TOWARD AN UNDERSTANDING OF WHEN AND WHY SITUATIONAL CONSTRAINTS INFLUENCE PERFORMANCE

A Thesis

by

MARGARET TUTT HORNER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2008

Major Subject: Psychology

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Approved by:

Chair of Committee,	Stephanie C. Payne
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ABSTRACT

Toward an Understanding of When and Why Situational Constraints Influence Performance. (August 2008)

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The current study sought to explain *when* and *why* situational constraints negatively influence performance on a complex task. In particular, perceived control and affective reactions (frustration and satisfaction) were examined as potential explanatory mechanisms, while ability and motivation were tested as moderators. The influence of situational constraints on task strategies was also examined and tested for possible nonlinearity. Finally the extent to which task strategy use moderates the situational constraint-task performance relationship was investigated. A laboratory study using 158 undergraduate psychology students was conducted. Three levels of situational constraints (low, moderate, high) were experimentally manipulated. Performance on a problem solving execution task, as well as experimenter observations of strategy use, were used to represent the constructs of interest in the study. Results indicated that situational constraints were directly related to task satisfaction and frustration and performance. In addition task strategy use was directly related to performance. However, there was no evidence for mediation or moderation effects. Limitations and future directions are discussed.

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Job performance is *the* outcome of interest in the large majority of research conducted by industrial and organizational (I/O) psychologists. Job performance is also an outcome of significant importance to managers and employers. A simple search of the PsycINFO database revealed that more than 11,000 articles examined job performance in some fashion in the last 100 years. Thus, examining and understanding variables that facilitate or hinder performance is important to I/O psychologists and managers. One variable that has been shown to negatively affect performance is situational constraints or aspects of the work setting beyond the employee's control that hinder performance (e.g., lack of job-related information needed to perform the job; Peters & O'Connor, 1980). However, the reasons why situational constraints adversely affect performance and the conditions that facilitate that relationship have not been extensively explored. Thus, the purpose of the current study is to examine *when* and *why* situational constraints influence performance. In short, I seek to identify both mediators and moderators of the situational constraint-performance relationship.

The first objective for this study is to determine why situational constraints affect performance. I theorize that situational constraints negatively affect performance

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This thesis follows the style of *The Journal of Applied Psychology*.

because they reduce perceived behavioral control which in turn increases frustration and decreases satisfaction. In other words, when individuals perceive situational constraints they are likely to feel that they have a low level of control over the situation. Perceptions of behavioral control are created by an individual's ability to exert his or her influence over both internal and external factors of the work environment (Ajzen, 1991). A lack of perceived control is likely to lead to an increased level of frustration and dissatisfaction because situational constraints inhibit individuals from goal attainment (Spector, 1978). These negative affective reactions are in turn expected to negatively affect performance. In summary, I propose that perceived behavioral control and affective reactions are potential mediators of the situational constraint-performance relationship.

The second objective for this study is to determine *when* situational constraints are likely to negatively impact performance. A number of researchers have proposed that situational constraints affect performance when they inhibit the translation of ability and motivation into performance (e.g., Peters & O'Connor, 1980). When situational constraints are high, the relationship between motivation and performance (Peters, Chassie, Lindholm, O'Connor, & Kline, 1982) and the relationship between ability and performance (O'Connor, Peters, & Segovis, 1983) become weaker. Further, highly capable individuals are more affected by situational constraints than those with lower levels of ability (O'Connor et al., 1983). The interaction with motivation is proposed to be similar in that highly motivated individuals are more affected by situational constraints than are their less motivated counterparts (Peters et al., 1982). In summary, I

examine ability and motivation as moderators of the situational constraint-performance relationship.

A third objective of this study expands on the second objective and seeks to determine if there are behaviors one can employ to mitigate the negative effects of situational constraints. One set of behaviors that seems to have merit are task strategies; or behaviors designed to circumvent such obstacles. I propose that situational constraints will be less related to performance when individuals employ more task strategies. In other words, task strategy use will moderate the relationship between situational constraints and performance, such that the negative relationship between situational constraints and performance will be weaker when task strategies are employed. By employing more task strategies, participants may be able to mitigate the impact that situational constraints have on effective performance (Tesluk & Mathieu, 1999).

Situational Constraints

In every work environment, there are aspects of the environment that encourage or discourage effective work performance. Positive aspects of the work environment, such as the assignment of more difficult and challenging tasks, equitable rewards for performance, a positive work climate, and job enrichment (Schneider, 1978) permit a better translation of abilities and motivation into performance (Peters et al., 1980). Negative aspects of the work environment, such as not having the tools required to do the job, a negative work climate, and not having the authority needed to complete a task, inhibit the translation of abilities and motivation into performance (Peters & O'Connor,

1980; Peters, O'Connor, & Eulberg, 1985; Peters, O'Connor, Eulberg, & Watson, 1988; Schneider, 1978). These negative aspects have been referred to as situational constraints (Peters & O'Connor, 1980; Peters et al., 1985; Peters et al., 1988).

A number of definitions of situational constraints have been provided in the research literature (see Table 1). For example, Peters et al. (1985) defined situational constraints as aspects of the work setting, beyond the control of the employee, that hinder the employee's work performance, by affecting both ability and motivation (e.g., a lack of job-related information or tools needed to perform the job). Many definitions include information about how situational constraints relate to performance. Most definitions describe a direct negative effect on performance. Many researchers define situational constraints as a moderator of the ability-performance and/or the motivation-performance relationship (e.g., O'Connor et al., 1982; Peters & O'Connor, 1980), and in at least one study (Steel & Mento, 1986), situational constraints were described as mediators of the motivation/ability-performance relationships. Interestingly, many of the same researchers proceed to hypothesize and test the direct effect on performance (e.g., Peters et al., 1980; Peters et al., 1982), yet the interaction with ability and motivation has not been tested as often. Only two studies have examined ability as a moderator of the situational constraint-performance relationship (O'Connor et al., 1983), and only one study has examined motivation as a moderator of the situational constraints on performance (Peters et al., 1982). This raises two concerns. First, a defining aspect of the situational constraint construct (moderation with ability and motivation) has not

been extensively tested. Second, including the relationship with performance (direct or moderated) in the definition and then testing it seems tautological.

Further, situational constraints are typically operationalized on a continuum from low to high. Perhaps it would be more appropriate to refer to situational constraints as situational factors or environmental characteristics, and define them as factors beyond the control of the employee that can act to facilitate *or* hinder performance (e.g., Schneider, 1978). The situational constraint categories discussed later are not defined as either positive or negative, therefore it may be more fitting to use a more neutral label, removing the negative connotation the term constraints gives to the construct. However, to be consistent with the related literature, I will use the situational constraint nomenclature.

Table 1

Terms and Definitions for Situational Constraints Used Throughout the Literature

Citation	**Term for Situational Constraint**	**Definition**	**Relationships with Performance in the Definition**
Adkins & Naumann, 2001; p. 453	Situational Constraints	-factors which place limits on the extent to which attitudes, personal attributes and motivation translate into behaviors and performance	-Situational constraints moderate the relationship between attitudes, personal attributes, and motivation and both behaviors and performance
Bacharach & Bamberger, 1995; p. 79	Situational Constraints	-factors beyond the control of the employee which have the potential to interfere with or limit job performance	-Direct relationship
Best et al., 2005; p. 442	Perceived Organizational Constraints	-obstacles to goal fulfillment that threaten resource depletion whereby personal investment is not compensated	
Dachler & Mobley, 1973; p. 400	Situational Restraints	-factors not under the control of the individual that may prevent the achievement of a certain level of performance even when ability and motivation are high and the person correctly directs his efforts	-Ability and motivation moderate
Freedman & Phillips, 1985; p. 397	Situational Performance Constraints	-contextual factors whose presence is expected to result in low motivation, dissatisfaction, and can directly affect performance by undermining the effectiveness to other motivating forces such as job enrichment, pay incentives, or goal setting	-Direct relationship -Motivation moderates

Table 1 Continued

Citation	Term for Situational Constraint	Definition	Relationships with Performance in the Definition
Hatcher et al., 1991; p. 953	Academic Situational Constraints	-out-of-class circumstances and activities which increase a student's workload, cause stress, and adversely affect academic performance and development. -decrease the amount of time, energy, and resources that students have available to apply toward educational pursuits	-Direct relationship
Herman, 1973; p. 211	Situational Contingencies	-physical characteristics of the performance setting that act to limit and often virtually overwhelm variance in performance	-Direct relationship
Ilgen et al., 1979; p. 366	External Constraints	-factors external to the individual that may inhibit the individual from doing what he or she wants to	-Direct relationship
Kane, 1997; p. 193	Situational Constraints	-circumstances beyond the worker's control that may limit performance to levels below perfection	-Direct relationship
Klein & Kim, 1998; p. 88	Situational Constraints	-features of the work environment that act as obstacles to performance by preventing employees from fully translating their ability and motivation into performance	-Ability and motivation moderate
Kolodny & Kiggundu, 1980; p. 632	Task Conditions	-uncertainty and variability in the task environment	-Not specified
Mathieu et al., 1992; p. 832	Situational Constraints	-characteristics of the work situation that interfere with employees' work performance	-Direct relationship

