects the six participants who did not complete round 13 due to technical problems.

Table 27: Market share percentage by condition without controls

Market Share Percentage by Condition Without Controls DB= Do your best; SD= specific difficult; PG= Performance goal; LG= Learning goal			
Condition	***n***	**MS13**	***SD***
(1) SD PG only SD Performance goal only – 21%	*n*=30	9.50%	*9.05*
(2) SD LG only SD Learning goal – 8 strategies	*n*=26	7.54%	*8.12*
(3) DB LG & SD PG Do best learning goal & 21% performance goal	*n*=32	7.98%	*8.59*
(4) DB LG & DB PG Do best learning goal & do best performance goal	*n*=31	9.67%	*10.36*
(5) SD LG & SD PG 8 strategies learning goal & 21% performance goal	*n*=27	7.79%	*8.02*
(6) SD LG & DB PG 8 strategies learning goal & do best performance goal	*n*=32	12.71%	*10.61*
Total	***N=178***	9.27%	*9.28*

The average number of strategies used per participant in each round was 8.27 (*s*=1.94). This measure came from the simulation data file for each participant. There were no significant differences in the number of strategies used by assigned goal condition.

4.3.2.4 Effective goal condition

Participants' effective goal condition was measured four times during the simulation: after rounds 2, 7, 10 and 13. Therefore, I examined whether and how participants' effective goal condition varied across the simulation.

In terms of distribution, 36.6% of the sample (67 participants) never switched effective goal condition, while 63.4% (116 participants) switched at least once. Of the participants who did not change effective goal condition during the task, the majority (50 participants – 74.6%) were those who remained in the effective performance goal condition throughout.[30] This represents 27.3% of the total sample. Those 50 cases were distributed across all six assigned goal conditions. The remaining participants who never switched effective goal condition were 4 participants who had an effective learning goal condition throughout and 13 participants who had an effective combined goal condition throughout (2.2% and 7.1% of the total sample respectively). The remaining 116 participants who switched did so in one of the remaining patterns.[31]

4.3.3 Manipulation checks

Goal Difficulty:

The task was intended to be challenging for participants and the performance results suggest this was the case. Firstly, ten (5.5%) out of the 183 participants in the final sample went bankrupt before completing round 13, resulting in a final market share of 0%. Secondly, the grand mean market share percentage at the end of round 13 was 9.27% (*sd*=9.25). Because participants started with a 7.4% market share in round 1, this means on average participants gained only 1.87% over the course of the 13 rounds. In fact, 57% of participants did not exceed their initial market share by the end of the simulation. Thirdly, only 11.8% of participants met or exceeded the 21% difficult level performance goal. Thus, both the task and the 21% performance goal were challenging and difficult for participants.

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[30] No participant remained in the effective no goal condition throughout the task.

[31] Since there are 3 possible effective goal conditions and 4 rounds, there are 81 possible patterns. There are 3 patterns where the effective goal condition never changes, which leaves 78 patterns that the switchers could follow. Since there are only 116 participants who switched, no statistical analysis can be done without collapsing the patterns dramatically.

Assigned goals:

In the final sample (*N*=183), 59 participants (32%) had a single assigned goal and 124 (68%) had a combined goal. Of the 124 participants assigned combined goals, 93 (75%) of them passed both goal manipulation checks while 32 (25%) passed only one. Of the 32 participants who passed only one manipulation check, 21 passed the performance goal check but failed the learning goal one, and 11 passed the learning goal check but failed the performance goal one.[32]

Of the 151 participants who had an assigned learning goal, 130 (86.1%) passed the learning goal manipulation check and 21 (13.9%) failed. This means that of the 124 participants with combined goals, 103 (83.1%) passed the learning goal manipulation check in a combined goal condition.[33] Of the 156 participants who had a performance goal, 145 (93%) passed the performance goal manipulation check and 11 (7%) failed. This means that of the 124 participants with combined goals, 113 (91.1%) passed the performance goal manipulation check in a combined goal condition.[34] Thus, the performance goal manipulation was more successful than the learning goal manipulation in combined goal conditions. This finding is consistent with the finding from study one that performance goals dominate over learning goals when combined.

Perceived task complexity:

Perceived task complexity was measured twice: once after round 2 and again after round 13. The reliability (Cronbach's alpha) of the 7-point scale after round 2 was 0.64 (*m*=5.34, *s*= 0.77). The reliability of the scale after round 13 was 0.69 (*m*=5.48, *s* =

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[32] These 32 cases were retained in the dataset because participants knew they had two assigned goals even though they only got the details of one correct. Furthermore, excluding these cases would underestimate the hierarchical differences between the two goal types, part of the phenomenon being investigated.

[33] LG calculation: 183 total-32 PG only = 151; 151-27 LG only = 124; 151-130 passed= 21 failed; 124-21 failed = 103 passed LG manipulation check in combined goal condition.

[34] PG calculation: 183 total-27 LG only = 156; 156-32 PG only = 124; 156-145 passed = 11 failed; 124-11 failed = 113 passed PG manipulation check in combined goal condition.

0.90). These results indicate that participants perceived the task as complex as anticipated. A univariate analysis of variance (ANOVA) indicated no significant differences between the six goal conditions when task complexity was measured after round 2 ($F(177) = .17$, $p>0.05$) or after round 13 ($F(177) = 0.65$, $p>0.05$).

Goal specificity:

Performance goal specificity

The mean level of specificity on a 7-point scale was 6.03 ($s= 1.09$) for those in condition 1 only. The Cronbach's alpha for the performance goal specificity scale was 0.95 for participants in condition 1 (SD PG only). For all three conditions with a specific difficult performance goal the grand mean was 5.65 ($s= 1.08$). When the combined goal conditions with specific performance goals (i.e. conditions 3 and 5) were added, however, the Cronbach alpha for performance goal specificity dropped to 0.69. These results suggest that the performance goal specificity scale had adequate reliability for those with a single performance goal as well as those with a specific performance goal combined with a learning goal. For all conditions with a specific performance goal, the grand mean indicates that participants perceived the performance goal as specific. It is worth noting, however, that a single specific difficult level goal had higher perceived specificity (although not significantly so) and higher reliability than exactly the same goal when combined with a learning goal.

For participants with do best performance goal (conditions 4 and 6), the Cronbach's alpha for the performance goal specificity scale was 0.69. The mean level of specificity was 4.29 ($s= 1.41$). These results show that participants with do best performance goals did find them less specific than participants with specific difficult level performance goals. An ANOVA indicated significant differences across the goal conditions ($F(172)=15.33$, $p<0.001$). Post hoc analysis showed that the perceived specificity of the difficult performance goal in conditions 1, 3 and 5 were each significantly higher than the perceived specificity of the do best performance goal in conditions 4 and 6. These results are consistent with the intended goal manipulations.

Learning goal specificity

The mean level of specificity on a 7-point scale was 4.67 (s= 1.34) for those in condition 2 only.[35] The Cronbach's alpha for the learning goal specificity scale was 0.62 for participants in condition 2 (LG only). When the combined goal conditions with specific learning goals (i.e. conditions 5 and 6) were added, however, the Cronbach alpha for learning goal specificity dropped to 0.55. For all three conditions with a specific difficult learning goal the grand mean was 4.44 (s= 1.50).[36] These results suggest that the learning goal specificity scale had adequate reliability for those with only a single learning goal but became less reliable when a specific learning goal was combined with a performance goal. For all conditions with a specific learning goal, however, the mean indicates that participants perceived the learning goal as moderately specific.

For participants with do best learning goals (conditions 3 and 4), the mean level of specificity was 3.74 (s= 1.31).[37] The Cronbach's alpha for the learning goal specificity scale was 0.51. These results show that participants with do best learning goals did find them less specific than participants with specific difficult level learning goals. An ANOVA indicated significant differences across the goal conditions ($F(150)=3.08$, $p<0.05$). Post hoc analysis showed that the perceived specificity of the difficult learning goal in conditions 2, 5 and 6 were each significantly or marginally significantly higher than the perceived specificity of the do best learning goals in conditions 4 and 3. These results are consistent with the intended goal manipulations.

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[35] This result means that in the single goal conditions goal specificity was significantly higher with the performance goal than the learning goal condition ($t(59)=4.62$, $p<0.001$).

[36] This result means that in the combined goal conditions goal specificity was significantly higher in the specific performance goal than the specific learning goal condition ($t(176)=6.18$, $p<0.001$).

[37] This result means that in the combined goal conditions goal specificity was significantly higher in the do best performance goal than in the do best learning goal condition ($t(125)=1.96$, $p=0.05$). Thus, at both difficulty levels and in both single and combined goals the performance goal was perceived as significantly more specific than the learning goal.

4.3.4 Correlation matrix for key variables

The correlation matrix for key variables is provided below in Figure 4.

Figure 4: Study two correlation matrix of key variables

Pearson Correlations (2-tailed)													
N varies from 94 to 183.	Condition	Wonderlic	Gender	Market Share % round 13	Commitment	Self-efficacy	Complexity	Clarity	Ambiguity	Approach uncertainty	Adaptation	Personal PG set	Personal LG set
Wonderlic score	-0.09	--											
p	*0.22*												
Gender	0.07	0.15*	--										
p	*0.37*	*0.05*											
Market Share % round 13	0.10	0.19*	0.32**	--									
p	*0.18*	*0.01*	*0.00*										
Commitment average	-.175*	-0.11	0.12	0.27**	--								
p	*0.03*	*0.17*	*0.13*	*0.00*									
Self-efficacy average	0.08	0.03	0.23**	0.51**	0.43**	--							
p	*0.31*	*0.74*	*0.00*	*0.00*	*0.00*								
Task complexity	-0.10	0.05	-0.19*	-0.23**	-0.19*	-0.18*	*0.69*						
p	*0.18*	*0.49*	*0.01*	*0.00*	*0.02*	*0.02*							
Goal clarity	0.04	0.01	0.15*	0.10	0.13	0.11	-0.05	*0.96*					
p	*0.63*	*0.88*	*0.05*	*0.19*	*0.10*	*0.17*	*0.55*						
Goal ambiguity	-0.09	-0.14	-0.20**	-0.18*	-0.19*	-0.15*	0.25**	-0.38**	*0.84*				
p	*0.21*	*0.07*	*0.01*	*0.01*	*0.02*	*0.04*	*0.00*	*0.00*					
Goal approach	-0.06	0.01	-0.30**	-0.46**	-0.25**	-0.33**	0.32**	-0.15*	0.38**	*0.73*			
p	*0.45*	*0.93*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.05*	*0.00*				
Goal adaptation	-0.08	-0.16*	-0.12	-0.15*	0.04	-0.05	0.18*	0.01	0.21**	0.44**	*0.84*		
p	*0.27*	*0.04*	*0.11*	*0.05*	*0.65*	*0.54*	*0.02*	*0.95*	*0.00*	*0.00*			
Personal PG set	-0.05	0.03	0.23**	0.37**	0.22**	0.37**	-0.05	-0.02	-0.02	-0.20**	0.02	--	
p	*0.47*	*0.72*	*0.00*	*0.00*	*0.01*	*0.00*	*0.51*	*0.75*	*0.77*	*0.01*	*0.80*		
Personal LG set	0.09	-0.10	0.11	0.01	0.12	0.02	0.09	0.11	0.01	-0.19*	0.15*	0.27**	--
p	*0.21*	*0.19*	*0.15*	*0.92*	*0.14*	*0.79*	*0.21*	*0.14*	*0.90*	*0.01*	*0.05*	*0.00*	
α on the diagonal if applicable	** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).												

4.3.5 Hypothesis tests

The results of the hypothesis tests are organized by category starting with assigned goals, followed by effective goal condition, and closing with the goal interpretation dimensions. All confidence intervals ("*CI*") reported are at the 95% level.

4.3.5.1 Assigned goals and task performance H_1

The first set of hypotheses test the relationships between assigned goals and task performance. The analysis was conducted using repeated measures ANCOVA to examine between subject effects. The dependent variable was market share percentage from rounds 1 to 13. The covariates included in the model are listed below.

4.3.5.1.1 Control variables for task performance hypotheses

Because two demographic variables were significantly correlated with task performance, the following controls were used when testing the performance hypotheses: gender (r=0.32, p<0.001; males performed better than females), and degree program (r=-0.25, p<0.001; program one participants performed better than program two participants).

Consistent with recommendations from Locke and Latham (1990), I also controlled for average goal commitment (r=0.27, p<0.01) in all analyses of task performance.[38] The mean level of goal commitment during the task was 4.41 (sd=0.88; *CI* = 4.28 to 4.53). There were no significant differences in average goal commitment by assigned goal condition. The only marginally significant difference in goal commitment between assigned conditions was between condition 1 (PG only) and condition 6 (SD LG & DB PG). Participants in condition 1 (PG only) had average goal commitment of 4.69

[38] In condition 4 (DB LG & DB PG), commitment was not measured since participants had no specific goal to be committed to. To run the analysis with average commitment as a covariate, however, a measure of commitment for condition 4 (DB LG & DB PG) was required. Mean imputation was therefore used for that condition. Including this covariate resulted in minor rounding error differences in the condition 4 market share results, but the overall pattern of findings was unchanged.

(*sd*=1.00; *CI* = 4.33 to 5.05) while those in condition 6 (SD LG & DB PG) had an average goal commitment of 4.08 (*sd*=0.96; *CI* = 3.73 to 4.42), for a mean difference of 0.61 ($p<0.09$).

There were no significant differences by assigned goal condition in learning or performance goal orientation, cognitive ability, or self-efficacy. Although goal orientation, cognitive ability, and self-efficacy were all measured, none of these variables affected any of the hypotheses results in any way and so were excluded from the analysis.

4.3.5.1.2 Assigned goals and task performance H_1

Hypothesis 1 was tested using repeated measures ANCOVA with the three control variables listed above: participant gender, degree program, and average goal commitment.

H_{1a}: Individuals assigned a single learning goal (condition 2 – LG only) will achieve higher task performance than individuals assigned a single performance goal (condition 1 – PG only).

A repeated measures ANCOVA of the two single goal conditions revealed no significant differences in performance between the learning goal only (condition 2) and the performance goal only (condition 1) conditions ($F(51) = 0.5$, $p>0.05$) . Those in the performance goal only condition (condition 1) achieved a mean market share of 9.42% (*CI*= 6.5% to 12.4%) by round 13, while those in the learning goal only condition (condition 2) achieved a mean market share of 7.63% (*CI*= 4.5% to 10.8%). The confidence interval for the difference between the means includes zero, hence the non-significant findings. Planned contrast results confirmed that there were no significant differences between the two conditions ($t(51) = 0.93$, $p>0.05$ (one-tailed)). These results were consistent whether or not the control variables were included. Consequently, there is no support for hypothesis 1a. Thus, the expected result that a learning goal only (condition 2) would outperform a performance goal only (condition 1) for a complex task like the one used in the study was not replicated.

H_{1b}: Individuals assigned a combined goal with both goals at the specific difficult level (condition 5 – SD LG & SD PG) will have lower task performance than individuals assigned a singular performance goal (condition 1 – PG only) or a singular learning goal (condition 2 – LG only).

A repeated measures ANCOVA of the three conditions showed no significant differences between condition 5 (SD LG & SD PG) and either of the singular goal conditions ($F(88)=0.40$, $p>0.05$). Participants in condition 1 (PG only) achieved a mean market share of 9.26% (*CI*= 6.6% to 11.3%), and those in condition 2 (LG only) achieved a mean market share of 7.46% (*CI*= 4.61% to10.31%). Participants in condition 5 (SD LG & SD PG) achieved a mean market share of 8.07% (*CI*= 5.7% to10.4%). Planned contrasts confirmed that performance in conditions 5 (SD LG & SD PG) was not significantly different from performance in condition 1 (PG only) ($t(63) = 0.80$, $p>0.05$ (one-tailed)) or condition 2 (LG only) ($t(59)=-0.14$, $p>0.05$ (one-tailed)). The confidence intervals for the mean difference of all three conditions overlapped. Thus, there is no support for H_{1b} that performance in condition 5 (SD LG & SD PG) will be lower than performance in the singular goal conditions.

H_{1c}: Individuals assigned a combined goal with both goals at the specific difficult level (condition 5 – SD LG & SD PG) will have lower task performance than individuals assigned any of the other combined goal combinations (condition 3 – DB LG & SD PG, condition 4 – DB LG & DB PG, or condition 6 – SD LG & DB PG).

A repeated measures ANCOVA of the four combined goal conditions revealed a marginally significant difference in performance between conditions ($F(113) = 2.54$, $p=0.06$). Post hoc analysis using the Bonferroni adjustment revealed that participants in condition 6 (SD LG & DB PG) significantly outperformed those in condition 5 (SD LG & SD PG) by a mean of 3.43% ($p<0.05$; *CI*= 0.04% to 6.82%) market share across all rounds. Participants in condition 6 (SD LG & DB PG) achieved a mean market share in round 13 of 12.0% compared to 8.4% for those in condition 5 (SD LG & SD PG). This result is confirmed in the planned contrast which shows that participants in condition 6

(SD LG & DB PG) outperform those in condition 5 (SD LG & SD PG) ($t(55) = 3.52$, $p<0.01$ (one-tailed)).

The difference in performance between participants in condition 5 (SD LG & SD PG) and condition 3 (DB LG & SD PG), and between condition 5 (SD LG & SD PG) and condition 4 (DB LG & DB PG), were not significant. Participants in condition 3 (DB LG & SD PG) had a mean of 8.03% in round 13 vs 8.4% in condition 5 (SD LG & SD PG) ($t(54) = -1.33$, $p>0.05$). Participants in condition 4 (DB LG & DB PG) achieved a mean of 9.8% vs. 8.4% for those in condition 5 (SD LG & SD PG) ($t(53) = 1.39$, $p>0.05$).

In conclusion, while condition 5 (SD LG & SD PG) does result in the lowest performance of all the combined goal conditions, the difference in performance between participants in condition 5 (SD LG & SD PG) and those in the other combined goal conditions is only significantly lower than those in condition 6 (SD LG & DB PG). Thus, there is only support for H_{1c} with respect to the difference between these two conditions.[39]

H_{1d}: Except when both goals are at the specific difficult level (condition 5 – SD LG & SD PG), individuals assigned a combined goal (condition 3 – DB LG & SD PG, condition 4 – DB LG & DB PG, and condition 6 – SD LG & DB PG) will outperform individuals assigned a singular goal (condition 1 – PG only, or condition 2 – LG only).

A repeated measures ANCOVA with singular (n=56) or combined goal (n=94) as the between-subject factor revealed marginally significant differences between market share performance in singular goal conditions compared to combined goal conditions (excluding condition 5 – SD LG & SD PG) ($F(145)=3.03$, $p<0.09$). Participants with combined goals (except condition 5 – SD LG & SD PG) outperformed participants with singular goals by achieving a mean market share of 10.04% (CI= 8.3% to 11.8%) vs. 8.68% (CI= 6.4% to11.0%) ($t(145) = 1.49$, $p<0.09$). Thus, there is marginal support for H_{1d}.

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[39] Note that these results remain consistent with the analysis is restricted to those participants who answered both goal manipulation checks correctly.

Note that when condition 5 (SD LG & SD PG) is included in the above analysis the improvement in performance from having combined goals versus singular goals ceases to be marginally significant ($F(172) = 1.73$, $p>0.05$).

H_{1e}: Individuals assigned a combined goal with a do best level performance goal (condition 4 – DB LG & DB PG, or condition 6 – SD LG & DB PG) will outperform individuals assigned a combined goal with a specific difficult performance goal (condition 3 – DB LG & SD PG, or condition 5 – SD LG & SD PG).

A repeated measure ANCOVA revealed a marginally significant difference in performance between participants in combined goal conditions with a do best level performance goal compared to those with a specific difficult level performance goal ($F(116)=3.61$, $p=0.06$). Those with a do best performance goal ($n=62$) outperformed those with a specific difficult performance goal ($n=59$) by an average of 1.66% across all rounds. Participants with a do best level performance goal achieved a mean market share of 10.88% (*CI*= 8.79% to 12.98%) versus those with a specific difficult performance goal who achieved a mean market share of 8.2% (*CI*= 6.07% to 10.36%). Consequently, there is marginal support for $H_{1e.}$

H_{1f}: Individuals assigned a combined goal with a specific, difficult learning goal (condition 5 – SD LG & SD PG, or condition 6 – SD LG & DB PG) will outperform individuals assigned a combined goal with a do best learning goal (condition 3 – DB LG & SD PG, or condition 4 – DB LG & DB PG).