Table 1 Continued

Citation	Term for Situational Constraint	Definition	Relationships with Performance in the Definition
Mathieu et al., 1993; p. 130	Situational Constraints	-characteristics of the environment that interfere with or restrict employees' performance	-Direct relationship
O'Connor et al., 1982; p. 418	Situational Constraints	-situational variables, beyond the control of the employee, that inhibit or prevent a person who is both willing and able to accomplish a task successfully from doing so	-Ability and motivation moderate
O'Connor et al., 1983; p. 178	Situational Constraints	-situational factors in the work setting which act to constrain or block the behavior of persons who are both willing and able to successfully accomplish a task	-Ability and motivation moderate
O'Connor et al., 1984; p. 663	Situational Constraints	-constraining work circumstances that act as partial determinants of individual job performance	-Direct relationship
Peters & O'Connor, 1980; p. 391	Situational Constraints	-aspects of the immediate work situation that interfere with the translations of abilities and motivation into effective performance	-Ability and motivation moderate
Peters et al., 1980; p. 79	Performance-Relevant Situational Variables	-situational characteristics believed to have a direct effect on performance	-Direct relationship
Peters et al., 1982; p. 9	Situational Constraints	-aspects of the work setting which inhibit persons from using their abilities or expressing their motivation effectively at work	-Ability and motivation moderate
Peters et al., 1985; p. 79	Situational Constraints	-situational factors predicted to interfere with the translation of ability and motivation into effective performance	-Ability and motivation moderate

Table 1 Continued

Citation	Term for Situational Constraint	Definition	Relationships with Performance in the Definition
Peters et al., 1988; p. 134	Situational Constraints	-one type of performance determinant in the immediate work situation that is presumed to interfere with the translation of abilities and motivation into effective work performance	-Ability and motivation moderate
Phillips & Freedman, 1984; p. 321	Situational Constraints	-contextual factors whose presence is expected to result in low motivation, dissatisfaction, and can directly affect performance	-Direct relationship with motivation, satisfaction, & performance
Pooyan et al., 1982; p. 2	Situational Constraints	-aspects of the immediate work environment which act to inhibit, or in the extreme prevent, satisfactory performance	-Direct relationship
Schneider, 1975; p. 454	Situational Characteristics	-the main cause of behavior in organizations, that may overwhelm individual differences when the range of individual differences in the work setting is relatively narrow	-Individual differences moderate
Schneider, 1978; p. 282	Situational Influences	-variables that might constrain or facilitate the display of abilities necessary to perform on the criterion of concern	-Situational influences moderate the relationship between ability and performance
Steel & Mento, 1986; p. 254	Situational Constraints	-variables routinely found within the task environment that potentially serve as constraints (or facilitating conditions) mediating the translation of motivation and ability into successful task performance	-Ability and motivation mediate

Table 1 Continued

Citation	Term for Situational Constraint	Definition	Relationships with Performance in the Definition
Steel et al., 1987; p. 473	Situational Constraints	-exert a direct deleterious effect on the level of task performance by hindering the full utilization of one's ability	-Ability mediates
Steel & Mento, 1989; p. 59	Situational Constraints	-facilitating/ inhibiting conditions that are predicted to display both direct and interactive (i.e., interacting with ability) effects on task performance	-Direct relationship between situational constraints and performance -Moderated relationship
Terborg, 1977; p. 194	Restraints to Performance	-various restraints in the work context which can limit performance	-Direct relationship
Tesluk & Mathieu, 1999; p. 201	Performance Barriers	-factors in the immediate work environment that can potentially interfere with effective performance	-Direct relationship

In an effort to better understand situational constraints and their influence, several researchers have developed taxonomies of situational constraints or constraint category systems. These taxonomies range from 8 (Peters et al., 1980), to 22 categories of situational constraints (O'Connor et al., 1984). Peters et al. (1985) reviewed the available situational constraint taxonomies (Broedling et al., 1980; Footlik, 1978; Kane, 1979; Kane 1981; Peters, O'Connor, Eulberg, & Watson, 1988; O'Connor, Peters, Pooyan, Weekly, Frank, & Erenkrantz, 1984; Peters et al., 1980; Quinn & Cobb, 1971) and found many situational constraint categories within those taxonomies to be job- or position-specific. In order to create a taxonomy of situational constraints that could be used for a wide array of jobs, Peters et al. (1985) created a situational constraint taxonomy consisting of the following 11 categories: (1) job-related information, (2) tools and equipment, (3) materials and supplies, (4) budgetary support, (5) required help and services from others, (6) task preparation, (7) time availability, (8) work environment, (9) scheduling of activities, (10) transportation, and (11) job-relevant authority. Definitions for each of these categories are presented in Table 2.

Table 2

Situational Constraint Categories and Definitions From Peters et al. (1985)

Situational Constraint Category Name	*Definition*
1. Job-related information	The information (from various sources) needed to do the job
2. Tools and equipment	The specific tools, equipment, and machinery needed to do the job
3. Materials and supplies	The materials and supplies needed to do the job
4. Budgetary support	Financial resources and budgetary support needed to do the job
5. Required services and help from others	The services and help from others needed to do the job
6. Task preparation	Preparation through education, training, and experience
7. Time availability	Availability of time to do the job assigned, taking into consideration time limits, interruptions, unnecessary meetings, non-job related distractions, etc.
8. Work environment	Physical aspects that affect ability to do the job
9. Scheduling of activities	The arrangement of work schedule for the best utilization of resources
10. Transportation	Transportation needed to get to and complete the job
11. Job-relevant authority	The authority needed to do the job

Situational Constraint- Performance Relationship

Several researchers have empirically tested the situational constraint-performance relationship in both lab and field settings. In lab settings, situational constraints have a consistent, negative effect on performance (Freedman & Phillips, 1985; Peters et al., 1980; Peters et al, 1982).

First, Peters et al. (1980) instructed a sample of undergraduate and graduate students to build models using Erector ® set parts. Experimenters simultaneously manipulated the level of four situational constraints (job-related information, tools and equipment, materials and supplies, and task preparation) to create two conditions: facilitating and inhibiting. Peters et al. (1980) found both quantity of work and quality of work were negatively related to the higher level of situational constraints. Second, Peters et al. (1982) asked 121 undergraduate and graduate students to engage in a task that simulated the basic work activities of a low-level clerical job (e.g., sorting, fastening, and filing information). Peters et al. (1982) manipulated situational constraints by simultaneously varying in the same theoretical direction the task-related information, the materials and supplies, and the work environment. Results supported a negative relationship between situational constraints and performance. Third, Freedman and Phillips (1985) constrained time availability, materials and supplies, and job-related information on a proof-reading task. Participants in the high situational constraints condition found significantly fewer errors than did the participants in the low situational constraint condition.

The majority of studies examining the influence of situational constraints on performance in the field also support a negative relationship (Klein & Kim, 1998; O'Connor et al., 1984; Steel & Mento, 1983; Steel & Mento, 1986; Steel & Mento, 1989; Steel, Mento, & Hendrix, 1987). First, using a sample of managers from a convenience store organization, O'Connor et al. (1984) showed a significant negative relationship between employee perceived situational constraints and supervisor ratings

of job performance. Second, Steel and Mento (1986) found supervisors' perceptions of situational constraints were negatively associated with three different types of performance criteria: supervisory appraisals, employee self-appraisals, and an objective measure of performance. Third, Steel, Mento, and Hendrix (1987) found finance company cashiers supervisors' perceptions of situational constraints were negatively correlated with supervisor ratings and self-appraisals of performance, but they were uncorrelated with an objective measure of each cashier's daily cash overages and cash shortages. The cashiers used in this study did not handle many cash transactions (Steel et al. 1987); therefore the objective measure may have been a deficient measure of performance. Fourth, Klein and Kim (1998) demonstrated a negative relationship between salesperson's assessment of situational constraints and an objective indicator of sales per hour averaged over three months.

There are two field studies that did not yield a significant negative relationship between situational constraints and performance. First, Pooyan et al. (1982) did not find a significant relationship between both employee and supervisor perceptions of situational constraints and supervisor ratings of performance in a sample of managerial and non-managerial jobs from the same banking institution. Peters et al., (1985) proposed that it may have been inappropriate to aggregate the managerial and non-managerial samples together. It may be that the type and amount of situational constraints experienced by the managerial sample was different from that of the non-managerial sample, thereby making the aggregation of samples unsuitable. Second, Peters et al. (1988) found that employee's perceptions of situational constraints did not

significantly affect superior's ratings of performance in a variety of air force work settings. However, the researchers proposed two reasons why they did not find the hypothesized effects. Their first explanation was that relevant constraint and/or performance variance was not meaningfully assessed. In other words, the researchers may not have used sensitive enough instruments to detect variance in situational constraints and/or work performance. The second possible explanation was that across the jobs examined, the mean level of situational constraints was very low (Peters et al., 1988), suggesting range restriction. It is also possible that the supervisors who completed the performance ratings took into account the fact that their employees work under and despite situational constraints (i.e., the supervisors were lenient in their ratings). However, it is generally held that supervisors fail to take situational constraints into account when making performance ratings (Bernardin, 1989), so this may be a less plausible explanation for the nonsignificant results found by Peters et al., (1988). In summary, employee and supervisor perceptions of situational constraints have been shown to negatively correlate with self-ratings, supervisor ratings, and objective measures of performance (see Table 3).

Table 3

Summary of Field Studies Examining the Situational Constraint-Performance Relationship

	Self Ratings of Performance	Supervisor Ratings of Performance	Objective Ratings of Performance
Employee's Ratings of Situational Constraints		O'Conner et al., 1984 Peters et al., 1988 (ns) Pooyan et al., 1982 (ns)	Klein & Kim, 1998
Supervisor Ratings of Situational Constraints	Steel & Mento, 1986 Steel et al., 1987	Steel & Mento, 1986 Steel et al., 1987 Pooyan et al., 1982 (ns)	Steel & Mento, 1986 Steel et al., 1987

Note. ns= non-significant findings

Based on a review of the situational constraints research, it seems clear that situational constraints have a negative influence on performance. What remains less clear is *why* situational constraints have a negative effect on performance. Thus the first objective of this study is to answer this question.

Why Do Situational Constraints Influence Performance?

Situational Constraint – Affective Reactions Relationship

One possible explanation for the negative relationship between situational constraints and performance is that situational constraints create negative affective reactions (Herman, 1973). Affective reactions are defined as emotional responses to the work or task setting (e.g., frustration and satisfaction). Both frustration and dissatisfaction can lead to lower levels of performance (Peters et al., 1980). There are any number of things that can cause negative affective responses in the work environment (e.g., stress), and research has shown that situational constraints should be included in a list of job characteristics that could cause negative affective reactions at

work (Peters et al., 1980; Peters et al., 1982). By preventing individuals who are capable of achieving acceptable levels of performance from performing well, the presence of situational constraints can lead to both dissatisfaction and frustration (Peters & O'Connor, 1980).

Theoretically, the relationship between situational constraints and affect can be explained by expectancy theory (Vroom, 1964). Expectancy theory is a motivational theory that is based on a person's beliefs about whether their effort and will lead to valued outcomes (Vroom, 1964). Vroom described expectancy theory as having three major constructs: expectancy, instrumentality, and valence. Expectancy is defined as a person's perception that effort will result in performance. Instrumentality refers to an individual's belief that performance will result in outcomes, such as pay, and valence describes the value that a person attributes to a given outcome (Mitchell & Daniels, 2003). People combine the outcomes of their expectancy, instrumentality, and valance perceptions in order to determine how much effort should be exerted for the task. The amount of effort the individual decides upon is called the motivational force (Vroom, 1964). This force directs an individual's effort and leads to performance. Consistent with expectancy theory, situational constraints lead to lower levels of motivation, because individuals no longer perceive a relationship between the amount of effort put into the task and performance on the task (Phillips & Freedman, 1984). Correspondingly, the more situational constraints, the more frustrated and dissatisfied individuals are likely to feel.

Both lab and field studies have provided consistent support for a positive relationship between situational constraints and frustration and a negative relationship between situational constraints and satisfaction (O'Connor et al., 1982; O'Connor et al., 1983; O'Connor et al., 1984; Phillips & Freedman, 1984; Peters & O'Connor 1980; Peters et al., 1982; Peters et al., 1988). There has been only one study (Freedman & Phillips, 1985) where situational constraints were not related to satisfaction.

There have been two laboratory studies (Peters et al., 1980; Peters et al., 1982) and three field studies (O'Connor et al., 1982; O'Connor et al., 1984; Peters et al., 1988) examining the influence that situational constraints have on frustration. First, using a sample of 70 students, Peters et al. (1980) found that the presence of situational constraints was positively and significantly related to self-reported frustration. Similarly, Peters et al. (1982) found that the presence of situational constraints was significantly and positively related to frustration, using a sample of 120 students.

In regards to field studies examining the situational constraint-frustration relationship, first, O'Connor et al. (1982) found that situational constraints were positively related to frustration using a sample of 237 full-time employees. Second, using a sample of managers from a convenience store organization, it was again shown that situational constraints and experienced frustration were positively related (O'Connor et al., 1984). Finally, Peters et al. (1988) were also able to show that there was a significant correlation between situational constraints and frustration using an Air Force sample.

There have been three lab studies (Peters et al., 1980; Peters et al., 1982; Phillips & Freedman, 1984) and three field studies (O'Connor et al., 1982; O'Connor et al., 1984; Peters et al., 1988) that have shown a negative relationship between situational constraints and satisfaction. Only one study (Freedman & Phillips, 1985) failed to find a significant relationship.

In a laboratory setting, Phillips and Freedman (1984) found that perceptions of the presence of situational constraints were negatively related to general work satisfaction in a sample of business students. Consistent with results found by Freedman and Phillips, Peters et al. (1980) found that students in an inhibiting condition reported less task satisfaction than students in a facilitating condition. In one final laboratory study, Peters et al. (1982) showed that using a sample of 120 students, satisfaction was negatively related to the presence of situational constraints.

With regard to field studies of situational constraints and satisfaction, using a sample of 287 employees, O'Connor et al. (1982) found that the presence of situational constraints was positively and significantly related to employee dissatisfaction. Second, using a sample of 1450 managers, O'Connor et al. (1984) found that an overall measure of constraints was negatively related to a general measure of satisfaction, a measure of satisfaction with work, and a measure of satisfaction with supervision. Third, Peters et al. (1988) also found support for a negative relationship between situational constraints and four different satisfaction measures. These included a measure of satisfaction with the work itself, satisfaction with supervision, satisfaction with co-workers, and

satisfaction with the working conditions. All these relationships were negative and significant (Peters et al., 1988).

The only study that did not report a significant relationship between situational constraints and satisfaction was a laboratory study conducted by Freedman and Phillips (1985). Using a sample of 146 undergraduate business students, the authors assigned participants into either a facilitating or an inhibiting condition and assessed their intrinsic satisfaction with the task. There was no relationship found between satisfaction and the presence or absence of situational constraints (Freedman & Phillips, 1985). The authors gave several reasons why their results were not consistent with the literature, for example, participants in their study did not find the task interesting and reported only average intrinsic motivation to perform (Freedman & Phillips, 1985).

Given the theoretical and empirical support for situational constraints to influence individuals' affective reactions, I seek to replicate this relationship with measures of satisfaction and frustration.

H1a: Situational constraints will be negatively related to satisfaction.

H1b: Situational constraints will be positively related to frustration.

Situational Constraint – Perceived Control Relationship

Situational constraints are defined as aspects of the work setting beyond the employee's control. Thus, the perceived control literature is also likely to facilitate our understanding of why situational constraints adversely affect performance. According to the theory of planned behavior, there are three determinants of a person's intention to engage in a specified behavior and one of them is perceived behavioral control (Ajzen &

Madden, 1986). Perceived behavioral control is an external factor that is defined as "the perceived ease or difficulty of performing the behavior and is assumed to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 2005, p. 111). It is this reflection on impediments and obstacles that brings to light the likely relationship between situational constraints and perceived behavioral control. Perceived control increases as individuals' beliefs in the number of resources and opportunities increases and the presence of situational constraints decreases (Ajzen, 1991).

Consistent with this definition, situational constraints are associated with low levels of perceived control. In a low situational constraint situation, employees are expected to feel that they have a high level of control because there are few aspects of the work setting that are beyond their control. When situational constraints are high, employees are expected to feel that they have a low level of control, because several aspects of the work environment are beyond their control. Thus, as situational constraints increase, perceived behavioral control is expected to decrease.

H2: Situational constraints will be negatively related to perceived behavioral control.

Perceived control over a situation influences actions and actions in turn influence outcomes (Skinner, Chapman, & Baltes, 1988). For instance, in a high control situation, behavior is active, focus on the activity is greater, and emotions are generally positive (Skinner, 1995). In a low control situation, it is much the opposite; behavior is inactive, challenging activities are avoided, and emotions are negative (e.g., apprehension or fear) (Skinner, 1995).

Waite (1998) states that individuals will react in different ways to the presence of situational constraints. Some individuals will perceive themselves as having a great deal of personal control over them; while other individuals will perceive themselves as having very little control over situational constraints. Therefore, situational constraints may affect performance, because they alter the level of control individuals perceive that they have.

Given the conceptual and empirical support for a significant relationship between perceived control and affective reactions, it seems a more complete explanation for why situational constraints negatively affect performance is that situational constraints lead to reductions in perceived control, which in turn lead to negative affective reactions which are negatively related to performance.

H3: Perceived behavioral control will mediate the relationship between situational constraints and (a) satisfaction and (b) frustration.

H4: (a) Perceived behavioral control, (b) satisfaction, and (c) frustration will mediate the situational constraint-performance relationship.

When Do Situational Constraints Influence Performance?

The second objective of this study is to determine when situational constraints negatively affect performance. I propose three possible moderators of the situational constraint-performance relationship.

Ability as a Moderator

Ability is the best predictor of performance (Schmidt & Hunter, 1998); however instability in the ability-performance relationship has also been observed (Ghiselli,

1966). Some researchers argue that this instability is due to statistical artifacts, such as range restriction (Schmidt & Hunter, 1977, 1978). Consistent with this, Peters and O'Connor (1980) propose that situational constraints produce differential range restriction in performance variances across work settings. In other words, situational constraints alter the variability in performance such that when situational constraints are high, the relationship between ability and performance is smaller than when situational constraints are low. It is important to note that whether ability or situational constraints are conceptualized as the moderator, mathematically the results would be the same.