A repeated measures ANCOVA revealed no significant difference between the performance of those with a do best learning goal ($n=63$) and those with a specific difficult learning goal ($n=58$) ($F(116)=0.21$, $p>0.05$). Participants with do best level learning goals achieved a mean market share of 8.91% whereas those with a specific difficult learning goal achieved a market share of 10.32% ($t(116) = -0.41$, $p>0.05$). Thus, there is no support for $H_{1f.}$

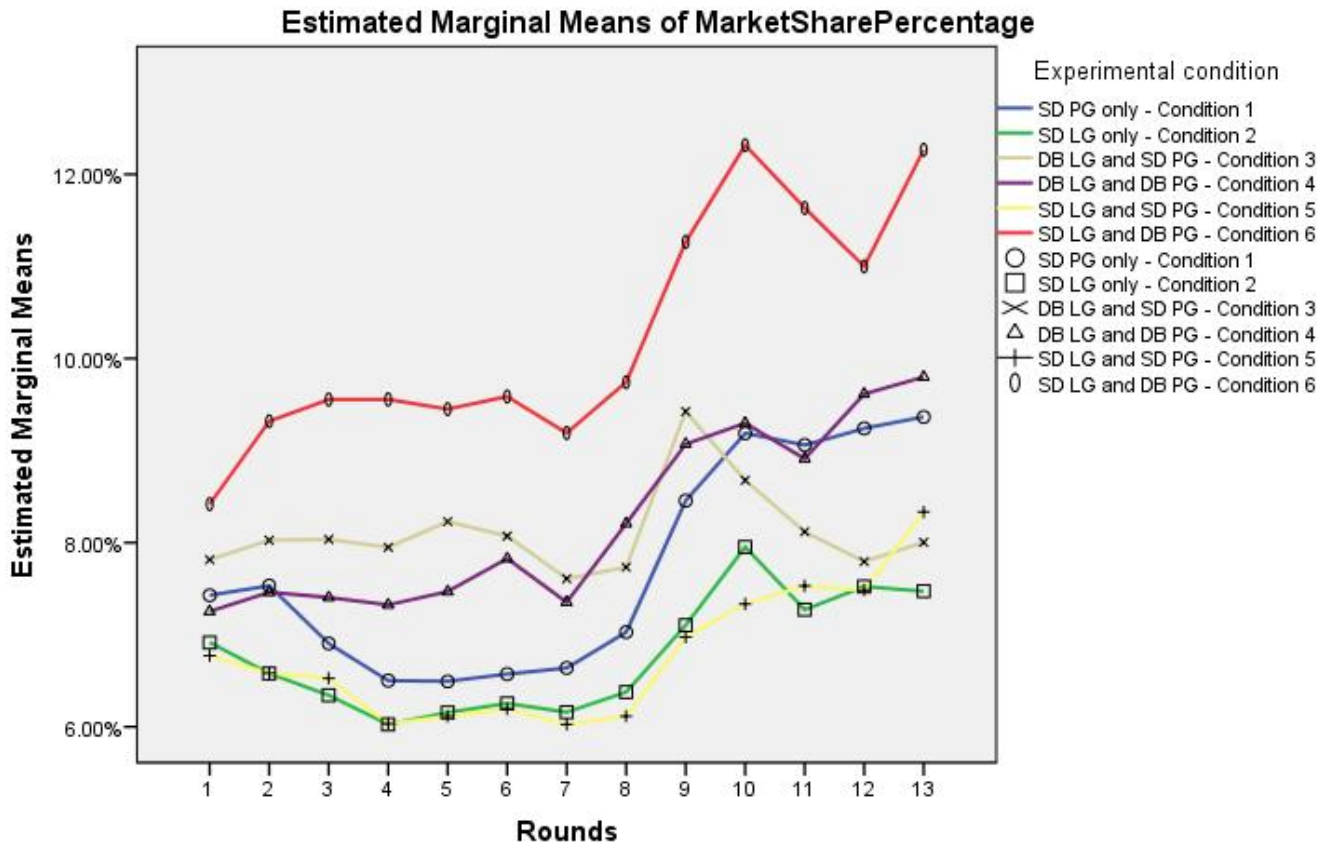
H_{1g}: Individuals assigned a combined goal with a specific, difficult learning goal and a do best performance goal (condition 6 – SD LG & DB PG) will outperform individuals assigned any of the other five goal conditions (conditions 1 – 5).

A repeated measures ANCOVA revealed marginally significant differences between conditions ($F(168)=2.09$, $p<0.07$). Condition 6 (SD LG & DB PG) resulted in the highest mean final market share of all the conditions at 12.32% (*CI*= 9.35% to 15.29%). This compares to means of 9.38% for condition 1 (PG only), 7.50% for condition 2 (LG only), 8.01% for condition 3 (DB LG & SD PG), 9.72% for condition 4 (DB LG & DB PG), and 8.32% for condition 5 (SD LG & SD PG).

Planned contrasts revealed that participants in condition 6 (SD LG & DB PG) significantly outperformed those in condition 1 (PG only) ($t(57) = 2.56$, $p<0.05$), condition 2 (LG only) ($t(53) = 3.49$, $p<0.01$), and condition 5 (SD LG & SD PG) ($t(54) = 3.53$, $p<0.01$). Planned contrasts also revealed that participants in condition 6 (SD LG & DB PG) marginally outperformed those in condition 3 (DB LG & SD PG) ($t(59) = 2.17$, $p<0.08$), and condition 4 (DB LG & DB PG) ($t(58) = 2.11$, $p<0.09$).

Consequently, there is support for H_{1g} that participants in condition 6 significantly outperform those in conditions 1 (PG only), 2 (LG only) and 5 (SD LG & SD PG), and marginally outperform those in conditions 3 (DB LG & SD PG) and 4 (DB LG & DB PG). This finding can be seen in the figure below which shows market share performance by condition across rounds.

Figure 5: Market share performance by condition across rounds



Covariates appearing in the model are evaluated at the following values: Degree program from booklet = 2.06, Gender from booklet = .41, Commitment average of time A and time C = 4.3926

4.3.5.1.3 Summary of findings on assigned goals and task performance H_1

In summary, in hypothesis 1 I found support for the following:

- performance in condition 5 (SD LG & SD PG) was significantly lower than in condition 6 (SD LG & DB PG)
- excepting condition 5 (SD LG & SD PG), performance in combined goals is marginally higher than in singular goals
- participants assigned combined goals with the performance goal at the do best level (condition 4 DB LG & DB PG, condition 6 SD LG & DB PG) marginally outperform those with the performance goal at the specific difficult level (condition 3 DB LG & SD PG, condition 5 SD LG & SD PG)
- participants in condition 6 significantly outperformed those in conditions 1 (PG only), condition 2 (LG only), and condition 5 (SD LG & SD PG), and marginally outperformed those in conditions 3 (DB LG & SD PG) and condition 4 (DB LG & DB PG).

In the table below, the check mark denotes higher performance and the "x" denotes lower performance.

Table 28: Summary of H_1 findings

Summary of H_1 Findings DB= Do your best; SD= specific difficult PG= Performance goal; LG= Learning goal ✓= higher performance; × = lower performance							
	Support	Condition 1 SD PG only	Condition 2 SD LG only	Condition 3 DB LG & SD PG	Condition 4 DB LG & DB PG	Condition 5 SD LG & SD PG	Condition 6 SD LG & DB PG
H1a	No	×	✓				

H1b	No	✓	✓			×	
H1c	C6>C5 only			✓	✓	×	✓
H1d	Marginal	×	×	✓	✓		✓
H1e	Marginal			×	✓	×	✓
H1f	No			×	×	✓	✓
H1g	Yes: C6>C1, 2 & 5 Marginal: C6>C3 & 4	×	×	×	×	×	✓

4.3.5.2 Effective goal condition H_2

The second set of hypotheses test the relationships between effective goal condition and assigned goal condition, followed by the relationship between effective goal condition and task performance. While manipulation checks tell us that participants know the goals they have been assigned, examining participants' effective goal conditions provides more information about how they cognitively responded to their assigned goals. Hypotheses 2_a and 2_b were tested using Chi-square analysis since they examine the actual distribution of effective goal condition against a theoretical distribution. Hypotheses 2_c and 2_d were tested using ANOVA since they examine the relationship between effective goal condition and task performance. Finally, hypothesis 2_e was examined using correlation.

4.3.5.2.1 Effective goal condition and assigned goal condition

H_{2a}: Individuals assigned singular goals will report having the corresponding effective goal condition (performance to performance; learning to learning).

This hypothesis tests whether participants' assigned singular goals are related to or independent from the corresponding effective goal condition. As both variables are categorical, this hypothesis was tested using Chi-square analysis. If participants' effective goal condition is related to their corresponding assigned goal condition, the Chi-square statistic should be significant. This is because the Chi-square tests the null hypothesis of random distribution of effective goal condition across assigned goal condition categories. Because the Chi-square test does not indicate the direction of the effect, the data must be examined to interpret the meaning of a significant result.

For participants assigned singular goals only, the distribution of effective goal condition by assigned goal condition for rounds 2, 7, 10 and 13 are outlined in the table below. Recall that there are three possible effective goal conditions: the effective performance goal condition (PG only), the effective learning goal condition (LG only), and the effective combined goal condition (both goals equally).[40]

Table 29: Effective goal condition across rounds by assigned single goal condition

Effective Goal Condition Across Rounds by Assigned Single Goal Condition				
	Effective goal condition	Assigned goal condition		Total
		PG only	**LG only**	
<u>*Round 2*</u>	Performance	10	9	19
n=58	Learning	6	4	10

[40] Note that cases where participants indicated they were not focused on either of the assigned goals – i.e. effective no goal condition - were excluded from the analysis since these cases represent goal non-acceptance or abandonment. The frequency of the effective no goal condition was very low with 2 cases in round 2; 3 cases in round 7; 3 cases in round 10; and 8 cases in round 13.

	Combined (both)	15	14	29
Round 7	Performance	21	16	37
n= 57	Learning	2	4	6
	Combined (both)	8	4	14
Round 10	Performance	21	12	33
n=54	Learning	3	2	5
	Combined (both)	6	10	16
Round 13	Performance	9	14	33
n=57	Learning	6	3	9
	Combined (both)	7	8	15

If participants' effective goal conditions are related to their corresponding assigned goal condition, the Chi-square statistic should be significant. This is because, according to goal setting theory, participants assigned performance goals should predominantly use an effective performance goal condition, and those assigned learning goals should predominantly use an effective learning goal condition since goals cause people to focus on the goal.

As shown in the table above, however, that is not what participants reported. The exact method was used to estimate the Chi-square statistic. The Chi-square statistic was not significant for any of the rounds (round 2 - $X_2\,(2) = 0.21$, $p>0.05$; round 7 - $X_2\,(2) = 1.2$, $p>0.05$; round 10 - $X_2\,(2) = 3.03$, $p>0.05$; round 13 - $X_2\,(2) = 0.98$, $p>0.05$). Consequently, H_{2a} is not supported.

Overall, these results suggest that the relationship between assigned goal condition and effective goal condition is more independent than predicted by goal setting theory.[41] This is especially true of participants assigned learning goals because they report focusing on performance goals or combined goals more than the learning goals alone. However, it is also somewhat true of participants who are assigned performance goals since they focus more on combined goals and the learning goal alone more than expected as well. In summary, there is much more variation in effective goal condition for participants assigned singular goals than is expected by the arguments of goal setting theory that goals result in clear focus on the goal and non-focus on non-goals areas (Latham & Locke, 2013).[42]

The following section addresses the research question *what is the relationship between assigned goal condition and effective goal condition for combined goals?* This section extends the analysis above to include assigned combined goals in order to explore the relationship between assigned combined goals and effective goal condition. Once again, this analysis examines whether participants' assigned goal conditions are related to or independent from their effective goal condition. As both variables are categorical, these hypotheses were tested using Chi-square analysis. Because of the complexity of the contingency table (6 assigned goal conditions X 3 effective goal conditions), the Monte Carlo method was used this time rather than the exact method used above. The relationship was examined at all four time periods: after rounds 2, 7, 10 and 13.

At round 2 there was a significant association between assigned goal condition and effective goal condition $X_2\,(10) = 22.83$, $p<0.02$. The strength of the association between the variables after round 2 is indicated by Cramer's V = 0.251 ($p<0.02$), indicating a moderate relationship. A graph of the distribution of effective goal condition by assigned

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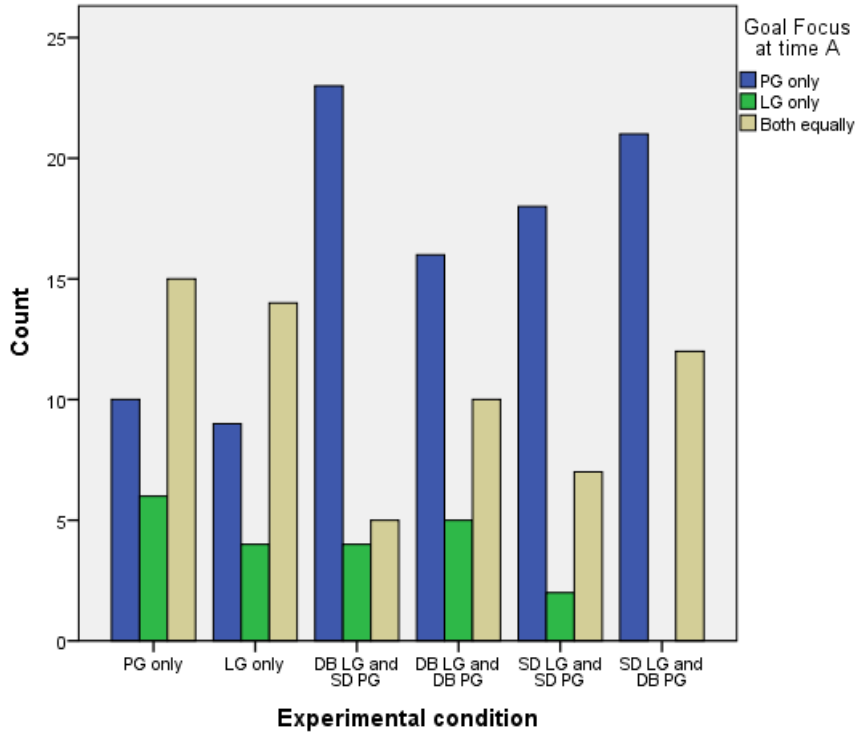
[41] Note that these results cannot be explained by failed manipulations since the majority of the participants in the final data set correctly identified their assigned goals. See the manipulation check section above for details.

[42] While these results may suggest that participants did not put in enough effort or take the study seriously, the data do not support that conclusion. On a 7-point scale, the mean level of effort reported was 5.3 (sd=0.97) and the level of seriousness reported was 5.7 (sd = 0.80).

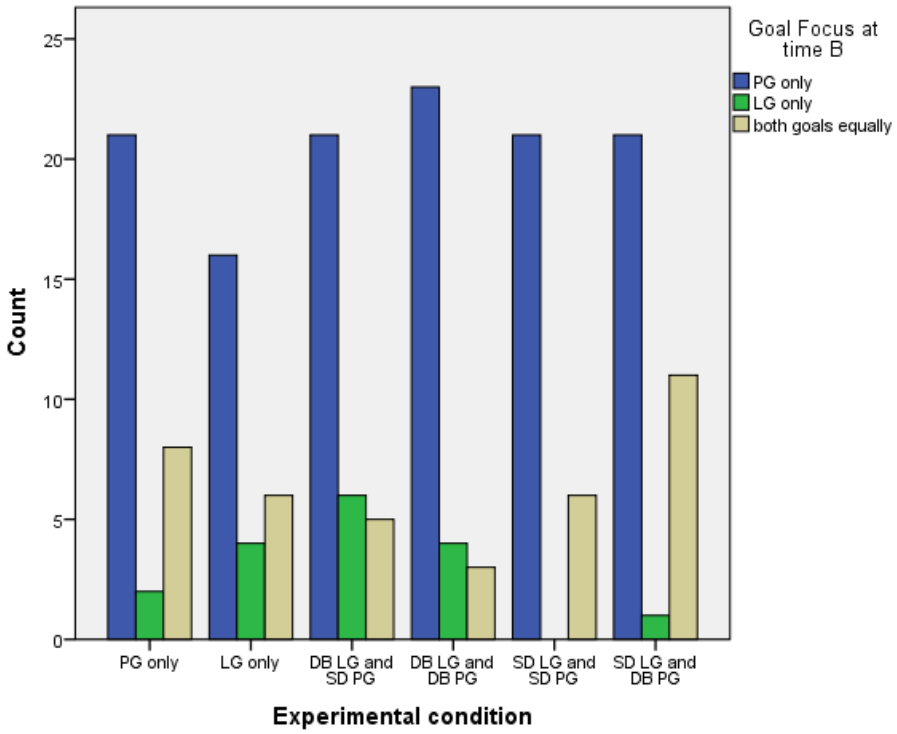
goal condition after round 2 is shown below. The results indicate that after round 2 the two single assigned goals were most commonly associated with the effective combined goal condition, whereas the four combined goal conditions were most commonly associated with the effective performance goal condition. The effective learning goal condition is the least common effective goal condition across assigned goal conditions.

Figure 6: Effective goal condition by experimental condition at round 2



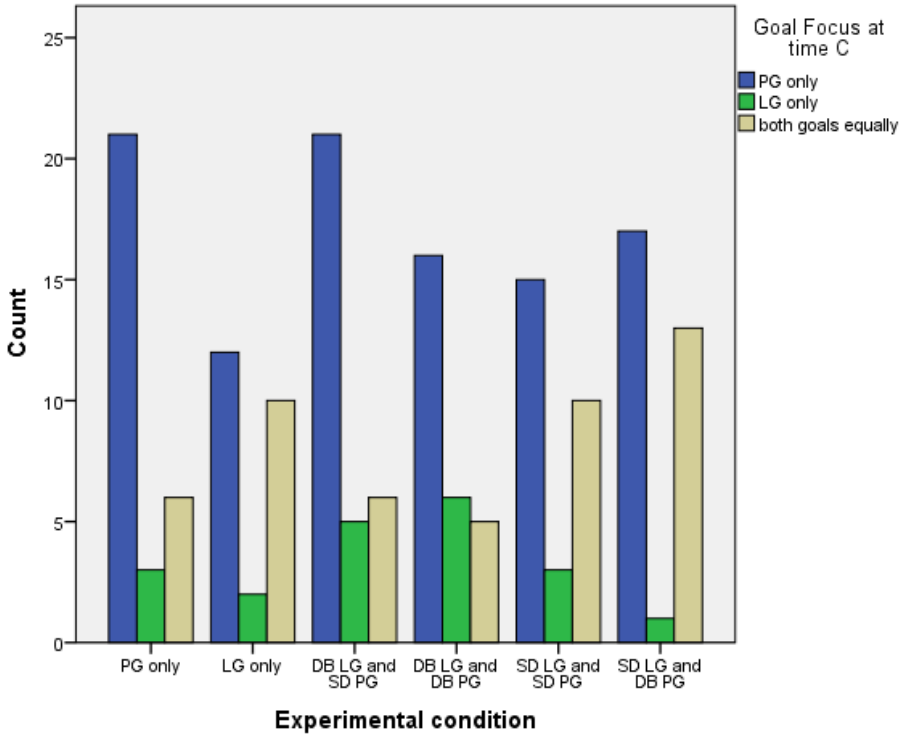
After round 7 there was a non-significant association between assigned goal condition and effective goal condition X_2 (10) = 14.33, p>0.05. The strength of the association between the variables after round 7 was also not significant as indicated by Cramer's V = 0.200, p>0.05. A graph of the distribution of effective goal condition by experimental condition for round 7 is shown below. It indicates there was no relationship between assigned goal condition and effective goal condition after round 7 like there was after round 2. Rather, it shows that across assigned goal conditions, the effective performance goal condition is the dominant option, occurring at least twice as often as the next most common effective goal condition, the effective combined goal condition (both goals equally).

Figure 7: Effective goal condition by experimental condition at round 7



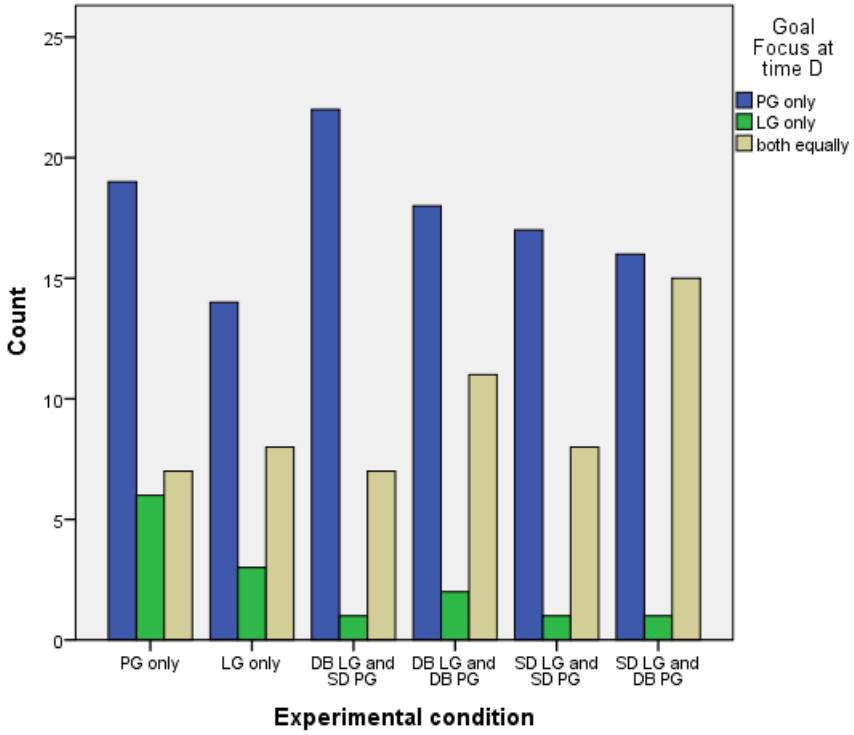
After round 10 there was also a non-significant association between assigned goal condition and effective goal condition X_2 (10) = 13.2, p>0.05. The strength of the association between the variables after round 10 was also not significant as indicated by Cramer's V = 0.20, p>0.05. A graph of the distribution of effective goal condition by experimental condition after round 10 is shown below. It indicates there was no relationship between assigned goal condition and effective goal condition after round 10, although in this round the dominance of the performance goal only condition appears somewhat diminished in favour of the combined goal option. It is possible this is in response to the deregulation in the market that occurred in the simulation starting at round 9.