Despite the number of authors who propose situational constraints as a moderator of the ability-performance relationship (e.g., Dachler & Mobley, 1973; Klein & Kim, 1998; Peters & O'Conner, 1980; Peters & O'Connor, 1988; Peters et al., 1982; Peters et al., 1985; Peters et al., 1988; Steel & Mento, 1986; Steel & Mento, 1989), only one published study reports for testing such an effect. O'Connor et al. (1983) reanalyzed two datasets. The first sample (originally published in Peters et al., 1982) consisted of 70 students, engaged in a task that involved building models from Erector ®set parts. In this task, job-related information, tools and equipment, materials and supplies, and task preparation were manipulated to create facilitating and inhibiting constraint conditions. Ability was measured using a standardized linear combination of the Revised Minnesota Paper Form Board Test (Psychological Corporation, 1969), Word Recognition Scale, Multi-Aptitude Battery (Psychological Corporation, 1955), and a timed job sample. A significant main effect for ability was found, however there was no evidence for an interaction between situational constraints and ability (O'Connor et al., 1983). The

second sample (originally published as O'Connor et al., 1982) consisted of 120 students who were instructed to engage in a task that involved a simulation of low level clerical tasks. Three categories of situational constraints (i.e., job-related information, materials and supplies, and work environment) were assigned to create facilitating and inhibiting constraint conditions. Ability was measured using the Minnesota Clerical Test (Psychological Corporation, 1959), the Groups Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971), and job sample quantity scores. Again, an overall ability measure was created. For this task, both a main effect of ability and a significant interaction between situational constraints and ability were found (O'Connor et al., 1983), with situational constraints reducing the relationship between ability and performance. In other words, the positive relationship between ability and performance was stronger in the low constraint condition than in the high constraint condition. The discrepant results may have been a function of reduced power in the first sample. Clearly, additional testing is warranted to determine to what extent ability moderates the situational constraints-performance relationship.

> H5: Ability will moderate the situational constraint-performance relationship such that the relationship between situational constraints and performance will be stronger when ability is low as opposed to high.

Motivation as a Moderator

According to cognitive evaluation theory (Deci, 1975), to maintain a constant level of motivation, individuals must be able to attribute performance to themselves as opposed to external influences. To ensure that individuals make internal attributions,

feelings of competence and self-determination must be drawn from the task (Deci, 1975). Freedman and Phillips (1985) propose that similar cognitive processes may explain the detrimental effects that situational constraints have on motivation, because situational constraints act to reduce the amount of control that individuals have over their own performance. In other words, because situational constraints make it apparent that performance is at least partially determined by external influences; their presence is likely to decrease motivation by inhibiting an individual's self-determination beliefs. Thus, motivation and situational constraints are expected to interact in the prediction of task performance, such that the positive relationship between motivation and performance will be stronger when situational constraints are low.

One study has examined situational constraints as a moderator of motivation-performance relationship in the laboratory (Peters et al., 1982). Peters et al. (1982) instructed participants to work on a low-level clerical task in which task-related information, materials and supplies, and the work environment were manipulated. Motivation was manipulated by assigning participants to three different goal setting conditions and performance was operationalized as the quantity of work. Researchers found evidence for a significant interaction between situational constraints and goal setting such that under severe situational constraints, goal setting does not have an effect on performance. More difficult goals are only reflected in performance in settings in which individuals are able to translate their motivation into effective performance (Peters et al., 1982). I seek to replicate this finding.

H6: Motivation will moderate the situational constraint-performance relationship such that the relationship between situational constraints and performance will be stronger when motivation is low as opposed to high.

Task Strategy as a Moderator

Task strategies are "performance programs" or "sets of rules" that an individual has stored and can be applied to the task (Campbell, 1988; Wood & Locke, 1990). Specifically, Campbell (1991) proposed the following definition for task strategy:

> Task-Performance Strategy (TPS) can be defined as the methods and procedures an individual uses in attempting to achieve a task's objective. TPSs may differ in terms of the number of procedural steps considered by the individual and the degree of creativity associated with the procedures. Further, the procedures might be algorithmic in nature (i.e., leading to the task's objectives with certainty) or simply heuristic (i.e., rules-of-thumb that may or may not achieve the task's objectives). These TPS characteristics presumably vary with the objective characteristics of the specific task, the familiarity of the individual with the task itself, and with the individual's inherent cognitive abilities (pp. 3-4).

Task strategies can be either proactive or reactive. Proactive strategies are employed in anticipation of future negative environmental contingencies, whereas reactive strategies are employed to circumvent present negative environmental contingencies (Tesluk & Mathieu, 1999). This study will focus on *reactive* task strategies.

The majority of the research on task strategies can be found in the goal setting literature. Goal setting researchers conceptualize task strategy use as a mediator of the goal setting-task performance relationship and empirical research supports this (Campbell, 1988; Campbell, 1991; Wood & Locke, 1990). However, task strategies are not contingent upon goal setting, as they may develop in the absence of goal setting (Mitchell & Silver, 1990).

Social-cognitive theory (Bandura, 1986, 1991, 1997) helps to explain the influence that task strategies have on performance. A major component of social-cognitive theory is self-regulation, or the ability an individual possesses to control his/her own motivation and behavior (Bandura & Simon, 1977). Strategies are one method that individuals can use to self-regulate, which will lead to higher levels of self-efficacy. Self-efficacy will in turn lead to increased levels of performance (Durham, Knight, & Locke, 1997). Task strategies can also be conceptualized as alternate ways to perform the task. So, by employing multiple methods, ideally one identifies the most effective strategy that ultimately maximizes performance.

Several studies have tested a direct relationship between task strategies and performance. Using a field sample, Earley, Lee, and Hanson (1990) found an employee self-report measure of task strategy use was significantly and positively related to supervisor performance ratings. In a laboratory study, Saavedra, Earley, and Van Dyne (1993) also found a positive relationship between strategy use and both performance quality and quantity. Chesney and Locke (1991) found that strategies had a significant effect on performance using a sample of graduating seniors engaging in a computer-

simulated strategic management business game. In another laboratory study, Audia, Kristof-Brown, Brown, and Locke (1996) showed that work processes, also referred to as strategies, were significantly and positively related to both performance quality and quantity. Based on social cognitive theory and previous research, I hypothesize that task strategy use will be positively related to task performance.

H7: *Reactive* task strategy use will be positively related to task performance.

Situational Constraints and Task Strategies

The development of effective strategies should include consideration of situational constraints (Marks, Mathieu, & Zaccaro, 2001); however, the relationship between situational constraints and task strategies has not been extensively researched. Only one study has examined this relationship (Tesluk & Mathieu, 1999), and these researchers found that situational constraints were negatively related to proactive task strategies. Tesluk and Mathieu (1999) focused on proactive task strategies, whereas I focus on reactive task strategies in this study.

Tesluk and Mathieu (1999) proposed a heuristic model depicting the influence of performance barriers (hereafter referred to as situational constraints) on work group performance and how the workgroups might respond to these constraints by employing crew problem management actions (hereafter referred to as task strategies; Figure 1). Specifically, they proposed that situational constraints have a direct effect on crew performance and that proactive task strategies moderate the situational constraint-performance relationship. They also hypothesized that as the use of *proactive* task strategies increased the severity of situational constraints would decrease. They found

that situational constraints had a significant negative relationship with performance, but contrary to expectation, task strategies did not significantly interact with situational constraints. The authors note that effective crews may have been using strategies other than the ones measured in the study, which could account for the lack of findings (Tesluk & Mathieu, 1999). The researchers found crews that used more *proactive* task strategies reported significantly fewer situational constraints. Thus, they found a negative relationship between *proactive* task strategies and situational constraints.

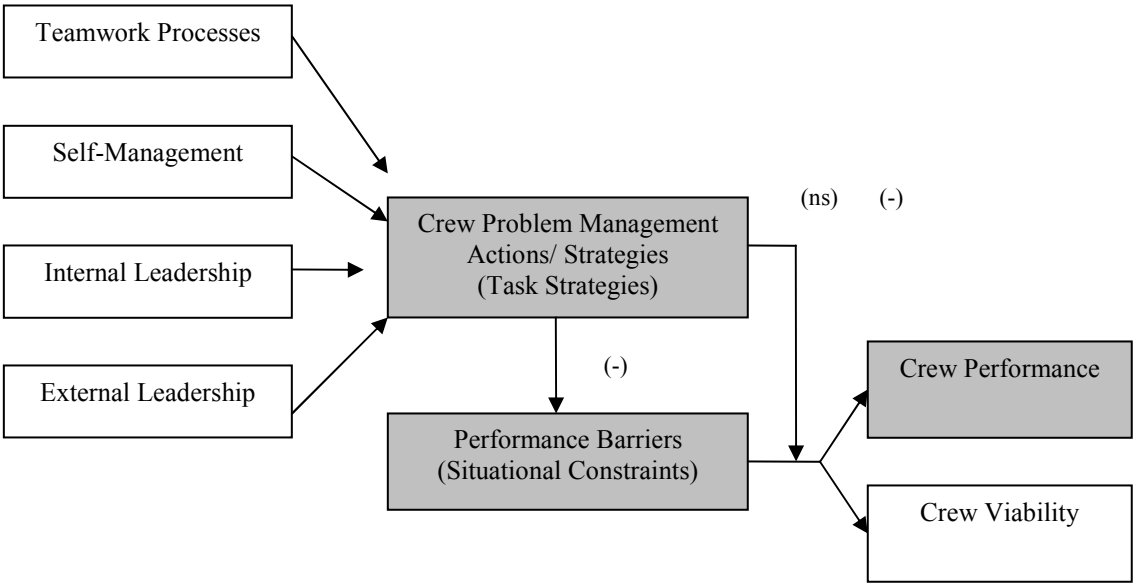

Figure 1. Tesluk and Mathieu's (1999) model describing linkages between crew characteristics, crew problem-management actions/strategies, performance barriers, and effectiveness. Shaded boxed represent variables of interest to the current study.

I propose a slightly modified pattern of relationships in which *reactive task* strategy use is a function of situational constraints. In other words, when individuals are faced with situational constraints, they are more likely to employ various task strategies

to deal with those constraints in an effort to reduce the negative/aversive effects situational constraints have on performance. Thus, reactive strategies are behaviors employed to buffer the negative effects of situational constraints. For example, to minimize the influence of a time availability constraint, an employee might use a task strategy that helps him or her to work more efficiently (e.g., limit interruptions by turning off the phone and email). By implementing this strategy, the employee is able to reduce the potentially negative effects of the time constraint on performance. Thus, I anticipate a positive relationship between situational constraints and task strategies.

However, I do not expect the relationship between situational constraints and task strategies to be linear. When there are an excessive number of constraints imposed, I anticipate that the individual will feel frustrated to the point of incapacitation and not employ any task strategies. In addition, when no constraints are imposed, I expect the individual will not feel a strong need to strategize. Therefore, I propose that in situations with either a high level of constraints or a very low level of constraints, individuals will employ fewer strategies than in situations with a moderate level of constraints.

H8: The relationship between situational constraints and *reactive* task strategy use is curvilinear (inverted U-shape), such that when constraints are very high or very low, few strategies will be employed, but when constraints are moderate more strategies will be employed.

Building to the objective of when do situational constraints affect performance, I further propose that task strategy use will moderate the relationship between situational constraints and performance, such that the greater the number of task strategies used, the

weaker the relationship between situational constraints and performance. Task strategies may allow individuals to manage their situational constraints and improve their performance (Tesluk & Mathieu, 1999). It is well established that situational constraints are outside of the control of the individual and that situational constraints are likely to have a negative effect on performance (e.g., O'Connor et al., 1982). Individuals may not be able to avoid the presence of situational constraints, but they may be able to use task strategies in a way that minimizes the impact of those situational constraints on performance (Tesluk & Mathieu, 1999). Tesluk and Mathieu (1999) tested the interaction of *proactive* task strategies and situational constraints on performance, but they did not find significant moderating effects. One possible explanation for these non-significant findings that the authors suggest is that crews may have been using task strategies that were either not measured or that the study's cross-sectional design was not able to capture (Tesluk & Mathieu, 1999). A second possible explanation is that the authors only measured crews' *proactive* task strategies which may only be effective if crews were able to predict when and which kind of situational constraints were going to occur. *Reactive* task strategies may show a different relationship with situational constraints and performance. *Reactiv*e strategies by definition are behaviors that follow situational constraints. In other words *reactive* strategies are the result of the presence of situational constraints in the task environment. When an individual employs *reactive* strategies, situational constraints will have a less negative impact on performance. (A model depicting all of the hypothesized relationships is presented in Figure 2).

H9: Reactive task strategies will moderate the relationship between situational constraints and performance, such that the relationship between situational constraints and performance will be weaker when the number of task strategies is high rather than low.

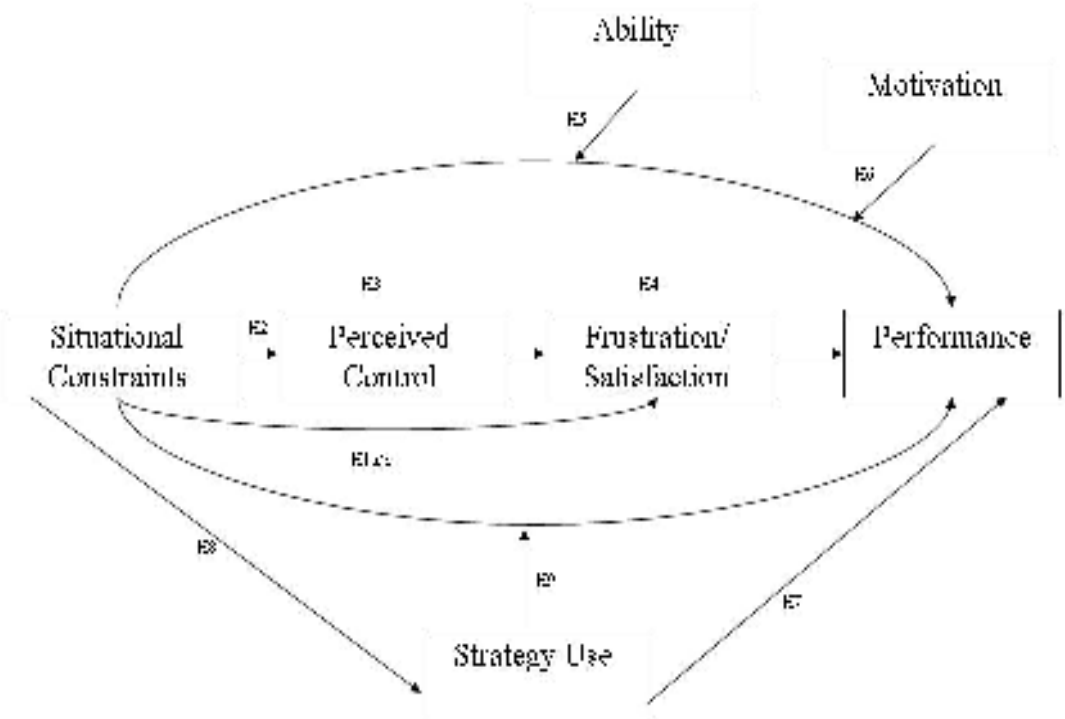

Figure 2. Proposed model depicting the relationships between situational constraints, perceived control, task strategies and performance.

CHAPTER II

METHOD

Participants

The participants for this study were obtained from the psychology subject pool and received course credit for participating in the study. One hundred and fifty eight participants performed the "Manufacturing Game" and were assigned to one of three different conditions; 55 participants were in the first condition, 50 in the second, and 53 were in the third condition. A sample of this size provided adequate power (.80) to detect a medium effect size (d = .40) between the groups (p = .05).

Of the 158 participants, 31% were male and 68% were female. The majority of the participants were Caucasian (76%), 12% were Hispanic, less than one percent were African American, less than one percent were Asian, and less than one percent classified their race as other. The average age of the participants was 18.89 years (SD = 1.18) range: 18-28). There were no significant differences across conditions based on sex, race, or age.

Experimental Task

The task used in this study was an adaptation of "The Manufacturing Game" (Zaccaro, Foti, & Kenny, 1991). The objective of the task was to obtain as much profit as possible by building three Lego© products (cars, robots, and boats) and selling them to the experimenter at pre-established market prices, which changed periodically (either every five or ten minutes depending on experimental condition). The cost of raw materials (i.e., the Lego© blocks), instructions for assembly, an order form for raw

materials, a list of pieces needed to build each model, and diagrams and three-dimensional models of the products to be assembled were provided to the participants prior to the production phase of the task. This task was chosen, because it allowed for easy manipulation of situational constraints.

In an attempt to ensure participant effort on the task and to motivate them to look for task strategies to improve their performance (Locke et al., 1981; Mitchell & Silver, 1990), all participants were assigned a specific and challenging goal of $15,000 in profit. This goal was chosen after pilot testing, because it proved to be a difficult but not impossible goal for this task.

A pilot study was conducted to ensure that the experimental manipulations were interpreted correctly. Forty-eight individuals participated in pilot testing, 13 participants were in the first condition, 14 were in the second condition, and 15 were in the third condition. Pilot testing data were used to identify task strategies employed on the Lego© building task and to determine the extent to which they could be coded in real time by experimenters.

Procedure

A 3-way (low, moderate, and high constraint) randomized between-subjects factorial design was employed for this study. Participants attended a two-hour experimental session that included a ten-minute practice session and a 20-minute performance session.

Participants were randomly assigned to one of the three experimental conditions described below. They were then asked to complete a demographic questionnaire (see

Appendix A). In addition participants completed a manual dexterity test, and a spatial ability measure, these were administered to assess various aspects of participant ability as both of these types of ability might be related to performance on the Lego building task. Next, participants were given instructions on how to perform the task. Participants completed a ten-minute practice session under low constraint conditions. They were given $12,000 with which to buy Lego© materials, market prices did not change, and three-dimensional models were provided (see Appendix B). Performance on the practice session was calculated and communicated to the participant. A detailed study protocol by time is depicted in Table 4

After the practice session, participants completed a questionnaire, which consisted of measures of frustration, task satisfaction, intrinsic motivation, task-specific self-efficacy, task interest, and perceived control, as well as a measure of cognitive ability. Next, participants were given the instructions and accompanying documents for their corresponding condition (see Appendix C). Participants were then given ten minutes in which to strategize. Participants were asked to generate a step-by-step plan that would improve their performance on the task (see Appendix D).

Table 4

Summary of Study Protocol

Start Time	Protocol Task
00:00:00	Introduction/Welcome
00:00:30	Informed Consent
00:01:30	Questionnaire A -demographic questionnaire
00:05:30	Spatial Ability
00:13:30	Manual Dexterity Task
00:25:30	Practice Session Instructions
00:27:30	Strategizing Time 1
00:39:00	Practice Session
00:50:00	Questionnaire B -frustration -task satisfaction -perceived behavioral control -intrinsic motivation -task-specific self-efficacy -task interest
00:57:00	Cognitive Ability
01:10:30	Performance Session Instructions
01:13:30	Strategizing Time 2
01:24:00	Performance Session
01:45:00	Questionnaire C -frustration -task satisfaction -perceived behavioral control -intrinsic motivation -task-specific self-efficacy -task interest -manipulation check items
01:55:00	Debriefing

Upon completion of the performance session, participants were asked to complete one final questionnaire which included measures of frustration, task satisfaction, intrinsic motivation, specific-self efficacy (with instructions asking them to respond as if they were to complete the performance session again), task interest and perceived control that were previously administered, as well as a measure to assess the effectiveness of the experimental manipulation. Participants were then debriefed and dismissed.