Figure 8: Effective goal condition by experimental condition at round 10



After round 13 there was once again a non-significant association between assigned goal condition and effective goal condition X_2 (10) = 13.3, p>0.05. The strength of the association between the variables after round 13 was also not significant as indicated by Cramer's V = 0.19, p>0.05. The graph of the distribution of effective goal condition by assigned goal condition is shown below. It indicates there was no relationship between assigned goal condition and effective goal condition at round 13. As we can see from the graphs, this is because the overall pattern of effective goal condition changes only somewhat across the assigned goal conditions.

Figure 9: Effective goal condition by experimental condition at round 13



Overall, it appears that across assigned goal conditions the effective performance goal condition was the most common effective goal condition, followed by the effective combined goal condition and then the effective learning goal conditions. While the distribution of effective goal condition varied somewhat between assigned goal conditions, the effective performance goal condition was the most common one across all six assigned goal conditions. Interestingly, the only exception was in the two singular goal conditions in round 2. In conclusion, the tendency to focus on performance rather than learning goals or combined goals appears to happen regardless of participants' assigned goal condition, with the possible exception of the earliest stages of the task.[43]

[43] Notably, from round 7 onward, the assigned goal condition where the effective combined goal condition was most common was condition 6 (SD LG & DB PG).

H_{2b}: Individuals will pursue an effective performance goal condition more frequently than an effective learning goal condition or an effective combined goal condition (both goals equally).

The distribution of the effective goal conditions reported after each of the four times it was measured was examined. Again, cases where participants indicated they were not focused on either of the assigned goals were excluded from the analysis.

The key question is whether the distribution of the effective goal condition differs significantly from what we would expect by chance (i.e. if there were no systematic influence). If the effective goal conditions were distributed by chance, we would expect a roughly equal distribution amongst the three possible categories. Again, Chi-squared analysis was used to test the distribution of effective goal condition.

An exact Chi-squared test of the effective goal condition distribution after round 2 was significant X_2 (2) = 48.04, p<0.001. This means that the null hypothesis that the actual observed distribution matches the expected distribution is rejected. The contingency table below clearly shows that more participants than expected focused on the performance goal only (actual 97 vs. expected 60), and fewer than expected for the learning goal only effective goal condition (actual 21 vs. expected 60). The standardized residuals are highly significant indicating this distribution is extremely unlikely to have occurred by chance. The effective combined goal condition had approximately the expected number of observed cases (63 actual to 60 expected); this is supported by the non-significant standardized residuals. Consequently, H_{2b} is supported at round 2 with respect to an effective learning goal condition but not with respect to an effective combined goal condition.

Table 30: Effective goal condition round 2

Effective Goal Condition Round 2

Goal focus at time A (round 2)

	Observed N	Expected N	Residual
PG only	97	60.3	36.7**
LG only	21	60.3	-39.3**
Combined (both equally)	63	60.3	2.7
Total	181		
**= p<0.01			

After round 7, an exact Chi-squared test of the effective goal condition distribution was significant X_2 (2) = 104.9, p<0.001. Hence, the actual observed distribution does not match the expected distribution. The contingency table below clearly shows that there are more than expected effective performance goal conditions (actual 123 vs. expected 60), and fewer than expected effective learning goal and effective combined goal conditions. Again, the standardized residuals are all highly significant indicating this distribution is highly unlikely to have occurred by chance. Thus, H_{2b} is supported at round 7.

Table 31: Effective goal condition round 7

Effective Goal Condition Round 7

Goal focus at time B (round 7)

	Observed N	Expected N	Residual
PG only	123	59.7	63.3**
LG only	17	59.7	-42.7**
Combined (both equally)	39	59.7	-20.7**

Total	179		
**= p<0.01			

After round 10, an exact Chi-squared test of the effective goal condition distribution was significant X_2 (2) = 60.05, p<0.001. Hence, once again the null hypothesis rejected. The contingency table below clearly shows that there are more than expected effective performance goal conditions (actual 102 vs. expected 57), and fewer than expected effective learning goal and effective combined goal conditions. Again, the highly significant residuals indicate that this distribution is unlikely to have occurred by chance. Therefore, H_{2b} is supported at round 10.

Table 32: Effective goal condition round 10

Effective Goal Condition Round 10

Goal focus at time C (round 10)

	Observed N	Expected N	Residual
PG only	102	57.3	44.7**
LG only	20	57.3	-37.3**
Combined (both equally)	50	57.3	-7.3**
Total	172		
**= p<0.01			

Finally, after round 13, an exact Chi-squared test of the effective goal condition distribution was also significant X_2 (2) = 72.32, p<0.001. Once again the null hypothesis is rejected as the actual distribution does not match the expected distribution. The contingency table below clearly shows that there are more than expected effective performance goal conditions (actual 106 vs. expected 59), and fewer than expected effective learning goal conditions. Again, the standardized residuals are highly significant for those two conditions. The effective combined goal condition had approximately the expected number of observed cases; this is supported by the non-

significant standardized residuals. Thus, H_{2b} is supported at round 13 with respect to the effective learning goal condition but not the effective combined goal condition.

Table 33: Effective goal condition round 13

Effective Goal Condition Round 13

Goal focus at time D (round 13)

	Observed N	Expected N	Residual
PG only	106	58.7	47.3**
LG only	14	58.7	-44.7**
Combined (both equally)	56	58.7	-2.7
Total	176		
**= p<0.01			

In summary, there is strong support for H_{2b} compared to the effective learning goal condition during all four rounds. Participants clearly showed a strong preference to cognitively focus on performance goals over learning goals throughout the task. There is mixed support for H_{2b} compared to the effective combine goal condition as the distribution was significantly different from expected at only two of the four times it was measured. Thus, in half of the rounds participants clearly preferred the effective performance goal condition over the effective combined goal condition, but in the other half of the rounds the bias towards the effective performance goal condition and away from the effective combined goal condition was not as clear.

4.3.5.2.2 Effective goal condition and task performance

H_{2c}: Individuals assigned combined goals who have an effective performance goal will perform worse than individuals who have an effective learning or effective combined goal condition.

This hypothesis was tested using ANOVA for participants who were assigned combined goals only using effective goal condition at round 2, 7, 10 and 13 as the independent factors and market share performance at the corresponding round as the dependent variable.

A one way ANOVA with round 2 effective goal condition as the independent factor revealed no significant differences in round 2 market share performance ($F(121)$=0.17, p>0.05). The same analysis with round 7 effective goal condition as the independent factor also revealed no significant differences in market share performance in round 7 ($F(120)$=1.4, p>0.05) or in performance in any subsequent rounds.

A one way ANOVA with round 10 effective goal condition as the independent factor revealed significant differences in round 10 market share ($F(115)$=3.01, p=0.05. Post hoc analysis revealed that participants who focused on both goals equally outperformed those who focused on learning goals alone (t(39)=2.79, p<0.01), but only marginally outperformed those who focused on performance goals alone (t(100)=1.69, p<0.10).

In round 13, the effective combined goal condition once again was the top performing condition; however, the difference in performance of those who focused on both goals versus those who focused on the learning goal only was only marginally significant (t(47)=1.9, p<0.10. There were no other significant differences.

In summary, with the exception of round 10, the differences in performance between the effective goal conditions were not significant. Across all rounds the highest market share was achieved by those who focused on both goals equally, and the lowest performance was amongst those who focused on the learning goal only rather than the performance goal only as predicted. Consequently, there is no support for H_{2c}.[44]

[44] When the analysis in H_{2c} was extended to include all assigned goal conditions, the results for each round again showed that the highest performance in all rounds was amongst those with effective combined goals, and the lowest performance was those with effective learning goals. The differences were not significant in any round, however.

Interestingly, however, it appears that the effective goal condition in round 2 significantly influenced performance in subsequent rounds. Specifically, participants who had focused on both goals equally in round 2 performed significantly better in round 7 ($F(120)$=3.47, p<0.05) than those who had focused only on the learning goal in round 2 (t(27)=2.57, p<0.05), and marginally significantly better than those who had focused only on the performance goal (t(49)=1.76, p<0.10). A similar lagged effect of round 2 effective goal condition was found in round 10. Participants who had focused on both goals equally in round 2 performed significantly better in round 10 ($F(118)$=3.47, p<0.05) than those who had focused only on the learning goal in round 2 (t(37)=3.4, p<0.01) or those who had focused only on the performance goal (t(48)=2.0, p=0.05). Finally, participants who had focused on both goals in round 2 outperformed in round 13 ($F(117)$=2.88, p=0.06) those who had focused only on the learning goal in round 2 (t(32)=2.9, p<0.01) but not those who had focused only on the performance goal (t(52)=1.13, p>0.05).

These unexpected results suggest that a focus on both goals equally early in the task is associated with higher performance later in the task. No other lagged effect of effective goal condition in an earlier round was found on performance in subsequent rounds. This improved performance effect seems to be limited to focusing on both goals equally in round 2.

H_{2d}: Individuals assigned combined goals who have an effective combined goal condition will perform better than those who have an effective learning or effective performance goal condition.

As shown in the analysis under H_{2c} above, the use of the effective combined goal condition was often associated with outperforming those who focused on either goal alone. Specifically, participants who focused on both goals equally in round 2 performed significantly better in subsequent rounds than those who focused only on the learning goal, and sometimes also better than those who focused only on the performance goal. The use of the effective combined goal condition in round 2 was associated with a lagged performance improvement in later rounds. In round 10 the use of the effective combined goal condition had a more immediate effect on performance. Participants who focused

on both goals equally significantly outperformed those who focused on the learning goal only and marginally outperformed those who focused on the performance goal only. In round 13, participants who focused on both goals marginally outperformed those who focused on the learning goal only.

Consequently, there is support for H_{2d} that focusing on both goals results in the highest performance. The support for the hypothesis is clear compared to the effective learning goal condition since performance was usually significantly better in the effective combined goal condition than the effective learning goal condition. The support for the hypothesis compared to the effective performance goal condition, however, is mixed since performance in the effective combined goal condition was not always significantly better than the effective performance goal condition.

H_{2e}: Switching effective goal conditions will be associated with higher task performance.

To test this hypothesis, I examined the effective goal condition reported by participants at rounds 2, 7, 10 and 13. I then coded whether or not the effective goal condition had changed from the previous report. This provided a measure of switching effective goal condition versus not switching between each pair of subsequent rounds. The strategy of switching or not switching was then related to task performance in the later of the two rounds. (For example, switching effective goal condition between round 2 and round 7 was related to task performance in round 7.)

The relationship between changes in effective goal condition across rounds and task performance was then examined. A change in effective goal condition between round 2 and round 7 was significantly negatively correlated with performance at round 7 (r= -0.17, p<0.05). An ANOVA of final market share performance and change in effective goal condition between round 2 and 7 showed that those who changed significantly underperformed those who did not change (F(180) = 5.43, p<0.05). Participants who changed goal focus between rounds 2 and 7 achieved an average market share in round 7 of 6.3% (*CI*= 5.0% to 7.3%), while those who did not change goal focus achieved an average market share of 8.2% (*CI*= 6.9% to 9.4%).

Similarly, a change in effective goal condition between round 7 and round 10 was significantly negatively correlated with performance at round 10 (r= -0.16, p<0.05). An ANOVA of final market share performance and change in effective goal condition between round 7 and 10 showed that those who changed significantly underperformed those who did not change (F(178) = 4.80, p<0.05). Participants who changed goal focus between rounds 7 and 10 achieved an average market share in round 10 of 7.2% (*CI*= 5.6% to 8.8%), while those who did not change goal focus achieved an average market share of 10.2% (*CI*= 8.5% to 11.9%).

A change in effective goal condition between round 10 and round 13 was significantly negatively correlated with performance at round 13 (r= -0.24, p<0.01). An ANOVA of final market share performance and change in effective goal condition between round 10 and 13 showed that those who changed significantly underperformed those who did not change (F(176) = 10.28, p<0.01). Participants who changed goal focus between rounds 10 and 13 achieved an average market share in round 13 of 6.0% (*CI*= 3.9% to 8.0%), while those who did not change goal focus achieved an average market share of 10.7% (*CI*= 9.0% to 10.4%).

Finally, a change in effective goal condition between round 2 and round 13 was also significantly negatively correlated with performance at round 13 (r=-0.20, p<0.01). An ANOVA of final market share performance and change in effective goal condition between round 2 and round 13 showed that those who changed significantly underperformed those who did not change (F(176) = 6.98, p<0.01). Participants who changed goal focus between rounds 2 and 13 achieved an average market share in round 13 of 7.9% (*CI*= 6.3% to 9.5%), while those who did not change goal focus achieved an average market share of 11.6% (*CI*= 9.1% to 14.1%). Consequently, it appears that across all rounds switching goal focus was significantly negatively associated with market share performance.

Furthermore, the relationship between performance and participants having changed their effective goal condition at least once during the task was also significantly negatively correlated (r= -0.20, p<0.01). Moreover, the frequency of change in effective goal

condition (that is, the more participant switched effective goal condition) and task performance was significantly negatively correlated (r= -0.23, p<0.01). An ANOVA of round 13 performance and the frequency of change in effective goal condition throughout the task was significant (F(176) = 3.68, p<0.05). It showed that participants who changed effective goal condition three times significantly underperformed those who never changed by a mean of 7.39% (p<0.01; CI= 1.22% to13.55%).

Thus, H_{2e} is not supported as there is strong and consistent evidence that the relationship between change in effective goal condition and task performance is the opposite of the predicted direction.[45] It appears that change in effective goal condition is associated with lower rather than higher performance.

4.3.5.2.3 Summary of findings on effective goal condition H_2

In summary, in hypothesis 2 I found support for the following:

- Assigned goal condition and effective goal condition are not related in the way predicted by goal setting theory
- The effective performance goal condition occurs significantly more frequently than the learning goal effective goal condition and sometimes significantly more frequently than the effective combined goal condition
- The use of the effective combined goal condition was associated with significantly better performance than the use of the effective learning goal condition, and sometimes marginally better performance than the effective performance goal condition
- The use of the effective combined goal condition early in the task was associated with increased performance later in the task

[45] It is important to note that because effective goal condition was not manipulated, it is unclear whether the switching caused the lower performance, or whether the lower performance caused the switching.

- Switching effective goal condition during the task was associated with significantly lower performance than using the same effective goal condition throughout the task

Table 34: Summary of H_2 findings

Summary of H_2 Findings				
	Supported	**Assigned goal condition**	**Effective goal condition**	**Task performance**
H2a	No	Singular goal	Same as assigned goal	
RQ1	n/a	Combined goal	? (unknown)	
H2b	Yes PG>LG Partial PG>CG	All – singular and combined goals	Performance > learning or combined	
H2c	No	Combined goal	Performance	Lowest
H2d	Yes CG>LG Partial CG>PG	Combined goal	Combined	Highest
H2e	No - decrease	All – singular and combined goal	Change between rounds	Increase

4.3.5.3 Goal interpretation H_3

The third set of hypotheses test the effects of specific goal interpretation dimensions. All the goal interpretation dimension hypotheses were tested using the revised four dimensions - goal clarity, goal ambiguity, goal approach uncertainty, and goal adaptation – along with the revised items.

4.3.5.3.1 Goal interpretation and task performance

The following hypotheses were tested primarily with bivariate correlations (Pearson's *r*). All goal interpretation items were measured on a 7-point scale. As reported above, there were no significant differences in any of the goal interpretation dimensions by assigned goal condition.

H_{3a}: Goal clarity will be positively related to task performance.

Participants reported overall goal clarity of 5.7 (*s*= 1.0), indicating that they found the goals clear. The correlation between goal clarity and task performance was not significant at any of the four times goal clarity was measured: round 2 (r = -.06, p>0.05), round 7 (r = .23, p>0.05), round 10 (r = 0.21, p>0.05), and round 13 (r = .10, p>0.05). Therefore, H_{3a} that goal clarity is positively related to task performance is not supported.

H_{3b}: Goal ambiguity will be negatively related to task performance.

Participants reported overall goal ambiguity of 4.5 (s = 1.5), indicating that they found the goals moderately ambiguous. The correlation between goal ambiguity and task performance was significant and negative during two of the four rounds it was measured and marginally significant and negative during the third: round 2 (r = -.05 (p>0.05), round 7 (r = -.17 (p<0.05), round 10 (r = -.14 (p<0.10), and round 13 (r = -.18 (p<0.05). Thus, hypothesis H_{3b} that goal ambiguity and task performance are negatively correlated is partially supported.

H_{3c}: Goal approach uncertainty will be negatively related to task performance.

Participants reported overall goal approach uncertainty of 5.3 (s = 1.2), indicating that participants experienced moderate uncertainty about how to pursue their goals. The correlation between goal approach uncertainty and task performance was negative and highly significant at all four times it was measured: round 2 (r = -.24 (p<0.001), round 7 (r = -.41 (p<0.001), round 10 (r = -.42 (p<0.001), and round 13 (r = -.47 (p<0.001). Therefore, hypothesis H_{3c} that goal approach uncertainty and task performance are negatively related is strongly supported.

4.3.5.3.2 Goal interpretation and effective goal condition

H_{3d}: Goal adaptation will be positively related to switching effective goal conditions.

Participants reported goal adaptation of 5.2 (s = 0.99), suggesting they experienced a moderate need to reassess their goals based on new information as the task progressed. The correlation between goal adaptation and switching effective goal conditions was only significant and positive in the final round: round 2 (r = .12, p>0.05), round 7 (r = .12, p>0.05), round 10 (r = .06, p>0.05), and round 13 (r = .23, p<0.01). Goal adaption was marginally positively related to the frequency of changes in effective goal condition (r = .14, p<0.10). Therefore, support for H_{3d} that goal adaptation is positively related to switching effective goal condition is limited.

4.3.5.3.3 Goal interpretation and goal commitment

At rounds 2 and 10, participants reported average goal commitment of 4.41 (s=0.88) on a 7-point scale. Thus, participants were moderately committed to their goal(s). There was only one marginally significant difference in average goal commitment between assigned goal conditions. Post-hoc tests revealed that participants assigned a performance goal only (condition 1) had marginally higher commitment (p<0.09) than participants assigned a specific difficult learning goal and a do best performance goal (condition 6). Participants in condition 1 (PG only) had average commitment of 4.7 (s = 1) whereas those in condition 6 (SD LG & DB PG) had average commitment of 4.1 (s = 0.96).

H_{3e}: Goal commitment will be positively related to goal clarity.

The correlation between goal commitment and goal clarity was not significant after round 2, marginally significant at round 10 and marginally significant on average: round 2 (r = .10, p>0.05), round 10 (r = .14, p<0.10), and average (r = .12, p<0.10). Therefore, there is limited support for hypothesis H_{3e} that goal commitment and goal clarity are positively related.

H_{3f}: Goal commitment will be negatively related to goal ambiguity.

The correlation between goal commitment and goal ambiguity was significant and negative after round 10 and on average, but not significant for round 2 alone: round 2 (r = -.05, p>0.05), round 10 (r = -.26, p<0.01), and average (r = -.17, p<0.05). Therefore, hypothesis H_{3f} that goal commitment and goal ambiguity are negatively related is partially supported.

H_{3g}: Goal approach uncertainty will be negatively related to goal commitment.

The correlation between goal commitment and goal approach uncertainty was significant and negative after round 10 and on average, but not significant for round 2 alone: round 2 (r = -.5, p>0.05), round 10 (r = -.35, p<0.001), and average (r = -.22, p<0.01). Therefore, hypothesis H_{3g} that goal commitment and goal approach uncertainty are negatively related is partially supported.

4.3.5.3.4 Goal interpretation and self-efficacy

Between rounds 2 and 10, participants reported average self-efficacy of 46.3 (s=19.9) on a 100-point scale. Thus, participants had moderate self-efficacy to achieve their goal(s). Self-efficacy did fall significantly (t(171)=6.7, p<0.001) from round 2 (m=51.6, s= 19.5) to round 10 (m=41.0, s= 25.0). There were no significant differences in self-efficacy by assigned goal condition.

H_{3h}: Goal ambiguity will be negatively related to self-efficacy.

The correlation between average goal ambiguity and average self-efficacy was r =-.22 (p<0.01). The correlation between goal ambiguity and self-efficacy after round 2 and round 10 were also significant and negative at r =-.18 (p<0.05) and r =-.22 (p<0.01) respectively. Therefore, hypothesis H_{3h} that goal ambiguity is negatively related to self-efficacy is supported.

H_{3i}: Goal approach uncertainty will be negatively correlated with self-efficacy.

The correlation between average goal approach uncertainty and average self-efficacy was r = -.23 (p<0.01). The correlation between goal approach uncertainty and self-efficacy after round 2 and round 10 were also significant and negative at r =-.18 (p<0.05) and r =-

.22 (p<0.01) respectively. Therefore, H_{3i} that goal approach uncertainty and self-efficacy are negatively related is supported.

4.3.5.3.5 Assigned goals and goal interpretation

The final hypotheses test the relationships between assigned goals and goal interpretation. Specifically, they examine whether there are differences in goal clarity and ambiguity between singular goals and combined goals.

The relationship between goal clarity and ambiguity was examined first. The correlation between goal clarity and goal ambiguity was significant and negative (r= -0.38, p<0.01). Consistent with the findings of the PCA analysis on the goal interpretation items, this result suggests that goal clarity and goal ambiguity are not simply opposite ends of the same dimension. Rather, it suggests that goal ambiguity captures different information relating to the completeness of goal information which is not captured by goal clarity. Hence, the goal clarity and goal ambiguity hypotheses were tested separately.

H_{3j}: Assigned combined goals will have lower goal clarity than assigned singular goals.