Situational Constraint Manipulation

In this study, three task-related resources (budgetary support, scheduling of activities, and job-related information) were simultaneously manipulated in the same direction to correspond to three levels of situational constraints (low, moderate, and high). Participants assigned to the *low situational constraint condition* were given $12,000 with which to buy Lego© materials, market prices did not change, and three-dimensional models were provided. Participants assigned to the *moderate situational constraint condition* were given $8,000 with which to buy Lego© materials. In this condition the market prices changed every 10 minutes and two-dimensional models (in which the sizes of the blocks were labeled) were provided. By doing this, I constrained budgetary support, scheduling of activities and job-related information to a moderate degree relative to the low and high situational constraint conditions. The participants assigned to the *high situational constraint condition* were given only $4,000 with which to buy Lego© materials. In this condition the market prices changed every five minutes and only pictures of the models (without the sizes of the blocks labeled) were provided.

These conditions were modeled after Peters et al. (1980), who simultaneously manipulated the job-related information, tools and equipment, materials and supplies, and task preparation of participants building three-dimensional models from Erector ® set parts into either a facilitating or an inhibiting condition.

Manipulation Check

Three items developed for this study were used to assess the effectiveness of the experimental manipulations. Participants were asked to answer three questions. (1) "How much money did you have during the 20 minute performance session?" Response options were: $4,000, $8,000, or $12,000 and coded as 1 through 3, respectively. (2) "How many times did the prices to buy and sell Legos© change during the 20 minute performance period?" Response options were: 0 times, 1 times or 3 times and coded as 1 through 3, respectively. (3) "Were the Lego© models available during the 20 minute performance session?" Response options were: no or yes and coded as 1 and 2, respectively (see Appendix E).

Measures

Unless otherwise indicated, all items were responded to on a 5-point agreement scale (1 = strongly disagree, 5 = strongly agree).

Performance. Performance was the amount of profit each individual earned while performing the manufacturing game (the second task). This was calculated by subtracting the amount of money each participant started with ($12,000, $8,000, or $4,000) from the amount earned based on accurately built products sold. If a participant sold a defective model, they were told it was defective but not specifically what was

wrong with it, they lost the parts used to build the defective model, and earned no money for it.

Perceived Behavioral Control. Perceived behavioral control was measured using seven items adapted from Armitage and Connor (1999). Sample items included, "Whether or not I perform well on the Lego© building task is entirely up to me," and "I have a high degree of personal control over my performance in the Lego© building task." The internal consistency estimate for the scores on this measure was $\alpha = .88$ (see Appendix F).

Task-Specific Self-Efficacy. Task-specific self efficacy was measured using five items adapted from a task-specific self efficacy measure used in Gully, Payne, Koles, and Whiteman (2002). Sample items included "I have no doubt that I will do well on the Lego© building task," "I think that my performance will be more than adequate on the Lego© building task," and "I feel good about my capability to do well on the Lego© building task." The internal consistency estimate for the scores on this measure was $\alpha = .91$ (see Appendix G).

Intrinsic Motivation. Levels of intrinsic motivation were measured using two items adapted from Lawler and Hall (1970) and five items adapted from Warr, Cook, and Wall (1979). This scale included items such as, "I feel a sense of personal satisfaction when I do the Lego© building task well", and "Doing the Lego© building task well increases my feelings of self-esteem". The internal consistency estimate for the scores on this measure was $\alpha = .81$ (see Appendix H).

Task Interest. Task interest was measured using seven items adapted from Daniel and Esser (1980). Items were modified so that they could be answered on a Likert scale, as opposed to the original graphic rating scale. Sample items include, "The Lego© building task is exciting," "The Lego© building task is dull" (reverse scored), and "The Lego© building task is boring" (reverse scored). The internal consistency estimate for the scores on this measure was $\alpha = .74$(see Appendix I).

Frustration. Frustration with the Lego© building task was measured using three items adapted from Peters et al. (1980). An example item read "Trying to complete the Lego© building task was a very frustrating experience." The internal consistency estimate for the scores on this measure was $\alpha = .80$ (see Appendix J).

Task Satisfaction. Task satisfaction was assessed using three items adapted from Cammann, Fichman, Jenkins, and Klesh's (1983) Overall Job Satisfaction measure, and two items adapted from the General Satisfaction subscale of Hackman and Oldham's (1974) Job Diagnostic Survey. Example items include, "Generally speaking, I am very satisfied with this task," and "In general, I don't like this task (reverse scored)." The internal consistency estimate for the scores on this measure was $\alpha = .90$ (see Appendix K).

Cognitive Ability. Cognitive ability was measured using the Wonderlic Personnel Test (Wonderlic, 2000). The Wonderlic Personnel Test is a timed 50-item test that measures participant cognitive ability. Participants were given 12 minutes to complete as many questions as possible. Items included word and number comparisons, disarranged sentences, sentence parallelism, following directions, number comparisons,

number series, analysis of geometric figures, and story problems requiring either mathematics or logic solutions (Wonderlic, 2000). Items were scored as either correct or incorrect, and correct answers were summed to create test scores that ranged from 0 to 50.

Spatial Ability. Spatial ability was measured using the Card Rotation test from the Kit of Factor-Referenced Cognitive Tests (Educational Testing Service, 1976). The Card Rotation test presents a drawing of a card on the left of a vertical line and eight cards on the right. The participant was asked to decide whether each of the eight cards was the same as or different from the card at the left. There were two parts of this test, each part had 10 items, and consistent with the test publication manual, participants were given three minutes to complete each part. Scores were computed by summing the total number of items answered correctly and subtracting the total number of items answered incorrectly (Educational Testing Service, 1976). The internal consistency estimate for the scores on this measure was $\alpha = .88$.

Strategy Use. Strategy use was assessed by the experimenter while the individuals were performing the task. Task strategies were identified during pilot testing as effective ways to perform the task. A checklist of these strategies was created and provided to the experimenter (see Appendix L). Experimenters were asked to indicate the frequency with which each participant engaged in each of the listed strategies.

*Manual Dexterity***.** Each participant's level of manual dexterity was assessed using the Purdue Pegboard. The Purdue Pegboard task was administered by following the standard instructions provided in the manual by Tiffin (1948). There were three

subtasks to this test of manual dexterity. The first subtask required participants to place as many pegs as possible into the holes in the pegboard, using one hand, in 30 seconds. This subtask was repeated with both the right and left hand. The second subtask instructed participants to place as many pegs into the holes as possible, using both hands, in 30 seconds. The third subtask was an assembly task. This task required subjects to place a peg in a hole, put a washer onto the peg, then a collar and another washer. Subjects had to place as many such assemblies as possible within 60 seconds alternating hands to pick up the components. An overall score was arrived at by creating an average score for each subtask and then summing across the subtasks.

Analyses

Pearson correlations as well as ANOVAs were used to test the negative relationship between situational constraints and affective reactions (H1), the negative relationship between situational constraints and perceived behavioral control (H2). Pearson correlations were used to test the positive relationship between strategy use and performance (H7).

Hypothesis 3 was tested using mediated regression analyses. To establish that there was a significant mediation effect, the relationship between situational constraints and (a) task satisfaction and (b) frustration should have been reduced when perceived behavioral control was added to the model. Baron and Kenny's (1986) three steps were used to test this hypothesis.

Hypothesis 4, which states that both (a) perceived behavioral control (b) task satisfaction and (c) frustration would mediate the relationship between situational

constraints and performance; was tested using mediated regression analyses. Each mediator was tested separately using Baron and Kenny's (1986) recommended steps.

Hypotheses 5 and 6 were tested using moderated regression analyses using predictor variables that have first been centered (Cohen, Cohen, West, & Aiken, 2003). In order for Hypothesis 5 (H5) to have been supported, R^2 needed to change significantly when the interaction term between situational constraints and one of the three ability measures (spatial, manual dexterity, or cognitive ability) was added to the equation. The change in R^2 for the interaction term between situational constraints and at least one of three motivation measures (intrinsic motivation, task-specific self efficacy, or task interest) must also have been significant in order to retain Hypothesis 6 (H6). Significant interactions were plotted to see if the nature of the interactions were in the hypothesized direction.

Hypothesis 8 (H8) stated that the relationship between situational constraints and task strategy use would be curvilinear (an inverted U-shape). To test Hypothesis 8, a multiple regression was conducted using situational constraints and the squared value of situational constraints as predictors. If the beta weight for the squared value of situational constraints was significant, then there would be evidence of a curvilinear effect.

Hypothesis 9 (H9) proposed that strategy use would moderate the relationship between situational constraints and performance. To test Hypothesis 9, moderated regression analyses were conducted. In order for Hypothesis 9 to be supported, the change in R^2 for the interaction term between situational constraints and strategy use

must have been significant and the nature of the interaction would need to be consistent with prediction.

CHAPTER III

RESULTS

As noted earlier, three items were administered to all participants to determine the strength of the experienced manipulation. Independent samples t-tests revealed that there were significant differences between conditions in the expected direction. Table 5 shows the results of these analyses. These manipulation check items show that the experimental manipulation was effective and significant differences were perceived by participants regarding the temporal, financial, and informational resources provided across conditions.

Table 5

Manipulation Check Analyses

Comparison	Manipulation Check Items	M_1	SD_1	M_2	SD_2	t	d
Condition 1 vs. Condition 2	Item 1: money available	2.96	.27	2.10	.42	12.59**	2.44**
	Item 2: prices change	1.11	.42	1.88	.33	-11.16**	-2.04**
	Item 3: models available	1.19	.39	1.90	.30	-9.96**	-2.04**
Condition 1 vs. Condition 3	Item 1: money available	2.96	.27	1.25	.62	22.76**	1.75**
	Item 2: prices change	1.11	.42	2.83	.47	-22.82**	-3.86**
	Item 3: models available	1.19	.39	1.89	.32	-10.09**	-1.96**
Condition 2 vs. Condition 3	Item 1: money available	2.10	.42	1.25	.62	9.60**	1.61**
	Item 2: prices change	1.88	.33	2.83	.47	-13.56**	-2.34**
	Item 3: models available	1.90	.30	1.89	.32	-.03	0.03

Note. The third question was a yes/no question; therefore there should not be a significant difference between C2 and C3 on this question.
* $p < .05$; ** $p < .01$ (two-tailed).

Means and standard deviations for the outcome variables by condition are presented in Table 6. In order to test Hypotheses 1 and 2, Pearson correlations were

calculated. Consistent with Hypothesis 1a, situational constraints were significantly and negatively related to task satisfaction (r = -.17, p < .05), such that individuals in the high situational constraint condition experienced less satisfaction than individuals in the low situational constraint condition. Consistent with Hypothesis 1b, situational constraints were significantly related to task frustration (r = .18, p < .05), such that individuals in the high situational constraint condition experienced more frustration than individuals in the low situational constraint condition. The correlation between situational constraints and perceived behavioral control failed to reach significance, which is contrary to Hypothesis 2 (r = -.02, p > .05). Descriptive statistics as well as correlations among the key study variables are presented in Table 7.

In addition, ANOVAs were used to further examine the relationships between situational constraints and task satisfaction, frustration, and perceived behavioral control. These results are presented in Table 8. Contrary to prediction, situational constraints did not significantly affect participants' levels of task satisfaction, F (2,155) = 2.63, p > .05, or participants' levels of frustration, F (2,154) = 2.72, p > .05. Also contrary to prediction, situational constraints did not significantly affect participants' levels of perceived behavioral control, F (2,155) = 0.07, p > .05.

Table 6

Means and Standard Deviations by Experimental Condition

	Low		Medium		High	
	M	*SD*	*M*	*SD*	*M*	*SD*
Task satisfaction	3.91	0.54	3.87	0.84	3.64	0.54
Frustration	2.05	0.61	2.20	0.97	2.40	0.68
Perceived Control	3.89	0.44	3.90	0.61	3.87	0.42
Performance	14598.18	10900.95	10694.00	6521.57	9379.26	8355.69

Note. * $p < .05$; ** $p < .01$ (two-tailed).

Table 7

Descriptive Statistics and Correlations Among Study Variables

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Sit Con	1.99	0.83											
2. Task satisfaction	3.81	0.66	-.17*	(.90)									
3. Frustration	2.22	0.78	.18*	-.67**	(.82)								
4. Perceived Control	3.89	0.49	-.02	.68**	-.53**	(.87)							
5. Spatial Ability	104.75	28.03	-.10	.14	-.12	.18*	(.89)						
6. Manual Dexterity	79.97	9.99	-.20**	.14	-.12	.10	.20*	(.80)					
7. Cognitive Ability	27.01	5.69	-.11	.13	-.21**	.17*	.23**	.13	-				
8. T.S.S. Efficacy	3.32	0.80	.00	.36**	-.31**	.48**	.28**	.13	.04	(.90)			
9. Int Mot	3.51	0.59	.02	.47**	-.29**	.51**	.26**	.18*	.17*	.45**	(.82)		
10. Task Interest	3.58	0.52	.11	.31**	-.21**	.28**	.09	.10	.07	.14	.46**	(.73)	
11. Strategy Use	31.19	20.53	-.11	.12	-.13	.07	.04	.02	.09	.03	.02	.00	-
12. Performance	11612.03	9045.64	-.24**	.38**	-.36**	.22**	.14	.25**	.28**	.13	.11	.01	.50**

Note. Sit Con=Situational Constraints, T.S.S. Efficacy=Task Specific Self Efficacy, Int Mot=Intrinsic Motivation

* $p < .05$; ** $p < .01$ (two-tailed).

Table 8

ANOVA Results for Task Satisfaction. Frustration, and Perceived Behavioral Control

Source		*SS*	*df*	*F*	η	*p*
Task Satisfaction	Between	2.26	2	2.63	0.18	0.08
	Within	66.42	155			
Frustration	Between	3.22	2	2.72	0.18	0.07
	Within	91.37	154			
Perceived Control	Between	0.034	2	0.07	0.03	0.93
	Within	38.24	155			

Note. * $p < .05$; ** $p < .01$ (two-tailed).

Hypotheses 3a/3b, which stated that perceived behavioral control would mediate the relationships between situational constraints and (a) task satisfaction and (b) frustration, were tested using mediated regression analyses using the steps recommended by Baron and Kenny (1986). However, these hypotheses were not supported. Table 9 presents the results of these analyses. The first step for Hypothesis 3a was to regress task satisfaction on situational constraints ($\beta = -.14$, $p < .05$). The second step was to regress perceived behavioral control on situational constraints ($\beta = -.01$, $p > .05$). The final step was to regress task satisfaction on situational constraints controlling for perceived behavioral control ($\beta = -.12$, $p < .01$). To support this hypothesis, the first two steps should have been significant and the third step should not have been significant. However, for these data, step two was not significant, failing to support Hypothesis 3a. Similar analyses were conducted in order to test Hypothesis 3b. Frustration was regressed on situational constraints ($\beta = .17$, $p < .05$). Then, perceived behavioral control was regressed on situational constraints ($\beta = -.01$, $p > .05$). Finally, frustration

was regressed on situational constraints controlling for perceived behavioral control (β = .16, $p < .05$). Once again, step two, or the relationship between situational constraints and perceived behavioral control was not significant, failing to support Hypothesis 3b.

Table 9

Mediation Analyses of the Situational Constraint-Affective Reactions Relationship (H3a/b)

	B	*SE B*	β	R^2
3a: Perceived Control Mediates Situational Constraints-Task satisfaction Relationship				
Step 1				
Task Satisfaction on Situational Constraints	-.14	.06	-.17	.03*
Step 2				
Perceived Control on Situational Constraints	-.01	.05	-.02	.00
Step 3				
Task Satisfaction on Perceived Control	.90	.08	.67	.48**
Task Satisfaction on Situational Constraints controlling for Perceived Control	-.12	.08	-.15	
3b: Perceived Control Mediates Situational Constraints – Frustration Relationship				
Step 1				
Frustration on Situational Constraints	.17	.07	.18	.03*
Step 2				
Perceived Control Situational Constraints	-.01	.05	-.02	.00
Step 3				
Frustration on Perceived Behavioral Control	-.83	.11	-.52	.31**
Frustration on Situational Constraints controlling for Perceived Control	.16	.06	.17	

Note $*p < .05$; $**p < .01$ (two-tailed).

Hypothesis 4 proposed that (a) perceived behavioral control, (b) task satisfaction, and (c) frustration would mediate the relationship between situational constraints and performance. These hypotheses were tested using mediated regression analyses as recommended by Baron and Kenny (1986) and using the Sobel (1982) test for statistical

significance. According to Baron and Kenny's (1986) three steps, there was evidence for task satisfaction and frustration mediating the relationship between situational constraints and performance; and the Sobel (1982) test confirmed this result. The results of these analyses are presented in Table 10. In order to test Hypothesis 4a, performance was regressed on situational constraints (β = -.24, p < .05). Then, perceived behavioral control was regressed on situational constraints (β = -.02, p > .05). Finally, performance was regressed on situational constraints controlling for perceived behavioral control (β = -.24, p < .05). Step 2 was not significant, failing to support Hypothesis 4a. In order to test Hypothesis 4b, performance was regressed on situational constraints in the first step (β = -.24, p < .05). In the second step task satisfaction was regressed on situational constraints (β = -.17, p < .05). Then performance was regressed on situational constraints controlling for task satisfaction (β = -.18, p < .05). Baron and Kenny's (1986) three step procedure showed evidence for partial mediation, and the Sobel (1982) test indicated that the indirect effect was significant (z = -1.95, $p \leq .05$). Similarly, to test Hypothesis 4c, performance was regressed on situational constraints (β = -.24, p < .05). Then frustration was regressed on situational constraints (β = .18, p < .05). Finally, in the third step performance was regressed on situational constraints while controlling for frustration (β = -.18, p < .05). Baron and Kenny's (1986) step showed evidence for partial mediation, and once again the Sobel test confirmed this result (z = -2.02, p < .05).