H_{3k}: Assigned combined goals will have higher goal ambiguity than singular assigned goals.

A one-way ANOVA revealed no significant differences between combined goals and singular goals on average goal clarity (F (182) =.89, p>0.05) or average goal ambiguity (F (182) =1.08, p>0.05). There were also no significant differences between combined goals and singular goals at any of the four time periods measured. Interestingly, the only marginally significant difference was for goal clarity after round 2 (F (182) =3.02, p=0.08); however, contrary to expectations, it showed that goal clarity was higher for combined goals (m = 5.76, s = .90) than for singular goals (m = 5.51, s = .96). Consequently there is no support for hypotheses H_{3j} or H_{3k}.

The first exploratory research question with respect to assigned combined goals and goal interpretation is whether combined goals at the same difficulty level (i.e. SD LG & SD

PG, or DB LG & DB PG) are clearer or more ambiguous than combined goals at different difficulty levels (i.e. DB LG & SD PG, or SD LG & DB PG).

To explore this question, two one-way ANOVAs were conducted, first for goal clarity. The results for goal clarity revealed a significant difference between assigned goals at the same vs. different difficultly levels (F (123) =4.46, p<0.05). Upon inspection, the results showed that goal clarity was significantly higher for combined goals at the same difficulty level (m=5.93, s=.76) than at different difficulty levels (m=5.60, s=.97). For goal ambiguity, however, there were no significant differences between assigned goals at the same vs. different difficultly levels for goal ambiguity (F (123) =.06, p>0.05) at any time.

The next research question with respect to assigned combined goals and goal interpretation is which of the combined goal conditions lead to the highest and lowest goal clarity and goal ambiguity.

To explore which condition had the highest clarity, a one-way ANOVA was conducted. It revealed a marginally significant difference between the four combined goal conditions (F (121) =2.10, p=0.10). A Bonferroni post hoc test showed that the only significant difference in goal clarity was between condition 5 (SD LG & SD PG) (m=6.07, s=0.69) and condition 6 (SD LG & DB PG) (m=5.53, s=1.06) (t(52)=2.22, p<0.05). Thus, condition 5 (SD LG & SD PG) was judged the clearest combined goal condition and condition 6 (SD LG & DB PG) was judged the least clear.

Goal ambiguity level for combined goals was also explored using ANOVA. There were no significant differences in goal ambiguity between any of the combined goal conditions ambiguity (F (121) =.69, p>0.05) at any time. Condition 4 (DB LG & DB PG) did have the highest goal ambiguity (m=4.7, s=1.52), but the differences between other conditions were not significant. The lowest goal ambiguity was in condition 5 (m=4.14. s=1.62), but again the differences were not significant.

4.3.5.3.6 Summary of findings on goal interpretation H_3

In summary, in hypothesis 3 I found support for the following:

- Goal ambiguity is negatively related to self-efficacy
- Goal ambiguity and goal commitment are negatively related
- Goal approach uncertainty is negatively related to task performance
- Goal approach uncertainty and goal commitment are negatively related
- Goal approach uncertainty is negatively related with self-efficacy
- There were no significant differences between singular and combined goals on either goal clarity or goal ambiguity
- Goal clarity is higher in combined goals where both goals are at the same difficulty level than when they are at different difficulty levels
- Condition 5 (SD LG & SD PG) was significantly clearer than condition 6 (SD LG & DB PG)

Table 35: Summary of H_3 findings

Summary of H_3 Findings + = positively related; - = negatively related					
Goal interpretation dimension	**Task performance**	**Effective goal condition**	**Commitment**	**Self-efficacy**	**Assigned goal condition**
Clarity	+ H_{3a} *Not supported*		+ H_{3e} *Limited support*		Combined < singular H_{3j} *Not supported* Condition 1-6? RQ2 *C5>C6*

Ambiguity	- H_{3b} *Partially supported*		- H_{3f} *Partially supported*	- H_{3h} *Supported*	Combined > singular H_{3k} *Not supported* Condition 1-6? RQ3 *No differences*
Approach uncertainty	- H_{3c} *Supported*		- H_{3g} *Partially supported*	- H_{3i} *Supported*	
Progress/ Adaptation		+ switching H_{3d} *Limited support*			

4.4 Discussion

This section discusses the main findings as well as the strengths and limitations of study two. Overall contributions of the two studies will be discussed in chapter five, along with theoretical and practical implications and areas for future research.

As outlined in chapter one, the research questions for this study included 1.) how performance on a highly complex task would compare in singular versus combined goal conditions, 2.) which combined goal condition lead to the best and worst performance, 3.) how goal focus works in combined goals, and 4.) how goal focus and goal interpretation affect performance.

4.4.1 Assigned goals and task performance

It was surprising that there were no significant differences in performance between the singular performance (condition 1 - PG only) and the singular learning goal (condition 2 -

LG only). This means that findings from previous studies on complex tasks and assigned goals – including the results of a meta-analysis (Seijts et al., 2013) – did not replicate. While there were no differences in goal commitment or self-efficacy between these two conditions, the performance goals were consistently perceived as more specific than the learning goals. Since goals are typically more effective when they are specific, this may have influenced the results; however, neither learning nor performance goal specificity was significantly correlated with performance in this study.

Another possible explanation is that many of the senior business student participants already knew a lot of the strategies that would help them achieve market share; they only needed to learn how to implement them in the simulation.[46] In study two the average number of strategies used by participants across all rounds was 8.3 (s=1.94) and the range was 3 to 13 (the maximum).[47] Total strategy usage was significantly positively related to performance (r=0.23, p<0.01). When people already have the knowledge required to do the task, learning goals alone are known to result in worse performance than performance goals as demonstrated by Brown and Latham (2002). Thus, the average ability level of the participants may help explain why learning goals were not beneficial to performance as expected. Clearly many participants still needed to learn effective strategies, however, since for some strategy usage was low and overall performance goals alone did not lead to higher performance.

The fact that the task was a computerized simulation may have played a role. Given the rise in popularity of business simulations (Salas, Wildman, & Piccolo, 2009), participants reported average prior experience with computerized business simulations of m=4.44 on a 7 point scale (s=1.3). The full range of the scale was used. Some participants even explicitly mentioned their previous experience or inexperience with simulations to the researcher. The correlation between experience with computer simulations and final task

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[46] This explanation is also consistent with the finding in study one that the difficult learning goal level from previous studies of 6 strategies was not perceived as difficult by the participants; hence it was increased to 8 for study two.

[47] The number of strategies used by each participant was provided in the simulation data file.

performance was positive and significant (r=0.39, p<0.01). Hence, some participants in this study may have had a better understanding of how simulations work and consequently had higher self-efficacy than others. Furthermore, participants in this study may have had more experience with simulations and higher self-efficacy than was the case in previous studies using this same simulation which were conducted before such simulations were as common. Thus, participants' previous simulation experience and business knowledge may have made a learning goal less relevant for many in the sample.[48] Nonetheless, the broad range within the sample on both variables may help explain why a performance goal alone did not significantly outperform the learning goal.

Furthermore, the results for the single learning goal condition (condition 2 – LG only) were very similar to those in the condition with both goals at the specific difficult level (condition 5 - SD LG & SD PG). If participants assigned a single learning goal (condition 2 - LG only) also self-set a specific difficult performance goal, then those participants would effectively have a comparable goal to those in condition 5 (SD LG & SD PG). This possibility would help explain the similarity in results between these two conditions, as well as the failed replication of the singular goal findings.[49]

The results of this study are consistent with those of Masuda et al. (2014) in terms of the combined goal condition that lead to the weakest performance. My study replicates their finding that the lowest performance occurs when both the learning and performance goals are at the specific difficult level (condition 5 SD LG & SD PG), although in this study it is only significantly different from the top performing condition (condition 6 SD LG & DB PG). This effect can be explained using resource allocation theory since limited cognitive resources are competing to achieve multiple goals (Kanfer & Ackerman, 1989; Kanfer et al., 1994).

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[48] When prior simulation experience is controlled for, the difference between the learning goal only and performance goal only condition remain non-significant.

[49] Post hoc analysis supports this explanation as 59% of participants assigned a single learning goal (condition 2 LG only) reported a self-set performance goal. The mean goal level that was self-set was 15.2% market share.

In terms of whether combined goals (with the exception of condition 5 SD LG & SD PG) outperform singular goals, I found marginal support that they may (p<0.09). The lack of strong support could be due to a lack of power, since it is possible that moving from a singular to a combined goal is a small rather than medium effect size.[50] The performance picture between goal conditions was quite mixed, however, with most conditions showing no significant differences in performance between them. Hence, performance may depend on the specific combination of assigned goals rather than whether they are combined.

Where the results of this study differ significantly from Masuda et al.'s (2014) is the condition that resulted in the highest performance. Masuda et al. found that the top performance was in the condition with a specific difficult performance goal and a do best learning goal (similar in this study to condition 3 – DB LG & SD PG). My results, on the other hand, show that peak performance occurred in the specific difficult learning goal and do best performance goal condition (condition 6 – SD LG & DB PG). As anticipated, this may be due to the design differences between the two studies including the higher level of task complexity and higher degree of learning required in this study, as well as the different order in which the goals were presented to participants.

To recap, participants in condition 6 (SD LG & DB PG) significantly outperformed participants with only one assigned goal (conditions 1- PG only, and condition 2 – LG only) and those assigned two specific difficult goals (condition 5). They also marginally outperformed those in the remaining two combined goal conditions, condition 3 (DB LG & SD PG) and condition 4 (DB LG & DB PG).

The question is, why was condition 6 (SD LG & DB PG) the highest performing condition? The results suggests that the do best level rather than specific difficult level performance goal was more effective for the highly complex task. This result is

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[50] According to meta-analytic evidence the effect size of one goal versus no goal is typically medium (Wood, Mento, & Locke, 1987). Presumably, as the number of goals increases, the incremental effect of each additional goal will decrease. Therefore, it may be that the difference between singular and combined goals is a small effect size and this study lacked sufficient power to detect that difference.

consistent with goal setting theory since the do best level performance goal avoids the known detrimental effects of specific difficult performance goals on complex tasks. Similarly, the literature on learning goals predicts that due to the task's complexity, a specific difficult rather than do best learning goal will lead to the better performance. Thus, it seems that this combination of goals in condition 6 (SD LG & DB PG) was the most appropriate one according to previous research. Indeed, this conclusion appears to have been supported in this study. Participants in condition 6 (SD LG & DB PG) did not have higher goal commitment or self-efficacy, however, vis-à-vis the other experimental conditions, nor did they perceive the task as less complex.

It is a particularly striking findings that condition 6 (SD LG & DB PG) resulted in the best performance and condition 5 (SD LG & SD PG) – with only one goal different - resulted in the lowest performance. One explanation is that on this type of task avoiding a specific difficult performance goal is important. However, the overall pattern of results cannot be explained by the absence of a specific difficult performance goal alone. It may be that Masuda et al.'s (2014) finding of curvilinear effects of combined goals due to resource allocation demands explains why performance is lower in condition 5 (SD LG & SD PG) since it arguably has the most demanding goals. My results are consistent with the proposed curvilinear effect.

In summary, there were no significant differences between the five lowest performing conditions. This result suggests that there was one condition – condition 6 (SD LG & DB PG) – that was best suited to the context and five that were fairly equally less well-suited. Overall, my findings suggests that condition 6 (SD LG & DB PG) was uniquely appropriate for this particular task, for these particular participants, or for both. That significant performance differences can result from two assigned combined goals with one goal the same and only one goal different suggests that the most appropriate goals for different contexts may be highly specific.

4.4.2 Effective goal condition

I found that participants favoured the effective performance goal condition over the other options regardless of their assigned goals. In fact, just over a quarter of participants had

an effective performance goal condition at all times throughout the task, versus very few who remained in the effective learning goal condition throughout. Specifically, the ratio of effective performance goal to effective learning goal was almost 13:1. The bias towards the performance goal was also shown in the manipulation check results where participants with combined goals correctly identified their performance goal more often than their learning goal. Overall, however, almost two thirds of participants switched their goal focus at some point during the task.

In both singular and combined goal conditions the goal focus that participants reported was not as predicted by goal setting theory. As in study one, the results showed a bias towards a performance goal focus. As suggested in the discussion of study one, this finding can be understood in terms of a goal hierarchy that prioritizes the performance goal. In combined goals (and sometimes even in single goals), performance goals seem to be the focal goals while learning goals are the background goals. My findings suggest that the issue of goal hierarchy is important to consider in explaining how goal focus influences how assigned goals affect task performance. For instance, one explanation for my findings is that goal hierarchy may moderate the relationship between goal interpretation and effective goal condition such that when there is a goal hierarchy the goal people focus on is the dominant one, and without a hierarchy the goal(s) focus is determined by the assigned goals. Multiple goals may always be hierarchical, however, and even single learning goals may be influence by an implied hierarchy.

A meta-analysis of learning goals shows that they enhance complex task performance compared to performance goals (Seijts et al., 2013). Yet, how do learning goals actually work if people do not always cognitively focus on the learning goal when assigned one? Similarly, how can combined goals – like this study's condition 6 (SD LG & DB PG) - enhance performance if the many people in that condition still focus on the performance goal alone? If goal focus is not what explains the difference in the effects on performance between learning and performance goals, what does?[51]

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[51] While one could argue the results are anomalous, they are consistent across four rounds (with the exception of singular goals in round 2 only) and hence appear robust, at least in this context.

My findings about effective goal conditions suggest several possibilities. Firstly, they suggest that one reason why condition 6 (SD LG & DB PG) was the top performing condition was because it reduced the bias towards the effective performance goal condition more than the other conditions did. At almost all times condition 6 (SD LG & DB PG) had more participants reporting that they focused on both goals equally than any other condition. In fact, in rounds 10 and round 13 the number of participants in that condition who reported an effective combined goal and an effective performance goal were almost equal. Thus, having the less dominant learning goals at the high difficulty level and the more dominant performance goal at the low difficulty level may have reduced the imbalance between the two goals, which may have permitted the learning goal to also have an effect.

Secondly, if the subject of goal focus is not what changes when learning vs. performance goals are assigned, perhaps it is the depth of cognitive processing that people engage in as a result of being asked to also think about learning while they focus on performance. This argument is consistent with existing arguments about why learning goals are effective: because they prompt strategy development. Rather than switching people's goal focus towards learning and away from performance completely, it may be that learning goals add a supporting background goal to the focal performance goal (Kruglanski et al., 2002), which leads to more in-depth cognitive processing and better strategies.[52]

Thirdly, given my findings about the bias towards an effective performance goal condition, it is important to consider the possibility that participants assigned singular learning goals in previous studies may have been in effective combined or effective performance goals conditions. This is particularly so for participants who self-set performance goals (Seijts & Latham, 2011). Consequently, it is important to bear in mind that previous findings about learning goals may in fact also reflect combined goals

[52] Note that there were no significant differences in the number of strategies used by condition; however, there is no measure of strategy use quality.

and not simply singular learning goals. This possibility presents a challenge for learning goal researchers to tease apart the effects of learning goals alone versus combined goals.

In terms of how the effective goal condition influences task performance, I found some support that the best performance was amongst those with effective combined goals.[53] This was consistently true compared to those in the effective learning goal condition, but only sometimes the case compared to those in the effective performance goal condition. At all times, however, the best performance was among those who focused on both goals simultaneously. This finding suggests that having combined goals may be especially appropriate for highly complex tasks. Previous research has found that learning goals are most helpful to performance in the early rounds of a task (Seijts et al., 2013). I found that an effective combined goal condition in round 2 was associated with higher performance in subsequent rounds. This finding suggests that combined goals may be most advantageous early in the task. In some ways this finding is consistent with the sequential argument that learning goals should precede performance goals until the task is mastered, whereupon the learning goal becomes at best irrelevant and at worst distracting. The results of this study suggest that peak performance may be best obtained by setting combined goals rather than only learning goals at the outset of a task.

I predicted that adapting one's goal focus appropriately throughout the task would result in better performance; however, I found precisely the opposite. Changing effective goal condition was consistently negatively related to task performance. One explanation for this finding is that poor performance caused people to switch goal focus in an attempt to improve performance. In response to unsatisfactory performance, people may decide to focus on the other goal instead. Another explanation is that switching is ineffective due to the high cognitive "cost" of changing goal focus, which is known to decrease performance (Northcraft et al., 2011). Switching costs may be due to effects like attentional residue where residual attention remains on the previous goal, therefore reducing the attention available to the new goal (Leroy, 2009). That switching is costly

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[53] It is important to recall, however, that since effective goal condition was not manipulated it is possible that the task performance caused the effective goal condition rather than vice versa.

supports the value of initially setting combined goals and of focusing on both goals simultaneously rather than sequentially.

On the whole, my findings support the value of simultaneously focusing on both goals throughout the task to improve highly complex task performance. The key question these findings raise – and one that I cannot answer from this study – is why some people focus on both goals equally while others do not, even when assigned exactly the same goal. I found no support that is was related to trait goal orientation, or to any demographic variables. Unfortunately, other individual differences that might explain these findings (e.g. need for cognition, conscientiousness, integrative complexity) were not measured in this study. Future research should attempt to explain why some people focus on both goals and how that approach can be encouraged.

4.4.3 Goal interpretation

The goal interpretation dimensions (goal clarity, ambiguity, approach uncertainty, and adaptation) were predicted to relate to differences in goal interpretation between assigned goal conditions, as well as to changes in goal interpretation over time. As expected, participants reported being uncertain of how to attain their goal (goal approach uncertainty) and needing to adapt to new information (goal adaptation). Overall, there was mixed support for the expected relationships between the goal interpretation dimensions and key variables. As predicted, goal ambiguity and goal approach uncertainty were both negatively related to task performance, goal commitment, and self-efficacy.

Contrary to expectations, however, participants found all the goals to be quite clear and only somewhat ambiguous with no significant differences between single and combined goals. This finding could reflect the fact that participants' responses about the clarity and ambiguity of the goals was confounded by their experience of the task. Since the complexity of the task was a strong influence on participant perceptions, this may explain the lack of perceived differences in the goal clarity and ambiguity. Another explanation for my findings, however, is simply that people are able to understand combined goals of various combinations without a significant loss of clarity or rise in ambiguity. Although

goal conflict was not measured, the fact that single and combined goals were equally clear and ambiguous suggest that combining learning and performance goals may not to lead to goal conflict. This may be because many people understood that the goals were related and that learning goals supported performance goals. Overall, my findings support the practical usefulness of combined goals in organizations because people are able to understand them clearly.

Also unexpectedly, goal clarity was not significantly related to either task performance or goal commitment, although participants found the goals clear (*m*=5.7 on a 7-point scale, *s*= 1.0). It may be that the complexity of the task was such that participants were clear on their goals but simply unable to meet them. The only significant difference in goal clarity between assigned goal conditions was between condition 5 (SD LG & SD PG) and condition 6 (SG LG & DB PG). That condition 5 (SD LG & SD PG) was the clearer of the two is consistent with previous findings that specific difficult goals are perceived as clearer than do best goals (Locke & Latham, 1990). However, this finding is surprising because participants in condition 6 (SD LG & DB PG) outperformed those in condition 5 (SD LG & SD PG), which means the usual positive relationship between goal clarity and task performance was reversed. It is possible that when people have multiple goals that too much goal clarity (i.e. multiple clear goals) is detrimental to performance because it results in added pressure to meet more than one clear goal, and because it may result in goal conflict. The results of study one suggested that condition 5 (SD LG & SD PG) was associated with higher pressure and goal conflict than condition 6 (SD LG & DB PG).

To summarize, at the outset of this dissertation a fundamental assumption was made that single goals would be clearer and less ambiguous than combined goals. Study two tested these assumptions and found they were not supported. Also unexpectedly, study two found that goal focus in single goals was more complex than expected with people in both singular goal conditions also focusing on unassigned learning or performance goals, or both.

What might explain these findings? One explanation is that goals are evaluated not simply according to the characteristics of the goal, but also in relation to the demands of

the task. In other words, people consider goals according to how appropriate they are for the task demands. This line of reasoning would be consistent with the idea of construal fit when the attributes of the assigned goals are perceived as appropriate to the task, and the perceived fit enhances performance (Berson, Halevy, Shamir, & Erez, 2015; Freitas et al., 2009). It is also possible that by asking participants the question about which goal(s) they were focusing on it conveyed the impression that the goals were not firm ones.

4.4.4 Strengths and limitations

This study has several key strengths. Firstly, it benefitted greatly from the design changes that were informed by the results of study one. The richness of the data obtained in study one was important to understanding in advance which components of the design had to change for study two. In addition to being rooted in prior goal setting studies, this study's design and instruments were improved from the learnings of study one. Secondly, as a controlled laboratory experiment, this study allowed for causal conclusions to be drawn about the relationship between the assigned goals and task performance. Thirdly, the measure of performance in the task is calculated from the choices participants enter via algorithms embedded in the simulation program; hence, it is an objective measure of task performance. Fourthly, the study has high ecological validity because it is a highly complex task that is clearly relevant to business management with participants who were trained in business principles. Thus, we can the study's results to be externally valid as well.[54] Finally, because the study design includes six different conditions (both types of singular goals as well as four variations of combined goals), the results provide a richer picture of the phenomenon of combined goals and allow for a better understanding of how learning and performance goals impact performance when combined.

There are several important limitations to this study. It is possible that the sample size was too small if in fact the difference between a single and combined goal is a small

[54] That said, the external validity of the study is limited by the fact that participants did not have rewards or consequences for their performance.

effect size. Thus, the study may not have had the power to detect differences. Also, performance varied substantially within conditions as the standard deviation of performance was large in all conditions.

Combined goals were only examined in the learning then performance goal order so order effects of combined goals could not be examined. That said, this study presented the combined goals in the opposite order from the Masuda et al. (2014) study and thus extends the literature. Arguably, the order presented in this study (learning then performance) is consistent with the underlying relationship between the goals and is therefore appropriate, but it is also inconsistent with the hierarchical relationship reported between the two goals.

In combined goal conditions goal commitment was only measured in relation to the performance goal and not also to the learning goal. Hence, I am unable to compare commitment to the learning goal vs. performance goal in combined conditions, or to control for the effect of commitment to the learning goal. Additionally, it is possible that asking participants about their commitment to the performance goal but not the learning goal influenced their stronger focus on the performance goal.

Goal orientation was only measured as a trait and not a state. Although I found no relationship between trait goal orientation and effective goal condition, it is likely that participants' state goal orientation and their effective goal condition would be related. Hence, the relationship between state goal orientation and effective goal condition remains unexplored. Also, other personality measures which were not included (e.g. need for cognition or achievement, conscientiousness) may have helped explain why only some participants focus on both goals.

It is possible that some of the findings – particularly those related to the bias towards performance goals – may be due to the specific characteristics of the task, such as playing the role of the CEO. This framing may have primed participants towards a performance focus, and thus may have prompted more extreme results than a less performance oriented task might have. Perhaps, framing the task so that participants play the role of a consultant seeking to understand the market to provide expert advice, for example, would

reduce the bias towards performance goals. That said, as an initial exploration to determine whether a potential phenomenon exists, using an extreme case to understand the phenomenon is justifiable (Yin, 2009). If such tasks do prime people for performance, that is important to understand in terms of the practical applicability of learning goals in organizations. Research using different tasks is needed to determine whether the results generalize.

Finally, there were several new measures developed for this study. Arguably, the most important new measure in this study was the effective goal condition which was self-reported. This was measured with a single items measure with four options representing mutually exclusive choices of goal focus at any point in time. Hence, there is no measure of internal reliability for this variable. Furthermore, since it is expected to change over the course of the task, the four measurement periods need not necessarily agree which means there is no measure of test-retest reliability either. The findings related to effective goal condition were consistent across the four rounds, however, which suggests they are robust. Since effective goal condition was not manipulated causal conclusions about performance cannot be drawn. Future research on effective goal conditions should examine how its measurement can be improved.

Chapter 5

5 Introduction

This chapter discusses the main findings and overall contributions of the two studies in this dissertation. This is followed by a discussion of this dissertation's strengths and limitations, its theoretical and practical significance, and areas of future research.

5.1 Overview

This dissertation was motivated by the long-standing practical need to better understand multiple goals: what happens when goals become more complex, when they go from singular to multiple? In particular, I sought to investigate how the core mechanism of goal focus functions in multiple goal conditions. I selected the specific case of combined learning and performance goals (combined goals) to explore this broader question because they are a simple form of multiple goals that is relevant to today's dynamic workplace where both learning and performing are necessary, but about which little prior research has been done.

The research process began with the assumption that in combined goal conditions goal focus may depend on how individuals interpret the two goals. This assumption is because when there are multiple goals there is more than one possible goal focus. Consequently, people with assigned combined goals could focus on the learning goal, the performance goal, or both goals depending on their interpretation. I further assumed that the goal(s) people focused on would determine the cognitive and/or motivational mechanisms triggered during the task, and therefore how combined goals influence task performance. Thus, I sought to understand how the interpretation of combined goals influences goal focus and ultimately performance on a highly complex task.

I conducted two studies to examine assigned combined goals, goal interpretation, goal focus and task performance. Both studies used a highly complex business simulation with participants who were senior business students. The first study was a cognitive interview study with participants in one of six assigned goal conditions. The focus of this

study was to see how participants understood the different combined goals, as well as to test the study design and obtain valuable input for study two. The second study was a laboratory experiment using the same six goal conditions whose purpose was to determine how assigned goals and goal focus each influenced task performance.

Overall, the findings of the two studies highlight the unexpected role of another variable: goal hierarchy. Specifically, the results suggest that how people interpret combined goals within a goal hierarchy influences the goals they focus on, which in turn influences task performance. Consequently, this dissertation highlights the role of an individual's goal hierarchy in understanding how combined goals influence highly complex task performance. The concept of goal interpretation and the impact of goal hierarchy on goal focus have broader implications for understanding how and why multiple goals impact performance in practice. This is because my results suggest that when combined goals are assigned both an individual's interpretation of the goals as well as the perceived hierarchy between the goals will also influence their goal focus. My findings about the role of goal interpretation and goal hierarchy may extend to other types of multiple goals, like simultaneous quality and quantity goals, for instance. Thus, this dissertation contributes to the literature on combined goals specifically, on multiple goals in general, and to our understanding of how such goals influence task performance.

The following sections outline and discuss the main findings of the two studies (including the final combined goal interpretation process model), followed by the overall contributions made.

5.2 Main findings

This section outlines the main findings to the research questions for study one followed by those for study two. Findings from both studies are integrated as appropriate.

5.2.1 Study one research questions

The first research question from study one was how people viewed the relationship between combined goals and whether the perceived relationship varied between individuals. In study one, participants with combined goals consistently viewed the

relationship between the goals such that learning the strategies (learning goal) led to market share (performance goal), albeit some participants only saw this in retrospect. This relationship was somewhat less clear amongst participants in study two as only 84% of study two participants who were assigned combined goals said the goals were related. Consistent with study one, 90% of that number said the relationship was that learning goals lead to performance goals. Consequently, I conclude that the majority of people assigned combined goals understood that learning goal strategies led to achieving performance goals. Practically speaking, however, this means that when combined goals are assigned the relationship between the two goals should be made clear so that everyone fully understands the rationale behind combined goals.

The next research question asked how people's goal interpretations influence the goals they focus on. I found between-individual variation in goal focus across all assigned goal conditions in both studies. Both studies also found, however, that performance goals were clearly the dominant goal focus at all times. Contrary to expectations, this was true regardless of the goals participants had been assigned - even singular learning goals. The dominance of performance goals seems to be due to the fact that people view performance as the focal, more important goal and learning as the background, less important goal. Thus, both studies support the conclusion that combined goals are interpreted as hierarchically related such that performance is perceived as the focal, more important goal and the learning goal is perceived as the background, less important goal. This interpretation leads most people to focus on the performance goal, so in effect the performance goal dominates over the learning goal.

Because this was an unexpected finding, the studies were not designed to determine the source of the goal hierarchy. As mentioned in the discussion of study two, it is possible that due to the simulation's emphasis on performance the framing of the task established the goal hierarchy. If that is the case, then my findings about the goal hierarchy may not generalize to other tasks. It is also possible, however, that the hierarchical relationship found between learning and performance goals may stem from the norms of the sample population. Business students may simply value performance outcomes more so than process outcomes like learning. That explanation would be consistent with the fact that

group norms and normative information are known influences on goal choice (Locke & Latham, 1990). My findings suggest that group norms may also influence assigned goal interpretation. While I cannot make a clear determination of the source of the hierarchy, it seems likely that the framing of the task and the population norms both played a role and may have reinforced one another.

It was also surprising that both studies found variance in goal focus amongst participants assigned only a single goal. Given that a performance focus is dominant, it is particularly unexpected that people assigned a singular performance goal would indicate focusing on anything other than the performance goal. Similarly, it is also surprising that the dominance of the performance goal focus extended to singular assigned learning goals as well. Consequently, the two studies present a picture of goal focus for singular goals on highly complex tasks that is less straightforward than anticipated.

These unexpected findings once again suggest that the determinant of goal focus is not the assigned goals. Rather, the choice of goal focus may come from how people understand the demands of the task (i.e. there is a need to learn and to perform), which they then put in a hierarchical order. This hierarchical order influences how assigned goals are focused on. When people recognized the need for both learning and performing but were only assigned one goal, they seem to have considered both anyhow within the same hierarchy. Based on these unexpected findings, I therefore conclude that people's goal focus for both assigned combined and singular goals was primarily determined by the goal hierarchy and the perceived demands of the task, rather than by their assigned goals as anticipated. The influence of assigned goals on goal focus seems to have been secondary to these other influences. These findings suggest that even when goals are assigned the goal pursuit process is a highly agentic one where people actively shape the goals they pursue rather than simply reacting to them. Thus, my findings support the argument that motivation is an agentic rather than behaviouristic process (Locke & Latham, 2015).

Another research question from study one was whether the approaches people take to their goals changes over time, and if so why. Both studies found within-individual

variation in goal focus throughout the task. In each of the two studies, approximately one quarter of participants retained the same goal focus throughout the task, while the majority changed goal focus at least once. With respect to the proposed goal interpretation dimensions that may trigger a change in goal focus, both studies support the conclusion that participants' immediate goal priorities are reflected in the effective goal condition they choose at the time. The other goal interpretation dimensions that were supported and remain in the final model are goal adaptation and approach uncertainty.

Finally, study one found qualitative support for the idea that combined goals may prompt deeper cognitive processing than singular goals. Specifically, the interview transcripts for participants in the combined goal conditions demonstrated that they noticed and adapted to change more than those in singular goal conditions. These types of behaviours are important to highly complex task performance, which suggests that combined goals may be more appropriate for this type of task. Additionally, combined goal participants demonstrated more use of learning techniques (such as determining causal relationships and testing new strategies) than those in singular goal conditions. Overall, these findings suggest that further research into combined goals may be warranted.

5.2.2 Study two research questions

Study two examined how singular and combined goal conditions influenced performance. The results showed that combined goals do not uniformly outperform singular goals because the effect of different combined goals on performance varies greatly. Both the goal condition that resulted in the highest and the lowest task performance were combined goals. Consequently, I conclude that combined goals may enhance or detract from complex task performance depending on the specific difficulty level of the goals.

Consistent with previous research using a less complex task (Masuda et al., 2014), my results showed that the condition that lead to the lowest performance was the combined goal with both goals at the specific difficult level. This result can be explained by resource allocation theory since limited cognitive resources must be distributed between two challenging goals, thereby reducing the resources available for each goal (Kanfer et

al., 1994). Consistent with previous research, therefore, I conclude that not only do combined goals not always enhance performance, but if the combined difficulty level is too high they can cause performance to deteriorate. This finding has important practical implications since assigning multiple specific difficult goals may be detrimental to performance.

The results of study one may also help explain the why the condition with two specific difficult goals (condition 5 – SD LG & SD PG) was the lowest performing condition in study two. The analysis of the qualitative interview data from study one found that condition 5 (SD LG & SD PG) was associated with the presence of two seemingly maladaptive factors – goal conflict, and the negative evaluation of one's performance and one's self. While these two factors were not measured in study two, if study two participants in condition 5 (SD LG & SD PG) in also experienced high goal conflict and high negative evaluation if would help explain why that condition was the worst performer. This line of thinking is consistent with the broader literature on the effect of learning goals versus performance goals on task performance which has shown that specific difficult performance goals result in lower performance on complex tasks in part because of other maladaptive responses like the 'mad scramble' effect (Cianci et al., 2010).

Also consistent with previous research (Masuda et al., 2014), I found that the best performance was also in a combined goal. In contrast to previous research, however, I found that the optimal performance was in the condition with a specific difficult learning goal and a do best performance goal (condition 6 - SD LG & DB PG). Performance in this condition was significantly higher than in both of the two single goal conditions (condition 1 – PG only; condition 2 – LG only) as well as the worst performing condition with two specific difficult goals (condition 5 – SD LG & SD PG). The best performing condition (condition 6 - SD LG & DB PG) was also marginally better ($p<0.09$) than the other two combined goal conditions, one with both goals at the do best level and one with a do best learning goal and a specific difficult performance goal (condition 4 – DB LG & DB PG; and condition 3 – DB LG & SD PG).

The qualitative results from the study one interview analysis may help explain why condition 6 (SD LG & DB PG) lead to the best performance. Firstly, the best performing condition 6 (SD LG & DB PG) was not associated with either of the two maladaptive responses seen in the worst performing condition 5 (SD LG & SD PG): high goal conflict and high negative evaluation. Secondly, the best performing condition 6 (SD LG & DB PG) was associated with greater use of learning techniques and greater noticing and adapting to task change, which were likely adaptive behaviours. Again, these were not measured in study two, but if the patterns found in study one extended to study two these observations would help explain the performance differences found in study two.

As outlined in chapter four, I predicted that condition 6 (SD LG & DB PG) would outperform the other goal conditions. I argued that because the learning goal was more specific and difficult than the performance goal in this condition it would encourage people to focus on the learning goal and signal that the learning goal was as important as the performance goal. The assumption behind this reasoning was that people's assigned goal condition would influence their goal focus. This was not the case, however, as I surprisingly found that goal focus and assigned goal conditions were unrelated. Hence, while my prediction was largely supported, it seems to have been supported for the wrong reasons.

An alternative explanation for why participants in condition 6 (SD LG & DB PG) actually performed the best relates to my findings about goal hierarchy. I found that across goal conditions people understood the goals such that the performance goal was focal and the learning goal was background. Hence, the dominant goal focus was performance regardless of the goal(s) assigned. Yet, as a highly complex task, participants had to also focus on learning in order to succeed (Seijts et al., 2013). In the face of the clear goal hierarchy, however, focusing on learning over performance was unlikely. Thus, my findings show that creating the needed focus on learning via assigned goals was difficult because people were focused on the dominant performance goal.

Yet, participants in condition 6 (SD LG & DB PG) did outperform most other conditions. As argued before, condition 6 (SD LG & DB PG) emphasizes learning over performance

more than the other conditions by having the learning goal at the specific difficult level and the performance goal at the do best level. Thus, this condition may have helped to counteract the performance goal focus suggested by the goal hierarchy. In other words, rather than *creating* the focus on learning by the assigned goal as expected, condition 6 (SD LG & DB PG) may have been effective at *reducing* the dominant focus on performance driven by the goal hierarchy. Indeed, participants in this top performing condition focused on both goals simultaneously more than in any other condition, including the singular learning goal. Hence, the assigned goal condition that clearly emphasized learning over performance may have balanced out the focus on performance driven by the goal hierarchy. The simultaneous focus on both goals that was more common in this condition than any other may explain why condition 6 (SD LG & DB PG) outperformed its counterparts.

Considering the role of goal hierarchy may also help explain why participants in the single learning goal condition (condition 2 – LG only) did not outperform participants in the single performance goal condition (condition 1 – PG only). Participants in condition 2 (LG only) were the only ones who did not have any assigned performance goal at all. Presuming that participants in this condition share the same goal hierarchy where performance is focal, then not having an assigned performance goal may have been confusing and led to goal conflict because the goal assigned was inconsistent with the perceived goal hierarchy. It is also possible that not being assigned the more important goal was perceived by participants as a signal that they were not capable of the important task of performing. I am only able to speculate, but it is important to consider that goal hierarchy may have influenced performance in other conditions as well, condition 2 (LG only) in particular.

Study two allowed me to examine how goal focus was related to task performance.[55] I found consistent support that those who focused on both goals equally significantly outperformed those who focused only on the learning goal. Focusing on both goals early

[55] Since goal focus was not manipulated, however, it is important to note that I cannot establish the causality of this relationship. Goal focus was measured prior to performance, however.

in the task was particularly beneficial to performance, possibly because of the task's steep learning curve. I also found partial support that people who focused on both goals equally also outperformed those who focused only on the performance goal. Contrary to predictions, however, people who switched goal focus during the task performed significantly worse than those who did not switch. In conclusion, my results showed that focusing on both goals simultaneously and not switching goal focus during the task were both positively related to task performance. (It is possible that higher task performance caused people not to switch goal focus, however, rather than the other way around.)

The final research question of study two was whether and how the dimensions of goal interpretation were related to task performance. In contrast to previous research, I found no support that goal clarity was positively correlated to task performance (r=0.10, p>0.05). As expected, however, I found some support that goal ambiguity was negatively correlated with performance (r=-0.18, p<0.05). I also found strong support that goal approach uncertainty was negatively related to task performance as predicted (r=-0.46, p<0.01).

5.2.3 Final goal interpretation process model

Based on the results of two studies together, the final goal interpretation process conceptual model is presented in the figure below. The final model has five important changes from the previous model developed after study one (see chapter three). All of the changes stem from the subsequent findings in study two.

Firstly, the model now reflects that the goal interpretation process appears to apply to both singular and combined assigned goals rather than only to combined goals as originally thought. This change reflects the unexpected findings that goal focus varies even in singular goal conditions, and that singular and combined goals did not differ in terms of goal clarity or ambiguity. Consequently, it seems that even singular goals may be interpreted differently by individuals and lead to variance in goal focus.

Secondly, because I found no support in study two that singular and combined goals differ in terms of goal clarity, or for any other hypotheses related to goal clarity, this

proposed goal interpretation dimension has been removed from the model. This finding is surprising and warrants further research.

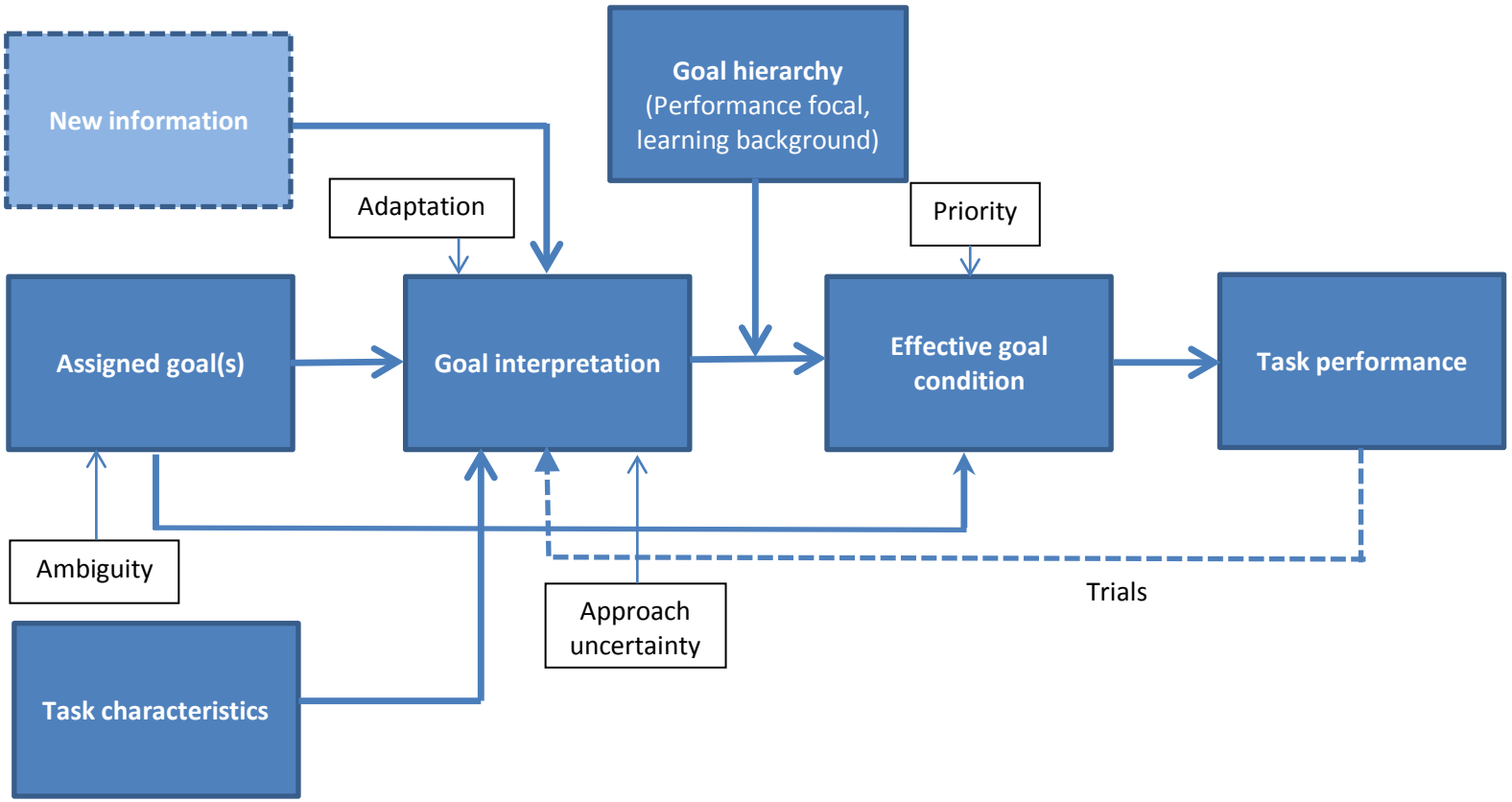
Thirdly, I also found no support in study two that trait goal orientation was related to effective goal condition or task performance. Hence, that variable has been removed from the model. It is possible that other individual difference variables may influence how goal interpretation leads to goal focus, however, and may also influence individual goal hierarchies. This will need to be examined in future research.

Fourthly, goal hierarchy has been added as a moderator of the relationship between goal interpretation and the effective goal condition (goal focus). This reflects the finding in both studies that goal focus is determined predominantly by the hierarchical relationship between combined goals where the focal goal is performance and the background goal is learning. Overall, the findings of my study suggest that combined goals are interpreted within that goal hierarchy which leads to a dominant focus on performance goals. Including goal hierarchy in the model helps explain why goal focus is not related to assigned goal conditions as anticipated.

The final change is that the model now shows that task characteristics (such as task complexity or task norms) may also influence goal interpretation, which was not reflected before. The task characteristics may be important to the goal interpretation process for three reasons. First, it may be that high complexity tasks are more likely to prompt goal interpretation – and hence changes in goal focus - than low complexity ones. Second, the task characteristics may influence the goal hierarchy that goals are interpreted within due to the norms for the task or context. For instance, in this study the task involved running a company as the CEO, which is arguably a performance oriented task rather than a learning oriented one. With a different task the goal hierarchy may be different or may not exist. Third, people may judge the appropriateness of assigned goals in relation to the task characteristics and the demands they present. Goals that are deemed fitting for the task demands (such as combined goals on highly complex tasks requiring learning) may be more effective than those that are not (such as learning goals for well-known tasks).

For all these reasons, the task itself may influence the goal interpretation process and the goal hierarchy, and therefore should be reflected in the model.

Figure 10: Final goal interpretation process conceptual model



5.3 Overall contributions

This dissertation began as an effort to better understand how the mechanism of goal focus functions in the case of multiple goals. I selected combined learning and performance goals to study as a specific case of a rarely researched multiple goal that is relevant to today's organizations. The contributions of these studies therefore relate first to the nascent literature on combined goals. Second, some of my findings about combined goals – like for instance the influence of goal hierarchy on goal focus – may generalize to other kinds of multiple goals, such as simultaneous performance goals. Thus, this dissertation contributes to the multiple goal literature as well. Finally, the goal interpretation process model that I propose contributes to the broader goal setting literature in that it helps explain in more detail how and why the mechanism of goal focus may function when there is more than one possible goal to focus on.

Firstly, my studies extend the work begun by Masuda et al. (2014) about the effect of combined goals on task performance. My studies extend previous research on combined goals in that I presented the goals in the opposite order (learning then performance), and I examined a highly complex, dynamic task where people had to search for and implement new strategies.

In terms of the assigned goal condition that resulted in the lowest performance, my results are consistent with Masuda et al.'s (2014) that having both goals at the specific difficult level leads to performance deterioration. My findings therefore reinforce the message that combined goals should be used with caution since overloading people with too many difficult goals is consistently detrimental to performance.

Consistent with previous research, I found that the best performance was also in a combined goal condition, but in a different one than in the Masuda et al. (2014) study which used a less complex task. I found that a combined goal with a specific difficult level learning goal and a do best performance goal (condition 6 – SD LG & DB PG) resulted in the best performance. Thus, my results extend our understanding of combined

goals in that a different combination of goals on a more complex task resulted in the best performance. I explain the difference between my results and Masuda et al.'s (2014) in terms of the different task characteristics, and possibly the order in which the goals were presented. Thus, compared to previous results, my findings suggest that, while people assigned combined goals may indeed outperform those assigned singular goals under certain conditions, the specific combined goal that leads people to perform their best may vary according to the context.

My first study in particular extends our understanding of combined goals beyond how they influence task performance to also explain why they have the effects that they do. In both of my studies, most people understood that combined learning and performance goals are related goals (rather than independent) where fulfilling learning goals leads to meeting performance goals. I also found, however, that combined goals are understood in a hierarchical manner where performance goals are the focal goal and learning goals are the background goal. This finding is important because it helps explain why goal focus was not determined by assigned goals as expected but by the perceived hierarchy between the two goals.

I also contribute to our understanding of how learning goals enhance performance on highly complex tasks. My findings suggest that the relationship between learning goals and goal focus may be more complex than expected. Rather, they suggest that instead of shifting focus away from performance toward learning, learning goals may function as an added background goal that complements the focal performance goal. I found that people who simultaneously focus on both goals equally – particularly early in the task – had higher task performance. Hence, an assigned combined goal that encourages a simultaneous focus on both goals in the face of a dominant focal goal (like condition 6 – SD LG & DB PG) may enable the background learning goal to have its intended effect. Furthermore, I found that goal focus can change throughout the task and that the majority of people change goal focus at least once. Switching goal focus however, was associated with lower performance. The key to making learning goals effective in the presence of a simultaneous performance goal, therefore, may be ensuring that learning goals are focused on *in addition to* performance goals rather than *instead of*.

My findings about the importance of goal hierarchy in understanding how goal focus functions in combined goals contributes to the broader literature on multiple goals as well. If a goal hierarchy influences goal focus when there are only two goals, the hierarchy between even more goals would likely influence goal focus as well. Hence, goal hierarchy is an important but understudied variable for research on multiple goals (Sun & Frese, 2013; Williams, 2013). Likewise, the broader process of goal interpretation should be considered in multiple goal research including dimensions like goal ambiguity, goal adaptation, goal approach uncertainty, and goal priority.

Unexpectedly, my studies may contribute to the broader goal setting literature as well. Specifically, my studies show that the way in which people focus on goals may be more complex than reflected in the current literature. I found evidence that, regardless of assigned goal condition, people tend to focus on the performance goal over the other options (learning only, or both goals equally). This appears to reflect a goal hierarchy where performance goals dominate as the focal goal while the learning goal acts as a supporting background goal. While goal setting theory certainly recognizes the phenomenon of goal hierarchies, to the best of my knowledge my studies are the first to show how the interpretation of goals through the lens of a goal hierarchy influences the key mechanism of goal focus and subsequent task performance.[56] One of the key contributions of my studies, therefore, is that they show that goal focus may be strongly influenced by the dominant goal in a goal hierarchy regardless of the goals that are assigned. This strong influence makes goal hierarchies all the more important to understand. The goal interpretation process model describes in more detail the way in which goal focus appears to function based on my investigations.

5.4 Overall strengths and limitations

In addition to the strengths and limitations of each study which have previously been discussed at the end of chapters three and four, the primary strength of this pair of studies

[56] To be clear, Masuda et al. (2014) did not examine goal hierarchy, goal focus, or goal interpretation in their studies. Theirs was an inductive approach to combined goals, whereas mine is more deductive.

is the use of two complementary methods. Because this dissertation consists of one qualitative study using a cognitive interview method and one quantitative study using a laboratory experiment method, this dissertation delivers a rich, detailed picture about the effects of combined goals while still allowing for conclusions to be drawn about how combined goals influence highly complex task performance. The primary limitations of the pair of studies, however, are that they both relied on the same task and hence some of the findings may be task specific, and that, due to the design changes from study one to study two, the comparison between the two studies is imperfect. Finally, there were several key unexpected findings in these studies, which means I can only speculate about many important questions raised, such as the source of the goal hierarchy observed.

5.5 Theoretical and practical significance

The results of this dissertation have several important theoretical implications. Firstly, my findings show that how the mechanism of goal focus works may be more complex than previously thought. In the context of a highly complex task, goal focus was not predicted by assigned goals alone as expected. Surprisingly, this was true for singular assigned goals as well. Thus, while goal focus may sometimes align with one's assigned goal, it may not always, particularly when there is a clear goal hierarchy. As was the case in these studies, the more dominant goal may in fact be the goal people focus on regardless of their assigned goals. Hence, my findings suggest a possible boundary condition for how assigned goals influence goal focus such that they only determine goal focus in the absence of an established goal hierarchy. It may also be that the characteristics of the task such as complexity influence goal focus and goal hierarchy. As for the source of the goal hierarchy, I can only speculate that it may have stemmed from the task framing, or from the existing norms within the sample population.

The important role of goal hierarchy in understanding how combined goals influence complex task performance suggests an integration of goal setting theory with goal systems theory (Kruglanski et al., 2002). While goal setting theory concentrates on the role of conscious goals, goal systems theory explains how subconscious goals are related to one another hierarchically. My model uses the goal hierarchy concepts of focal and background goals from goal systems theory to explain how conscious combined learning

and performance goals are understood and acted upon. Integrating goal setting theory and goal systems theory may be beneficial for future research into goal hierarchies and for future theory building around multiple goals in general.

This dissertation also contributes to our understanding of how learning goals may enhance complex task performance relative to performance goals. Previous research has suggested that learning goals are effective because they shift people's focus away from performance outcomes and towards the development of task strategies (Winters & Latham, 1996). This view suggests that goal focus is on one *or* the other goal. Consistent with a goal systems theory view, my findings suggest instead that learning goals may function less by *switching* goal focus from one focal goal to another, and more by *adding* a background learning goal to the focal performance goal. By operating in support of the focal goal and without introducing goal conflict, the learning goal may enhance performance. My findings also suggest that when both the focal and background goals are made explicit in combined goals, performance may be enhanced further provided the combined goals emphasize learning.

This dissertation introduces the goal interpretation process conceptual model. My findings that people's assigned goals and their effective goals do not necessarily correspond (despite the fact that people can correctly report their assigned goal) is explained by the individual's goal interpretation process. This mediating process can alter an assigned goal into a different effective goal. Understanding the goal interpretation process is important because it is the source of between-individual and within-individual variation in the goals people actually pursue, and hence the outcomes they attain. Overall, I provide an initial conceptual model with which to better understand how the goal interpretation process influences goal focus and task performance. I also show how a hierarchical relationship between the goals influences goal focus and outcomes. Future research is needed to determine whether my findings replicate, or generalize to other tasks and populations. Undoubtedly, further modifications to the model based on future new findings will be necessary.

There are also several important practical implications to my findings. Firstly, it is important for managers assigning goals to be aware that the goals they assign may not match the goals that are actually pursued - even when people are able to correctly repeat their assigned goal - because an individual may interpret the assigned goal differently than intended. Therefore, it is important for managers to understand how people interpret the goals they are assigned in order to predict whether or not they will have the intended outcomes. This also means that managers need to be aware that the same goals assigned to different people may produce different outcomes. Hence, managers may have to customize goal assignments to individuals. They may also need to emphasize and reinforce the importance of non-dominant goals like learning goals in order to encourage combined goals to be interpreted in a way that employees pay attention to both goals.

My results also reinforce the message that goal ambiguity should be avoided as it may lead to underperformance. In the context of combined goals, this means it is especially important for managers to ensure that employees truly understand what is expected of them from the learning goal. If employees do not fully understand the learning goal and its rationale, they are likely to focus only on the performance part of a combined goal. Goal approach uncertainty may also lead to poor performance by employees, so managers need to ensure employees have the skills to be successful in pursuing assigned goals, and that if they encounter problems they have access to resources like training or expertise to help guide them. Managers also need to be aware that, in dynamic conditions, goals need to be revisited regularly as new information and change may cause employees to reconsider their assigned goals.

My findings also suggest that, provided they are used appropriately, combined goals may be a useful managerial tool for handling highly complex tasks in dynamic contexts. Under certain circumstances, setting combined goals at the appropriate levels may indeed allow people to work harder as well as smarter. Comparing my results to Masuda et al.'s (2014), the pattern of findings suggests that when the complexity of the task is high, the learning goal should be emphasized over the performance goal. For moderately complex tasks, however, a do your best learning goal may enhance performance when combined with a specific difficult performance goal (Masuda et al., 2014).

My findings also suggest, however, that mangers need to be careful about using combined goals. Firstly, when combined goals are assigned, the relationship between the two goals should be made clear so that people understand the rationale behind the goals. Second, due to the detrimental effects of setting too many goals at the specific difficult level, managers need to avoid overloading people with multiple goals at that level. For instance, consistent with Masuda et al.'s findings (2014), my results suggest that managers seeking to improve both quality and quantity simultaneously should set only one of the goals at the specific difficult level and the other at the do best level. Otherwise, it may be that managers are better to set learning and performance goals at the specific difficult level in sequence rather than simultaneously so that employees are able to focus their full attention on each goal at a time and are not overwhelmed by multiple challenging goals.

When assigning goals, managers also need to consider the possible influence of a goal hierarchy that may shift the focus of the goals employees are assigned and the ones they actually pursue. For example, a goal hierarchy could exist between simultaneous quality and quantity goals such that quantity goals are the focal goal. Managers seeking to improve quality by setting quality goals will need to recognize the dominant quantity goal and set quality goals in a way that employees also pay attention to the quality goals. Thus, understanding the hierarchical relationship between multiple goals may help managers set assigned goals that are effective for goals perceived as background goals as well as those perceived as focal goals. Less dominant goals may require stronger emphasis in goal assignments in order to compete with focal goals for employees' attention. This approach may reduce the dominance of the focal performance goal and help encourage employees to focus on all of the goals, not just the focal one. Thus, goal hierarchies need to be considered in the setting of multiple simultaneous goals.

In order to set effective learning goals, managers must first ensure that employees truly understand what is being asked of them. Typically, employees are not as familiar with learning goals as they are with performance goals, so learning goals need to be set with a clear rationale for their use. Managers should explain that learning goals are being set because of the novel, complex nature of the task, and because they anticipate the need to

adapt to a changing environment. This means employees will need time to develop the skills required to succeed, and managers can reassure employees that taking the time to learn is expected and encouraged. Based on research findings, managers can also explain to employees that learning goals help people with behaviours that lead to success on novel, complex tasks in dynamic environments such as information search, feedback seeking, and taking the time to develop new skills. Managers can thus guide employees to focus on the behaviours that will help them understand the learning goal better, appreciate its importance, and successfully achieve it.

Setting appropriate goals is the first step, but goals then have to be monitored and managed in order to be effective over time. Whereas managers are trained in the management of performance goals, they tend not to be trained in setting and managing learning goals. The ultimate objective of learning goals is to ensure employees master their tasks. Therefore, like managers do for performance goals, they should ensure that learning goal results are reported, reviewed and discussed regularly just like other important objectives. This process will help ensure that employees are provided with feedback about their learning goals from managers or other colleagues. Like other goals, learning goals should be incorporated into employee development and performance plans. While there is currently no research on how rewards may affect learning goals, it is likely that rewarding learning goal achievements will encourage greater attention and higher achievement levels. Hence, managers may want to consider learning goal awards in addition to performance awards to recognize novel new strategies for success. Recognizing employees who have been able to identify and implement new strategies that aid the organization in its goals should result in higher employee commitment to their own learning goals.

Organizations that have educational support like organizational learning or organizational development staff may be able to assist managers and employees in the evaluation of learning goal achievement and the dissemination of effective new strategies throughout the organization. The incorporation of learning goal outcomes from other employees or teams to employee training and orientation programs may reinforce the importance and relevance of learning goals to employees. Over time, emphasizing learning goals and

achievement within the organization may encourage a culture of learning and strengthen the importance of learning within the goal hierarchy.

Managers may need to set goals that are perceived to appropriately match the specific characteristics of the task. This means carefully considering the level of complexity and the amount of learning that the task demands. If goal appropriateness or perceived goal fit is actually a factor in goal outcomes, managers may have to determine how goals are perceived by those to whom they are assigned. If assigned goals are not perceived as appropriate for the task, either the goals themselves or the perception of the goals may need to be adjusted to have the greatest impact.

Finally, my findings may help respond to critics of goal setting in organizational practice who argue that goals result in too much goal focus and prevent additional focus on important non-goal areas (Ordóñez et al., 2009a; Ordóñez, Schweitzer, Galinsky, & Bazerman, 2009b). Rather, my findings show that the range of goal focus observed was much broader than expected. Perhaps goals do in fact leave sufficient cognitive flexibility for non-goal areas to be considered as well. These unassigned goals may operate as additional background goals, or may become the focal goal if deemed most important in the goal hierarchy. Thus, the criticism that goal setting prevents people from also thinking about important non-goal areas may be overstated. Instead, it may be that managers need to become more aware of the goal hierarchies in their environments and utilize techniques like emphasizing and rewarding non-dominant goals to ensure they are not dwarfed by more dominant ones.

5.6 Areas for future research

This dissertation sets the stage for numerous important future research questions.

Firstly, there are several interesting questions with respect to combined goals specifically. One of the key unanswered questions from this dissertation is why some people focus on both goals equally while others do not, even when they have the same assigned goals. Because of the positive relationship I found between performance and the effective combined goal condition, as well as the negative relationship between switching goal

focus, it is important to understand what prompts people to focus on the goals equally during the task. Are some people able to focus on both goals simultaneously because of individual traits or cognitive ability? Is it because of perceptions or attitudes? Does the equal goal focus actually cause the improved performance (rather than the reverse causality)? If it is the case that a simultaneous and equal goal focus leads to better performance, then it is important to understand how people can be encouraged to do so. Perhaps simple, regular reminders by managers of the importance of learning can help employees maintain a balanced focus between learning and performance throughout complex tasks. Similarly, managers may be able to reinforce the importance of learning by offering learning awards to recognize employees who identify effective new strategies. Learning awards would also provide a way for employees to share the strategies they have learned with others in the organization so the benefits of learning are maximized.

Future research on combined goals could also empirically test whether there are order effects of combined goals on performance. My results from study one suggest that there may be, but I was unable to test that in study two. In order to see whether the finding that performance goals dominate learning goals generalizes to other tasks, future studies will need to use different types of tasks, including less complex ones. It may be that tasks where the learning demands are not as high that combined goals presented in the performance then learning order are more effective than those presented in the opposite order. Masuda et al.'s (2014) results suggest that this might be the case. Hence, the better order for presenting the goals may depend on the emphasis needed for the particular task.

The effect of combined goals on other dependent variables – such as creativity - should be examined too. For instance, as has been found with achievement goals, it is possible that combined goals may encourage creative thinking that might lead to novel ways of meeting goals (Miron-Spektor & Beenen, 2015). However, the effect of goal hierarchy and goal interpretation should be considered as well since the importance of the learning goal may need to be emphasized.

Since my results suggest that differences in goal interpretation and goal focus may be due to how appropriate the goals are perceived for the particular task, future research should examine how the concept of construal fit applies to different pairings of tasks and combined goals. Is there really a 'goal condition of best fit' for different tasks? What goals are perceived as appropriate and facilitative for different types of tasks? Are perceptions of goal appropriateness associated with lower goal conflict and higher task performance? It may be that combined goals are most effective when employees assigned them receive a comprehensive explanation of the rationale behind the pair of goals assigned. Understanding the rationale behind the goals assigned may lead employees to be more committed to both goals and encourage them to focus on the goals simultaneously.

My studies highlight the role of goal focus on task performance, as well as the role of goal hierarchy on how goals are interpreted and focused on. To the best of my knowledge, these are largely unexplored topics in goal setting research, possibly because so little attention has been paid to multiple goals where they are most relevant. Hence, more research is needed to understand how and why people focus on different goals as they pursue different tasks. My findings suggest that goal focus is in part a reflection of the perceived hierarchical relationship between goals. What determines that hierarchy? Does it change, and if so, how? Do goal hierarchies vary between-individuals? If so, why? What are the hierarchies between other kinds of multiple goals?

Another new area for future research is around the proposed process of goal interpretation. My studies suggest that a goal interpretation process influences the mechanism of goal focus. I would expect that most people who have pursued goals in the workplace would agree that how we make sense of the goals we are assigned influences the goals we choose to focus on; hence, this model has some ecological validity. The goal interpretation process may well influence the other goal mechanisms of persistence and effort towards goals as well. It stands to reason that how we make sense of our assigned goals in the workplace should also influence the amount of effort and the amount of time we put towards the goals we choose to focus on. Similarly, it seems likely that goal hierarchies also influence the effort and persistence that people show

towards goal attainment. Further research about goal focus and goal hierarchies may reveal some interesting ways in which people shape the goals they are assigned through their goal interpretation process. This would shed empirical light on how the individual representation of goals which Austin and Vancouver posited almost two decades ago (1996) occurs and how it influences goal outcomes.

In contemporary workplaces, goals are commonly set at the team level as well as the individual level (Kramer, Thayer, & Salas, 2013). While most research on learning goals has been conducted at the individual level, few studies have examined their effects when set at the team level. This is an important question for team-based work environments where goals need to be set for the team as a whole. Some research has found that the patterns at the individual level do not generalize to the team level because of the amount of coordination required within the team (Nahrgang et al., 2013). Hence, the effect of team level combined goals on team outcomes should be examined empirically.

Finally, future research should examine the effects of combined goals in field settings. To date, the research in this area is limited by the fact that it has relied on student samples in laboratory settings. Most relevant to studying combined goals would be field studies in dynamic industries such as technology or financial services, or in industries where the need to learn features prominently, such as research based industries (e.g. pharmaceuticals) or higher education. Combined goals are likely most relevant to employees with highly complex jobs such as executives, managers, professors, and professionals. Moreover, combined goals may be ever more appropriate for new employees in highly complex jobs such as new graduates or trainees. Future field studies should examine how combined goals affect not only outcomes like task performance, but also other important outcomes like employee satisfaction and self-efficacy since field research on learning goals has found that these outcomes were higher when people were assigned learning rather than performance goals (Latham & Brown, 2006). It is possible that other important outcomes like customer satisfaction may also be improved from the appropriate use of combined goals. Organization-based studies are an important next step in our understanding of the effectiveness of combined goals.

5.7 Conclusion

While my studies have investigated the idea of goal interpretation within the specific context of combined goals, there are many other contexts where goal interpretation may be at work which may influence the effect of goals on a wide range of outcomes. Importantly, from a broader perspective there is a wealth of existing research about discrete interpretive processes akin to goal interpretation. For example, similar to the combined goal interpretation process in these two studies, a person's goal commitment also changes how assigned goals impact outcomes. Likewise, a person's self-efficacy can change the goals one pursues and impact outcomes. As a way of revising goals, the process of self-setting goals is another interpretation of goals that can fundamentally change the goals people pursue. No doubt there are other examples like these. My studies about combined goals have highlighted the importance of the role that a broader cognitive goal interpretation process may play in our understanding of how goal setting works at the individual level.

On a broader level, however, the idea of a goal interpretation process that relates assigned goals to goal outcomes is one that is rarely explicitly acknowledged in the goal setting literature, but is nevertheless well studied with respect to some specific topics like the examples mentioned above. My studies have brought a conceptual model and some empirical evidence to support Austin and Vancouver's (1996) assertion that the goal pursuit process is an idiosyncratic one even when goals are assigned. Thus, the broader concept of an individual goal interpretation process that is responsible for creating an individual's representation of their goals is a synthesis contribution to the goal setting literature that highlights the collective importance of the many different ways in which individuals understand and act on their assigned goals. This dissertation has explored this process with respect to the specific context of combined goals. By highlighting the critical importance of how individuals interpret goals and the role that goal hierarchies play in that process, I seek to prompt research into the goal interpretation process in other contexts, especially in relation to other types of multiple goals. In deference to Shaw's warning about how science can become dangerous if it ceases to learn, this dissertation

draws attention to an important area in which even the comprehensively studied goal setting theory can continue to learn.

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Appendices

Appendix A: Study one goal manipulations

Condition 1: Performance goal only 21%	The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. Past users of the simulation have shown that a goal of achieving 21 percent market share by the end of the simulation is difficult, yet attainable. Research has shown that setting a difficult, yet attainable goal maximizes performance. **Thus, your goal as the new CEO is:** - **to achieve 21 percent or more total market share by the end of the simulation.**
Condition 2: Learning goal only 6 strategies	The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. Thinking about strategies to help you increase market share results in higher performance. Past users of the simulation have shown that a goal of identifying and implementing 6 different strategies by the end of the simulation is difficult, yet attainable. Research has shown that setting a difficult, yet attainable goal maximizes performance. **Thus, your goal as the new CEO is:** - **to identify and implement 6 or more strategies to increase market share by the end of the simulation.**
Condition 3B*: Do best learning goal &, 21% performance goal	The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. Thinking about strategies to help you increase market share results in higher performance. By the end of the simulation, your goal is to identify and implement as many different

	strategies as possible to increase market share. Past users of the simulation have shown that a goal of achieving 21 percent market share by the end of the simulation is difficult, yet attainable. Research has shown that setting difficult, yet attainable goals maximizes performance. **Thus, your goals as the new CEO are:** - **to identify and implement as many different strategies as possible to increase market share by the end of the simulation,** - **and to achieve 21 percent or more total market share by the end of the simulation.**
Condition 4B*: Do best learning goal &, do best performance goal	The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. Thinking about strategies to help you increase market share results in higher performance. By the end of the simulation, your goal is to identify and implement as many different strategies as possible to increase market share. Your other goal is to achieve the highest total market share possible by the end of the simulation. **Thus, your goals as the new CEO are:** - **to identify and implement as many different strategies as possible to increase market share by the end of the simulation,** - **and to achieve the highest possible total market share by the end of the simulation.**
Condition 5B*: 6 strategies learning goal &, 21% performance goal	The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. Thinking about strategies to help you increase market share results in higher performance. Past users of the simulation have shown that a goal of identifying and implementing 6

	different strategies by the end of the simulation is difficult, yet attainable. Past users of the simulation have also shown that a goal of achieving 21 percent market share by the end of the simulation is difficult, yet attainable. Research has shown that setting difficult, yet attainable goals maximizes performance. **Thus, your goals as the new CEO are:** - **to identify and implement 6 or more strategies to increase market share by the end of the simulation,** - **and to achieve 21 percent or more total market share by the end of the simulation.**
Condition 6B*: 6 strategies learning goal &, do best performance goal	The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. Thinking about strategies to help you increase market share results in higher performance. Past users of the simulation have shown that a goal of identifying and implementing 6 different strategies by the end of the simulation is difficult, yet attainable. Your other goal is to achieve the highest total market share possible by the end of the simulation. Research has shown that setting difficult, yet attainable goals maximizes performance. **Thus, your goals as the new CEO are:** - **to identify and implement 6 or more strategies to increase market share by the end of the simulation,** - **and to achieve the highest possible total market share by the end of the simulation.**
* Note: Version A presents the goals in the reverse order (performance then learning).	

Appendix B: Pre-reading background case

The Business Strategy Simulation[57]

Company and Industry Background

Celcom21 (early 1990s)

Mr. Douglas, the founder and Chief Executive Officer of Celcom21, a promising cellular phone service company that operates in the North-East region of the United States, has appointed you to an executive position in the company. Although Mr. Douglas is considered a pioneer of the cellular service industry, Celcom21 has not yet reached the dominant position to which he aspires. With your arrival Mr. Douglas will be overseeing the activity of the company in his new position of Chairman of the Board.

Your role as the new CEO will be to use your business wisdom to turn Mr. Douglas's aspirations into reality. The information in this case will help you understand the cellular industry, cellular technology, facts about the region the company operates in, and the company's present financial situation. Please read this case at least twice before participating in the simulation.

Cellular Industry Regulation

The Federal Communications Commission (FCC), a branch of the U.S. government, has regulated the supply of cellular communication services in order to reduce problems of interference similarly to what it did in 1927 with the Radio Act. The FCC has divided the U.S. map in eight regions and each region into several markets. Any company can operate only in one region. In order to be able to provide cellular services in one of the eight regions a company must buy a permit issue by the FCC. The FCC limits the number of permits for each region to 20. Once a company holds a "regional" permit it can then buy licenses to operate cellular networks in any market within that region.

Furthermore, by acquiring the license to provide cellular services in a specific market each company is assigned a quantity of radio waves that allows it to carry cellular traffic for 30,000 subscribers; companies that desire to grow can, and should, buy additional radio waves.

To illustrate, Celcom21 holds a permit to operate in the North-East region and a license to operate in Market A of this region. The license to operate in Market A assigns Celcom21 a quantity of radio waves that allows it to carry cellular traffic for 30,000 subscribers. Since the North-East region comprises five markets, the FCC allows Celcom21 and the other 19 companies operating in the region to 1) buy licenses to operate in the other four markets, and 2) to buy additional radio waves to carry cellular traffic for a larger number of subscribers.

Cellular Communications Technology

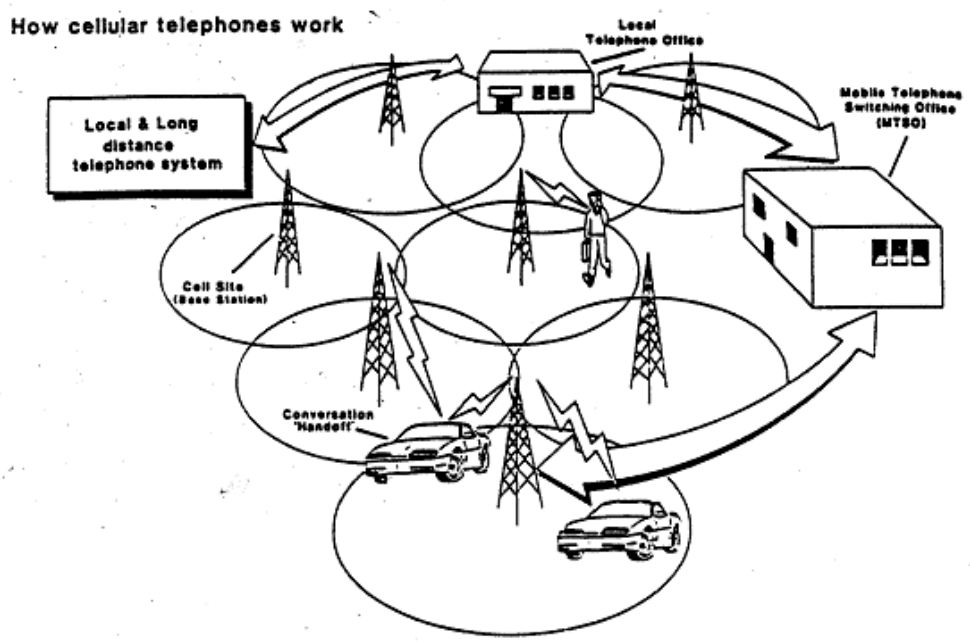
Developed by Bell Laboratories in the 1960s, cellular telephone service derives its name from the small regions – called **cells** – into which a service area is divided. Each cell is equipped with a low-power transmitter/receiver known as a **base station** (see Figure 1). Depending on the topography and population of the area served, the radius of a cell can range from 2 to 10 miles. Ideally, cell coverage of a service area would be total, yet unduplicated. In reality, cells frequently overlap or leave gaps due to obstructions.

Typically, the base station of each cell is connected to a mobile telephone switching office (**MTSO**) by means of either conventional telephone lines or microwave technology. The MTSO is a central switching point where a computer co-ordinates calls for the entire service area. Signal strength, which declines as the cellular phone travels away from a base station, is constantly monitored by the MTSO. At the point where the signal strength to an adjacent cell base station exceeds the existing signal, the MTSO will "hand off" the call to the next cell without a perceptible distraction in the conversation.

Calls originating from a cellphone are connected through the MTSO to either the local landline telephone company or a long-distance company, depending on the number called. Similarly, calls originating outside the cellular system are routed through a long-

distance company, or the local phone company, to the MTSO and on to the base station providing the strongest signal to the cellular phone. Sound quality is generally comparable to regular landline telephone service.

Figure 1: A Cellular System



Currently, it is possible to increase cellular's capacity by frequency reuse and by adding radio waves. Frequency reuse consists of cells not adjacent to one another that can use the same frequency without interfering with each other. A commonly used method to increase capacity is **cell splitting**, where a cell is divided by adding more, less powerful base stations. By increasing the number of cells, the system operator is able to increase the level of frequency reuse. However, there are limits to the number of times a cell can be split as extreme cell density can result in mutual channel interference. Research scientists are exploring other ways of increasing the efficiency of the cells.

Cellular Service

Cellular communications require a cellular telephone and a subscription with a cellular phone company. To make cellular phone calls, callers have to be within the range

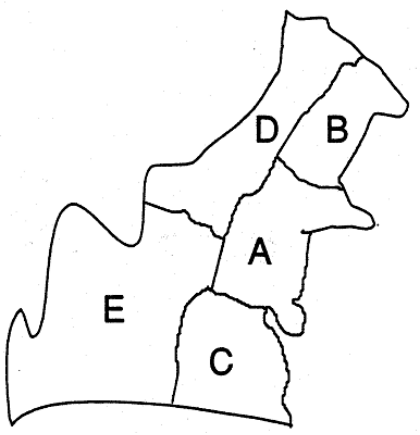
of one of the service areas. Then, they can call any location in the world where regular or cellular service is available. Some cellular service companies offer supplemental services such as paging and data transmission. Data transmission using cellular telephones, however, is currently slower than data transmission using standard phones. If a cellular phone customer moves into an area which is not covered by her cellular service company she is not able to make or receive cellular phone calls.

The charge for cellular service is usually a one-time activation fee ($15 to $30), and an air charge for each minute of both incoming and outgoing calls. Most companies charge 65c per minute for peak calling times and 35c per minute for off-peak times. Industry executives have identified two types of customers: business users (people who use cellular services mostly at work) and private users (people who use cellular services mostly outside work). Surveys conducted by the Cellular Industry Association have shown that business subscribers use the cellular phone more than private users and also that, unlike private subscribers, they connect to the cellular network mostly during peak hours.

The North-East Region

The North-East region as identified by the FCC includes five markets. Markets A, B, and C are classified as large urban areas. Markets D and E are classified as rural areas (see Figure 2).

Figure 2: FCC's Map and Population of the North-East Region



Population:

Market A: 17.9 million

Market B: 6.02 million

Market C: 7.73 million

Market D: 1.1 million

Market E: .56 million

The FCC is currently awarding licenses to operate in Markets A and B and plans to conclude the assignment of licenses to operate in the other three markets within the next five years. In the year that just ended cellular services were available to potential customers only in Market A and the market reached a total of 70,000 subscribers.

A total of twenty companies provide cellular services in the region, including Celcom21. Several companies are still setting up their cellular systems. Among the most active cellular carriers, in addition to Celcom21, are Ameritech, Nynex, Contel, Digital Radio, Bell Atlantic, Mobile Communications and GTE. Ameritech is currently the market share leader in the North-East region with 20% of the market, followed by Nynex with a 15% market share.

The Company

Mr. Douglas began his communications career in high school, selling subscriptions for a local cable television company. He graduated with a degree in business and telecommunications in 1990 and, shortly after, went back to his hometown, located within the Market A area, where he founded Celcom21.

Since the start, and unlike other companies, Celcom21 has concentrated only on the cellular phone service, leaving aside related businesses such as paging or data transmission. The company charges, like most other companies, 65c per minute during peak-hours and 35c per minute during off-peak hours. Celcom21 has a sales force that includes 4 salaried representatives, employed by the company at a yearly salary of $80,000, and 3 dealers who earn 15% of the revenues they generate.

Concerning advertising activities, during the past year Mr. Douglas allocated a total of $1.9M to various initiatives including ads, direct mailing, and promotional activities. A portion of the advertising budget was used to target business users ($1.1M), another slice to target private users ($.4M), and the remaining ($.4M) were general promotional expenses.

The technology the company is currently using is similar to that adopted by other major competitors such as Ameritech and Nynex. The radio waves allocated to Celcom21 by the FCC allow it to handle 30,000 subscribers. A large number of subscribers on these radio waves usually leads to channel interference, large number of accidentally disconnected calls, low quality of reception, and other serious technical problems. Put simply, a company cannot grow without purchasing additional radio wave capacity.

Celcom21 concluded the past year with 4,760 subscribers, a 7.4% share of the market, of which 4,400 were business users and 360 were private users. Concerning the financial situation of Celcom21, the year ended with $7.5M of revenues, an operating profit of $.39M, and $18.94M of funds available for the activity of the company (see Table 1).

Table 1: Celcom21's situation (early 1990s): Financial and other operational data

Revenues	$7.5mil	Shareholder's Equity	$20mil
Direct Costs	$2.6mil	Long Term Debt	$20mil
Sales Force Costs	$640,000	Short Term Debt	$15mil
Advertising Costs	$1.9mil	Total Investments	$34.2mil
General Expenses	$2.2mil	Available Funds	$18.94mil
Operating Profit	$390,000		
Total number of subscribers	4,760		
Radio Wave Capacity	30,000		

A Final Note:

Keep in mind that this case presents the current state of the company and the cellular industry. These conditions will change throughout the simulation. In the end, your performance will depend on whether you can make decisions that integrate a wide range of dynamic strategic issues and implement your vision for the company. More strategic details will be provided before playing the simulation. Thanks in advance for participating.

Appendix C: Study one semi-structured interview protocol

Note: The researcher explained to participants that they did not have to answer any of the verbal or written questions that they did not want to.
Preamble: My role is just to observe and understand how you go about the simulation task and why. I am not judging or evaluating you. There are many ways to approach this task, and I just want to understand yours.
During task questions (for when the participant is still working on the simulation): at end of round 2, 7, 10
1) What you think of the simulation so far?
2) What's your approach to the simulation at this point? Why?
3) Tell me about what you are trying to accomplish now. Why?
a) Are you trying to accomplish anything else? Why?
i) What matters to you most at this point? Why?
4) (Rounds 7 and 10) Have you changed your approach to the simulation since you started? Why or why not?
a) If yes, what triggered you to change your approach?
b) ROUND 10 – have you noticed any changes in the industry or environment?
5) How do you use the feedback you receive after each round?
a) Has it prompted you to change your approach at all?
6) How do you use the information you receive or buy after each round? Is it useful to you?
7) How do you feel about your progress so far?
8) Is there anything else influencing you that you'd like to tell me about?
Post-task questions (for when the participant is done the simulation):
9) How would you describe your experience of the simulation task overall?
10) How would you describe the simulation task? Easy? Challenging? Complex?
11) How did you approach working on the simulation overall? Why did you take that approach?

12) What were the hardest decisions for you?
13) Do you remember the goals that were assigned to you at the beginning? What were they?
14) Tell me what you thought about your assigned goals.
a) Why did you think that?
b) Did you think the goals were reasonable? Did you agree with them?
c) How committed were you to your assigned goals? Why?
If multiple goal condition:
d) Did you think the two goals I gave you were related? If yes, how so?
i) Was one of your assigned goals more important to you than the other, or were they the same?
(1) Why? How did it affect your approach to the simulation?
ii) At any point was one of your assigned goals a higher priority for you than the other, or the same?
(1) Why? How did it affect your approach?
iii) Did you work on your assigned goals together at the same time, or one after the other?
(1) Why? How did it affect your approach?
iv) Did you consider what year you were on in the simulation when thinking about your assigned goals?
(1) Why? How did it affect your approach?
v) At any point in the simulation did you change how you approached your assigned goals?
(1) Why? What triggered your decision to change your approach?
15) Did you have any other goals, like for example a profit goal? Why?
16) Did you set specific, personal goals that you pursued?

a) What were they? Strategy development goals, market share goals, or both?
b) Why did you set them?
c) Which was more important to you: your assigned goals or your personal goals?
17) Tell me about any other factors that influenced how you approached your goals.
18) How did the feedback you received after each round influence you?
19) How did your progress towards your goals influence you? Why?
20) Now that you've done the simulation once, is there anything about your approach to meeting your assigned goals that you would change next time? What specifically? Why would you change it?
21) Is there anything else you'd like to tell me about your experience playing the simulation and trying to meet your assigned goals?

Appendix D: Study one draft goal interpretation items

On a scale of 1 to 7 where 1= "very unlike me" and 7 = "very like me", please indicate the degree to which each of the following statements reflects your approach to your goals at this stage of the simulation. <u>Please read the questions carefully!</u>						
(1) As I work on the task, I am thinking about which of my assigned goals is more important.						
1	2	3	4	5	6	7
Very unlike me	Unlike me	Somewhat unlike me	Not like or unlike me	Somewhat like me	Like me	Very like me
(2) As I work on the task, I am thinking about which of my assigned goals to focus on first.						
1	2	3	4	5	6	7
Very unlike me	Unlike me	Somewhat unlike me	Not like or unlike me	Somewhat like me	Like me	Very like me
(3) As I work on the task, I am thinking about which of my assigned goals is most appropriate to focus on at my stage of the simulation.						
1	2	3	4	5	6	7
Very unlike me	Unlike me	Somewhat unlike me	Not like or unlike me	Somewhat like me	Like me	Very like me
(4) When I receive my market share performance feedback, I think about which of my assigned goals I should focus on next.						
1	2	3	4	5	6	7
Very unlike me	Unlike me	Somewhat unlike me	Not like or unlike me	Somewhat like me	Like me	Very like me
(5) If I see that the market conditions are changing, I think about which of my assigned goals to focus on next.						
1	2	3	4	5	6	7
Very unlike me	Unlike me	Somewhat unlike me	Not like or unlike me	Somewhat like me	Like me	Very like me

(6) My assigned goals are very clear to me so I do not have to think about them as I work on the task.						
1	2	3	4	5	6	7
Very unlike me	Unlike me	Somewhat unlike me	Not like or unlike me	Somewhat like me	Like me	Very like me
(7) I am very sure how to achieve my assigned goals so I do not have to think about them as I work on the task.						
1	2	3	4	5	6	7
Very unlike me	Unlike me	Somewhat unlike me	Not like or unlike me	Somewhat like me	Like me	Very like me
Q8: Please select the <u>ONE</u> option below that most accurately reflects your approach to your goals at this point in the simulation:						
(1) As I work on the task, I am thinking about which of my assigned goals is more important.						
(2) As I work on the task, I am thinking about which of my assigned goals to focus on first.						
(3) As I work on the task, I am thinking about which of my assigned goals is most appropriate to focus on at my stage of the simulation.						
(4) When I receive my market share performance feedback, I think about which of my assigned goals I should focus on next.						
(5) If I see that the market conditions are changing, I think about which of my assigned goals to focus on next.						
(6) My assigned goals are very clear to me so I do not have to think about them as I work on the task.						
(7) I am very sure how to achieve my assigned goals so I do not have to think about them as I work on the task.						
Q9: Please select the <u>ONE</u> option below that most accurately reflects your approach to your goals at this point in the simulation:						
(1) I am currently focusing on my market share percentage goal.						
(2) I am currently focusing on my strategy development goal.						
(3) I am currently focusing on my market share percentage goal and my strategy development goal equally.						
(4) I am not focusing on either of my assigned goals.						

Appendix E: Study two goal manipulations

Condition 1: Performance goal only 21%	Your Goal: The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. This is because gaining market share early is a known key success factor for a company in the cellular phone industry. Past users have shown that a goal of achieving 21% market share by the end of the simulation is difficult, yet attainable. Research has shown that setting difficult, yet attainable goals maximizes performance. **Thus, your goal as the new CEO is:** - **to achieve 21% or more total market share by the end of the simulation.**
Condition 2: Learning goal only 8 strategies	Your Goal: The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. This is because gaining market share early is a known key success factor for a company in the cellular phone industry. Past users of the simulation have told us that thinking about operational strategies to help you increase market share results in higher performance. Operational strategies are tactical moves you can make to increase market share such as increasing advertising expenditure. A goal of identifying and implementing 8 different operational strategies by the end of the simulation is difficult, yet attainable. **Thus, your goal as the new CEO is:** - **to identify and implement 8 or more operational strategies to increase market share by the end of the simulation.**
Condition 3: Do best learning goal &, 21% performance goal	Your Goals: The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. This is because gaining market share early is a

	known key success factor for a company in the cellular phone industry. Past users of the simulation have told us that thinking about operational strategies to help you increase market share results in higher performance. Operational strategies are tactical moves you can make to increase market share such as increasing advertising expenditure. By the end of the simulation, your goal is to identify and implement as many different operational strategies as possible to increase market share. Past users have also shown that a goal of achieving 21% market share by the end of the simulation is difficult, yet attainable. Research has shown that setting difficult, yet attainable goals maximizes performance. **Thus, your goals as the new CEO are:** - **to identify and implement as many different operational strategies as possible to increase market share by the end of the simulation,** - **and to achieve 21% or more total market share by the end of the simulation.**
Condition 4: Do best learning goal &, do best performance goal	<u>Your Goals:</u> The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. This is because gaining market share early is a known key success factor for a company in the cellular phone industry. Past users of the simulation have told us that thinking about operational strategies to help you increase market share results in higher performance. Operational strategies are tactical moves you can make to increase market share such as increasing advertising expenditure. By the end of the simulation, your goal is to identify and implement as many different operational strategies as possible to increase market share. Also, by the end of the simulation, your other goal is to achieve the highest total market share possible. **Thus, your goals as the new CEO are:**

	- **to identify and implement as many different operational strategies as possible to increase market share by the end of the simulation,** - **and to achieve the highest possible total market share by the end of the simulation.**
Condition 5: 8 strategies learning goal &, 21% performance goal	<u>Your Goals:</u> The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. This is because gaining market share early is a known key success factor for a company in the cellular phone industry. Past users of the simulation have told us that thinking about operational strategies to help you increase market share results in higher performance. Operational strategies are tactical moves you can make to increase market share such as increasing advertising expenditure. A goal of identifying and implementing 8 different operational strategies by the end of the simulation is difficult, yet attainable. Past users have also shown that a goal of achieving 21% market share by the end of the simulation is difficult, yet attainable. Research has shown that setting difficult, yet attainable goals maximizes performance. **Thus, your goals as the new CEO are:** - **to identify and implement 8 or more operational strategies to increase market share by the end of the simulation,** - **and to achieve 21% or more total market share by the end of the simulation.**
Condition 6: 8 strategies learning goal &, do best performance goal	<u>Your Goals:</u> The length of the simulation is 15 years (or rounds). The most important indicator of performance in the simulation is Total Market Share. This is because gaining market share early is a known key success factor for a company in the cellular phone industry. Past users of the simulation have told us that thinking about

	operational strategies to help you increase market share results in higher performance. Operational strategies are tactical moves you can make to increase market share such as increasing advertising expenditure. A goal of identifying and implementing 8 different operational strategies by the end of the simulation is difficult, yet attainable. Also, by the end of the simulation, your other goal is to achieve the highest total market share possible. **Thus, your goals as the new CEO are:** - **to identify and implement 8 or more operational strategies to increase market share by the end of the simulation,** - **and to achieve the highest possible total market share by the end of the simulation.**

Appendix F: Manipulation checks and exclusion criteria items

Manipulation checks	
Learning goal manipulation check	My assigned operational strategies goal as the new CEO for Celecom21 was: (check ONE and enter number if applicable) _____ to identify and implement as many different operational strategies as possible to increase market share by the end of the simulation. OR _____ to identify and implement _____(enter number) different operational strategies to increase market share by the end of the simulation.
Performance goal manipulation check	My assigned market share goal as the new CEO for Celecom21 was: (check ONE and enter number if applicable) _____ to achieve the highest market share percentage as possible by the end of the simulation. OR _____ to achieve _____% (enter number) or more total market share by the end of the simulation.
Goal specificity	
Anchors for all items	*1= strongly disagree* *7=strongly agree*
Learning goal specificity	The strategies goal assigned at the beginning of Year 1 was specific.
	The number of strategies to be implemented that was assigned at the beginning of Year 1 was specified.
	There was a high degree of uncertainty about the number of strategies to be implemented.
Performance goal specificity	The market share percentage goal assigned at the beginning of Year 1 was specific.
	The market share percentage goal that was assigned at the beginning of Year 1 was specified.
	There was a high degree of uncertainty about the market share percentage goal to be achieved.
Goal complexity	
Anchors for all items	*1= strongly disagree* *7=strongly agree*
	The simulation was complicated.
	It was getting so that I could just about predict what I needed to do in order to successfully complete the simulation.
	The simulation requires me to coordinate many different things at the same time.
	The simulation required that I use many different types of information.

	Many times, I had to check one more thing before I made a decision.
Prior knowledge	Besides the case, had you heard about any of the details about the study before you came to your session? _____Yes _____ No
	If yes, did you know any details about the simulation that helped you perform better? _____Yes _____ No
	If yes, please indicate what you knew about the simulation or experiment in advance:
Study effort	How seriously did you take this study? 1=not at all 7=very seriously
	How much effort did you put into this study? 1=very little 7=maximum effort

Appendix G: Control variable items

Cognitive Ability	Wonderlic Inc. (proprietary test)
Goal commitment	
Anchors for all items	*1= strongly disagree* *7=strongly agree*
	It is unrealistic to expect me to reach this goal.
	It is hard for me to take this goal seriously.
	Quite frankly, I don't care if I achieve this goal or not.
	It is quite likely that this goal may need to be revised.
	I am strongly committed to pursuing this goal.
	I think this goal is a good goal to shoot for.
	It would not take much to abandon this goal.

Appendix H: Moderating variable items

Goal orientation	
Anchors for all items	*1= strongly disagree* *7=strongly agree*
	I prefer to do things that I can do well rather than things that I do poorly.
	I am happiest at work when I perform tasks on which I know that I won't make any errors.
	The things I enjoy most are the things I do best.
	The opinions others have about how well I can do certain things are important to me.
	I feel smart when I do something without making any mistakes.
	I like to be fairly confident that I can successfully perform a task before I attempt it.
	I like to work on tasks that I have done well on in the past.
	I feel smart when I can do something better than most other people.
	The opportunity to do challenging work is important to me.
	When I fail to complete a difficult task, I plan to try harder the next time I work on it.
	I prefer to work on tasks that force me to learn new things.
	The opportunity to learn new things is important to me.
	I do my best when I'm working on a fairly difficult task.
	I try hard to improve on my past performance.
	The opportunity to extend the range of my abilities is important to me.
	When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work.

Appendix I: Mediating variable items

Self-efficacy	Research has shown that individuals (e.g., undergraduate business students, MBAs, managers, and executives) achieve a market share anywhere between 5% and 35%+. Now, rate your confidence in achieving the following amounts of market share by the end of Year 15. In the first column write "Yes" if you think you can achieve that amount of market share or higher, or "No" if you do not think you can achieve that much. In the second column, using a number between 0 (no confidence) and 100 (complete confidence), indicate how confident you are in achieving that amount of market share or higher, independently of your Yes or No answer.	
Amount of Market Share %	Yes or No	Confidence level 0 – 100%
1% or more		
5% or more		
9% or more		
13% or more		
17% or more		
21% or more		
25% or more		
29% or more		
33%+ or more		
Pre-tested goal interpretation items		
Anchors for all items	*1= strongly disagree*	*7=strongly agree*
Goal Clarity (4)	I have clear assigned goal(s) on this task.	
	My assigned goal(s) is/are clear to me.	
	I understand clearly what my assigned goal(s) is/are.	
	I understand clearly what is expected of me to meet my assigned goal(s).	
Goal Ambiguity (4)	I do not have all the information I need to fully understand my assigned goal(s).	
	I would like more information about what my assigned goal(s) mean.	
	I have questions about how I should interpret my assigned goal(s).	
	I am missing information that I need to fully understand my assigned goal(s).	
Goal Approach Uncertainty (3)	I am wondering whether there is a correct way to complete my assigned goal(s).	
	I am unsure whether there is a right and wrong way to go about completing my assigned goal(s).	
	At my point in the task, I am not sure how to go about	

	completing my assigned goal(s).
Goal Progress (3)	Seeing my performance results makes me reconsider the assumptions I have made about my assigned goal(s).
	When I get my performance feedback, I try to make sense of my assigned goal(s) again.
	Getting my performance feedback results helps me understand the rationale behind my assigned goal(s).
Goal Adaptation (3)	Seeing the market conditions changing makes me reconsider the assumptions I have made about my assigned goal(s).
	When the market changes, it makes me think about why I was assigned my goal(s).
	When I see that the market is changing, it causes me to try to make sense of my assigned goal(s) again.
Effective goal condition	Select most appropriate option. *(Italics not shown.)*
	1. I am currently focusing on my market share percentage goal. *(performance)* 2. I am currently focusing on my strategy development goal. *(learning)* 3. I am currently focusing on my market share percentage goal and my strategy development goal equally. *(combined)* 4. I am not focusing on either of my assigned goals. *(no goal)*

Appendix J: Other variable items

Personal goals	Did you set any specific goals for yourself that were different from the goals that were assigned to you? (Check one). _____Yes _____ No
Performance Learning	If yes, what were the specific goals you set for yourself? I had a specific personal goal of attaining a market share of _____ % (enter number) I had a specific personal goal of implementing _____ strategies (enter number)
Profit goal	Did you also have a goal of keeping your company profitable (i.e. in the black/green)? (Check one) _____Yes _____ No
	If yes, was your profit goal a specific amount, or just profitable (vs. not profitable)? Specific amount $_____ (enter number) OR _____ Just profitable (in the black/green)
Relationship between goals	I thought my operational strategies goal was related to my market share percentage goal. (Check one) _____Yes, I think they were related _____No, I don't think they were related
	If yes, I thought the relationship between my operational strategies goal and my market share percentage goal was like this: (Check one only.) _____ Implementing operational strategies lead to market share changes (i.e. strategies cause market share) _____ Market share changes lead to implementing operational strategies (i.e. market share causes strategies) _____ Other relationship. If other relationship, please describe: _____
	I think having both an operational strategies goal and a market share goal: (Check one only.) ____had <u>no impact</u> on my performance in the simulation ____<u>helped</u> my performance in the simulation ____<u>hurt</u> my performance in the simulation
	Why did you pick that answer above? Please explain.

Appendix K: Ethics approval notices

Western Research

Research Ethics

Use of Human Participants - Ethics Approval Notice

Principal Investigator: Gerard Seijts
File Number:104158
Review Level: Delegated
Approved Local Adult Participants: 36
Approved Local Minor Participants: 0
Protocol Title: Goal setting and complex task performance: a cognitive interview study
Department & Institution: Richard Ivey School of Business\Ivey School of Business,Western University
Sponsor:
Ethics Approval Date: August 21, 2013 **Expiry Date:** August 31, 2014

Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
Other	Pre-interview case reading for task preparation - Celecom 21 Case	2013/08/07
Instruments	Semi-structured interview protocol for goal setting and complex task performance a cognitive interview study v1 Aug 7 2013	2013/08/07
Letter of Information & Consent	Letter of information and consent for goal setting and complex task performance v1 Aug 7 2013	2013/08/07
Recruitment Items	Recruitment Email for Goal setting and complex task performance: a cognitive interview study v1 Aug 7 2013	2013/08/07
Recruitment Items	Recruitment Classroom Announcement for Goal setting and complex task performance: a cognitive interview study v1 Aug 7, 2013	2013/08/07
Western University Protocol		2013/08/06
Other	Study Email Debrief Request Form	2013/08/19
Instruments	Revised booklet with email address section removed per Board Requirements	2013/08/19

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussions related to, nor vote on, such studies when they are presented to the NMREB.

The Chair of the NMREB is Dr. Riley Hinson. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[redacted]

Ethics Officer to Contact for Further Information

Grace Kelly	Vikki Tran	Erika Basile
[redacted]	[redacted]	[redacted]

This is an official document. Please retain the original in your files.

Western Research

Research Ethics

Use of Human Participants - Ethics Approval Notice

Principal Investigator: Gerard Seijts
File Number:104158
Review Level: Delegated
Protocol Title: Goal setting and complex task performance: a cognitive interview study
Department & Institution: Richard Ivey School of Business\Ivey School of Business,Western University
Sponsor:
Ethics Approval Date: October 01, 2013 **Expiry Date:** August 31, 2014

Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
Advertisement	Revised classroom announcement including statement that participants will be financially compensated.	
Recruitment Items	Revised email announcement including statement that participants will be financially compensated.	

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

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[redacted]

Ethics Officer to Contact for Further Information

Grace Kelly	Vikki Tran	Erika Basile
[redacted]	[redacted]	[redacted]

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Western Research

Research Ethics

Use of Human Participants - Initial Ethics Approval Notice

Principal Investigator: Gerard Seijts
File Number:104829
Review Level: Delegated
Protocol Title: Goal setting and complex task performance experiment
Department & Institution: Richard Ivey School of Business\Ivey School of Business,Western University
Sponsor:
Ethics Approval Date: January 27, 2014 **Expiry Date:** April 03, 2015

Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
Instruments	Pre-test survey in Word for PHD students to categorize items to concept definitions (version Dec 16, 2013) Survey link is http://ivey.az1.qualtrics.com/SE/?SID=SV_eVyx67MqODIG9k5	2013/12/16
Instruments	Pre-test survey items for PHD students to categorize items to concept definitions (version Dec 16, 2013) Survey link is http://ivey.az1.qualtrics.com/SE/?SID=SV_eVyx67MqODIG9k5	2013/12/16
Letter of Information & Consent	Pre-test letter of information and consent Dec 13, 2013 Survey link: http://ivey.az1.qualtrics.com/SE/?SID=SV_eVyx67MqODIG9k5	2013/12/13
Recruitment Items	Pre-test recruitment email for PHD students Dec 13, 2013 Survey link is: http://ivey.az1.qualtrics.com/SE/?SID=SV_eVyx67MqODIG9k5	2013/12/13
Instruments	Online survey in word format for goal setting and complex task performance experiment Dec 8 2013. Here is the survey link as well. http://ivey.az1.qualtrics.com/SE/?SID=SV_9NB0VSvtGaOeYwt	2013/12/08
Recruitment Items	Recruitment_Poster for goal setting and complex task performance experiment Dec 8 2013	2013/12/08
Other	Study email debrief request form Dec 8, 2013	2013/12/08
Letter of Information & Consent	Consent form for goal setting and complex task performance experiment (study 2) Dec 8, 2013	2013/12/08
Other	Experiment session pre-reading - Celecom21 Case. Note this document was approved by ethics already in the study 1 application (cognitive interview study file number 104158 approved Aug 21, 2013)	2013/08/21
Western University Protocol		2013/12/20
Response to Board Recommendations	Response to Board requirements of Jan 2, 2014	2014/01/08
Letter of Information	Letter of information with non-completion payment policy highlighted. This policy is now made clear in the two recruitment documents as well so participants know in advance what the policy is as requested by the Board.	2014/01/08
Recruitment Items	Revised Email recruitment with non-completion payment policy stated as requested by the Board	2014/01/08
Recruitment Items	Revised Classroom recruitment notice with non-completion payment policy stated as requested by the Board.	2014/01/08

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussions related to, nor vote on, such studies when they are presented to the NMREB.

The Chair of the NMREB is Dr. Riley Hinson. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number [redacted]

Ethics Officer to Contact for Further Information

Grace Kelly	Vikki Tran	Mina Mekhail	Erika Basile
[redacted]			

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Curriculum Vitae

Name: **Meredith J. Woodwark**

Post-secondary Education and Degrees:

Ivey Business School, Western University
London, Ontario, Canada
Ph.D. 2010-2015

Sauder School of Business, University of British Columbia
Vancouver, BC, Canada
M.B.A. 2003-2004

Beedie School of Business, Simon Fraser University
Vancouver, BC, Canada
Graduate Diploma in Business Administration 2001-2002

Dalhousie University
Halifax, Nova Scotia, Canada
B.A. (Hons. 1st class) 1993-1997

Honours and Awards:

Ontario Graduate Scholarship, Province of Ontario
2014-2015

C.B. (Bud) Johnston Ontario Graduate Scholarship, Ivey Business School, Western University
2014-2015

Organizational Behaviour Doctoral Consortium, Academy of Management Annual Meeting, Philadelphia, USA, 2014

Social Science and Humanities Research Council (SSHRC) Doctoral Fellowship, Ivey Business School, Western University
2013-2014

Ontario Graduate Scholarship, Province of Ontario
2013-2014 (declined)

C.B. (Bud) Johnston Ontario Graduate Scholarship, Ivey Business School, Western University
2013-2014 (declined)

Outstanding Reviewer Award, OB Division, Academy of Management Annual Meeting, Orlando, FL, 2013

Laurier School of Business and Economics Best Case Award, Administrative Sciences Association of Canada Conference, Calgary, AB, 2013

Ontario Graduate Scholarship, Province of Ontario
2011-2012

C.B. (Bud) Johnston Ontario Graduate Scholarship, Ivey Business School, Western University
2011-2012

Richard Ivey School of Business Plan for Excellence Doctoral Fellowship, Western University
2010-2014

MBA Graduation Prize, Sauder School of Business, University of British Columbia
2005

Rosemary Janet Bawden Fellowship in Commerce, Sauder School of Business, University of British Columbia
2004

MBA Education Abroad Scholarship, Sauder School of Business, University of British Columbia
2004

MBA Program Entrance Scholarship (declined), Beedie School of Business, Simon Fraser University
2003

Related Work Experience

Lecturer, Organizational Behaviour
School of Business & Economics, Wilfrid Laurier University
2014-present

Sessional Instructor, Organizational Behaviour
DAN Management and Organization Studies, Western University
2013

Publications (Peer-reviewed):

- **Woodwark, M.J.** & MacMillan, K. (2014). Industrial-organizational psychology research: The setting is academic. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 7 (3), 326-330.

Book Chapters:

- Seijts, G.H., Latham, G.P., & **Woodwark, M.** (2013). Learning goals: A qualitative and quantitative review. In E.A. Locke & G.P. Latham (Eds.), *New Developments in Goal Setting and Task Performance*. New York, NY: Routledge Academic, p.195-212.

Published Cases:

- MacMillan, K., and **Woodwark, M.J.** (2016). House, Hearth & Home: Managing Leadership Change. In G. Rowe and L. Guerrero's (Eds.) *Cases in Leadership (4th edition),* Sage Publications, Inc.
- **Woodwark, M.J.** and Wong, M. (2015). Sawchyn Guitars: Can an Old Business Learn New Tricks? In P. Beamish (Ed.) Cases *in Strategic Management (11th edition),* McGraw-Hill Ryerson.
- **Woodwark, M.J.,** and Wong, M. (2013). Sawchyn Guitars: Can an Old Business Learn New Tricks? Ivey Publishing.
- MacMillan, K., and **Woodwark, M.J.** (2012). House, Hearth & Home: Managing Leadership Change. Ivey Publishing.

Refereed Conference Presentations:

- MacMillan, K., **Woodwark, M.J.,** Schnarr, K. & Beal, B. (2015). A practical guide to writing effective business cases. Symposium conducted at the *Teaching and Learning Conference at the annual meeting of the Academy of Management*, Vancouver, Canada.
- **Woodwark, M.J.,** Seijts, G.H., Arshoff, A., & Latham, G.P. (2014). Learning goals and the moderating role of gender. In G.H. Seijts' (Chair*) The effect of setting learning goals for complex tasks.* Symposium conducted at the International Congress of Applied Psychology of the International Association of Applied Psychology, Paris, France.
- **Woodwark, M.J.,** MacMillan, K., Schnarr, K. & Arshoff, A. (2014). Tested tips for doctoral students to successfully teach, get great evaluations and still graduate!

Symposium conducted at the *Teaching and Learning Conference at the annual meeting of the Academy of Management*, Philadelphia, USA.

- **Woodwark, M.J.** (2014). Goals and job engagement: how affect theory illuminates the relationship. Poster presented at the annual meeting of the *Society for Industrial and Organizational Psychology (SIOP)*, Honolulu, USA.
- Kiaii, B., Seijts, G., Patel, R., Ward, C., Cherry, R. & **Woodwark, M.** (2013). Inclusive team training for cardiac surgery: combining multiple simulators. Presented at the *Canadian Cardiovascular Congress*, Montreal, Canada.
- **Woodwark, M.J.,** Weiss, J. & Seijts, G.H. (2013). Identifying the behaviours that facilitate employee engagement: an exploratory study. In **M.J. Woodwark** and G.H. Seijts' (Chairs*) International Perspectives on the Relationship between Leadership and Employee Engagement.* Symposium conducted at the annual meeting of the Academy of Management, Orlando, USA.
- **Woodwark, M.J.** (2013). Bridging the worlds of employee engagement and affect theory. Paper presented at the *29th European Group for Organization Studies Colloquium*, Montreal, Canada.
- **Woodwark, M.J**., and Wong, M. (2013). Sawchyn Guitars (A): Can an Old Business Learn New Tricks? and (B) Managing Small Business Growing Pains. Cases presented at the annual meeting of the *Administrative Sciences Association of Canada*, Calgary, Canada.
- MacMillan, K., **Woodwark, M.J.** & Wong, M. (2012). Unity through differentiation: Exploring a paradox of belonging. Paper presented at the 28th *European Group for Organization Studies Colloquium*, Helsinki, Finland.
- **Woodwark. M.J.** (2012). Paying attention to the offering of engagement: An attention-based view of employee engagement in the firm. Paper presented at the annual meeting of the *Administrative Sciences Association of Canada*, St. John's, Canada.
- MacMillan, K., and **Woodwark, M.J.** (2012). Leadership at 'House, Hearth & Home': A changing of the yard. Case presented at the annual meeting of the *Administrative Sciences Association of Canada*, St. John's, Canada.

- **Woodwark, M.J.**, Weiss, J. & Seijts, G.H. (2011). Leadership behaviours that drive employee engagement. In C. Sue-Chan (Chair*) Influencing Employee Engagement, Empowerment, and Adaptation: How Leadership Matters.* Symposium conducted at the annual meeting of the Administrative Sciences Association of Canada, Montreal, Canada.