Table 10

Mediation Analyses of the Situational Constraint-Performance Relationship (H4abc)

	B	*SE B*	β	R^2
H4a: Perceived Control Mediates Situational Constraints - Performance Relationship				
Step 1				
Performance on Situational Constraints	-2617.05	847.80	-.24	.06**
Step 2				
Perceived Control on Situational Constraints	-.01	.05	-.02	.00
Step 3				
Performance on Perceived Control	4010.94	1392.19	.22	.11**
Performance on Situational Constraints controlling for Perceived Control	-2565.39	828.82	-.24	
H4b: Task satisfaction Mediates Situational Constraints - Performance Relationship				
Step 1				
Performance on Situational Constraints	-2617.05	847.80	-.24	.06**
Step 2				
Task Satisfaction on Situational Constraints	-.14	.06	-.17	.03*
Step 3				
Task Satisfaction to Performance	4790.67	1011.29	.35	.18**
Performance on Situational Constraints controlling for Task Satisfaction	-1971.46	806.52	-.18	
H4c: Frustration Mediates Situational Constraints - Performance Relationship				
Step 1				
Performance on Situational Constraints	-2617.05	847.80	-.24	.06**
Step 2				
Frustration on Situational Constraints	.17	.07	.18	.03*
Step 3				
Performance on Frustration	-3707.83	877.96	-.32	.16**
Performance on Situational Constraints controlling for Frustration	-1978.44	821.76	-.18	

Note. * $p < .05$; ** $p < .01$ (two-tailed).

In an effort to test relationships depicted but not formally hypothesized in the theoretical model proposed, some post-hoc exploratory analyses were conducted. Mediated regression analyses also showed that both task satisfaction and frustration fully mediate the relationship between perceived behavioral control and performance. The results from these analyses are presented in Table 11. First, in order to test if task satisfaction mediated the relationship between perceived behavioral control and performance, performance was regressed on perceived behavioral control ($\beta = .22$, $p < .05$). Then task satisfaction was regressed on perceived behavioral control ($\beta = .68$, $p < .01$). In the third step, performance was regressed on perceived behavioral control while controlling for task satisfaction ($\beta = -.06$, $p > .05$). Baron and Kenny's (1986) steps showed evidence for full mediation and the results of the Sobel (1982) confirmed this result ($z = 3.94$, $p < .05$). The same procedure was used to test if frustration mediated the relationship between perceived behavioral control and performance. In the first step performance was regressed on perceived behavioral control ($\beta = .22$, $p < .05$). Then frustration was regressed on perceived behavioral control ($\beta = -.32$, $p < .05$). Finally performance was regressed on perceived behavioral control while controlling for the effects of frustration ($\beta = .06$, $p > .05$). The Sobel (1982) test confirmed that frustration also fully mediated the relationship between perceived behavioral control and performance ($z = 3.29$, $p < .05$).

Table 11

Exploratory Mediation Analyses of the Perceived Control-Performance Relationship

	B	*SE B*	β	R^2
Task satisfaction Mediates Perceived Control – Performance Relationship				
Step 1				
Performance on Perceived Control	4104.16	1429.63	.22	.05**
Step 2				
Task Satisfaction on Perceived Control	.91	.08	.68	.46**
Step 3				
Performance on Task satisfaction	5784.86	1378.19	.42	.15**
Performance on Perceived Control controlling for Task Satisfaction	-1141.00	1846.24	-.06	
Frustration Mediates Perceived Control – Performance Relationship				
Step 1				
Performance on Perceived Control	4104.16	1429.63	.22	.05**
Step 2				
Frustration on Perceived Control	-.84	.11	-.53	.28**
Step 3				
Performance on Frustration	-3751.92	1031.35	-.32	.13**
Performance on Perceived Control controlling for Frustration	1050.61	1648.49	.06	

Note. * $p < .05$; ** $p < .01$ (two-tailed).

Hypothesis 5, which stated that ability would moderate the relationship between situational constraints and performance, was tested using moderated regression analyses. Three different measures of ability were used: spatial ability, manual dexterity, and cognitive ability. Separate regressions were run for each type of ability. The data failed to support the hypothesis that ability moderates the relationship between situational constraints and performance. Results for these analyses are presented in Table 12.

Table 12

Ability as a Moderator of the Situational Constraint-Performance Relationship (H5)

	B	*SE B*	β	R^2	ΔR^2
Cognitive Ability					
Step 1					
Situational Constraints	-2617.05	847.80	-.24**	.058	
Step 2					
Situational Constraints	-2308.08	826.69	-.21**	.121	.063**
Cognitive Ability	402.06	120.41	.25**		
Step 3					
Situational Constraints	-2359.04	825.70	-.22**	.130	.009
Cognitive Ability	415.12	120.54	.26**		
Situational Constraints x Cognitive Ability	-204.61	156.22	-.09		
Spatial Ability					
Step 1					
Situational Constraints	-2617.05	847.80	-.24**	.058	
Step 2					
Situational Constraints	-2491.16	849.01	-.23**	.070	.012
Spatial Ability	36.89	25.12	.11		
Step 3					
Situational Constraints	-2476.51	849.57	-.23**	.076	.006
Spatial Ability	40.70	120.54	.13		
Situational Constraints x Spatial Ability	-29.18	31.63	-.07		
Manual Dexterity					
Step 1					
Situational Constraints	-2617.05	847.80	-.24**	.058	
Step 2					
Situational Constraints	-2161.17	847.70	-.20*	.100	.042*
Manual Dexterity	95.56	35.15	.21**		
Step 3					
Situational Constraints	-2076.84	844.73	-.19*	.0116	.016
Manual Dexterity	94.23	34.97	.21**	.058	
Situational Constraints x Manual Dexterity	-71.94	43.98	-.12		

Note. * $p < .05$; ** $p < .01$ (two-tailed).

Hypothesis 6 stated that motivation would moderate the relationship between situational constraints and performance. This hypothesis was tested using three different measures of motivation: task-specific self efficacy, intrinsic motivation, and task interest. None of the three measures of motivation interacted significantly with

situational constraints to predict performance on the Lego© building task. Results for these analyses are presented in Table 13

Table 13

Motivation as a Moderator of the Situational Constraint-Performance Relationship (H6)

	B	*SE B*	β	R^2	ΔR^2
Task-specific self efficacy					
Step 1					
Situational Constraints	-2617.05	847.80	-.24**	.058	
Step 2					
Situational Constraints	-2625.78	842.91	-.24**	.074	.016
Task-specific self efficacy	1466.78	873.49	.13		
Step 3					
Situational Constraints	-633.69	847.12	-.24**	.075	.001
Task-specific self efficacy	1479.67	880.21	.13		
Situational Constraints x Task-specific self efficacy	-165.66	1071.03	-.01		
Intrinsic Motivation					
Step 1					
Situational Constraints	-2617.05	847.80	-.24**	.058	
Step 2					
Situational Constraints	-2637.41	844.86	-.24**	.070	.012
Intrinsic Motivation	1745.60	1196.40	.13		
Step 3					
Situational Constraints	-2632.15	845.77	-.24**	.074	.004
Intrinsic Motivation	1440.95	1253.71	.09		
Situational Constraints x Intrinsic Motivation	1230.30	1496.88	.07		
Task Interest					
Step 1					
Situational Constraints	-2617.05	847.80	-.24**	.058	
Step 2					
Situational Constraints	-2652.57	854.83	-.24**	.059	.001
Task Interest	535.79	1354.75	.03		
Step 3					
Situational Constraints	-2664.15	857.52	-.24**	.060	.001
Task Interest	426.73	1382.01	.03		
Situational Constraints x Task Interest	-751.88	1755.89	-.03		

Note. * $p < .05$; ** $p < .01$ (two-tailed).

To test Hypothesis 7 another Pearson correlation was computed. Consistent with expectation, the relationship between strategy use and performance was significant and in the predicted direction ($r = .46$, $p < .01$; see Table 8).

Hypothesis 8 proposed that there would be a curvilinear relationship between situational constraints and performance. In order to test this, a multiple regression was conducted using situational constraints and the squared value of situational constraints as predictors. A significant beta weight for the squared value of situational constraints would indicate a curvilinear effect; however the beta weight was not significant ($\beta = .48$, $p > .05$; see Table 14). Therefore, Hypothesis 8 failed to be supported by the data.

Table 14

Curvilinear Relationship Between Situational Constraints and Task Strategy Use (H8)

	B	*SE B*	β	R^2	ΔR^2
Step 1					
Situational Constraints	-2617.05	848.86	-.24**	.058	
Step 2					
Situational Constraints	-7788.35	6083.64	-.71	.062	.004
Situational Constraints x Situational Constraints	1294.72	1508.25	.48		

Note. * $p < .05$; ** $p < .01$ (two-tailed).

Hypothesis 9 predicted that reactive task strategy use would act as a moderator of the situational constraint-performance relationship. Contrary to expectation, the data failed to support this hypothesis ($\beta = -.11$, $p > .05$; see Table 15).

Table 15

Task Strategy Use as a Moderator of the Situational Constraint-Performance Relationship (H9)

	B	SE B	β	R^2	ΔR^2
Step 1				.058	
Situational Constraints	-2617.05	848.86	-.24**		
Step 2				.29	.232**
Situational Constraints	-2035.22	742.69	-.18**		
Reactive Task Strategy Use	181.94	25.49	.49*		
Step 3				.30	.01
Situational Constraints	-1996.76	740.31	-.18**		
Reactive Task Strategy Use	169.54	26.74	.45**		
Situational Constraints x Reactive Task Strategy Use	-45.33	30.68	-.11		

Note. * $p < .05$; ** $p < .01$ (two-tailed).

CHAPTER IV

DISCUSSION AND CONCLUSIONS

Explaining and predicting job performance has long been the goal of I/O psychologists; therefore, studying and explaining variables that affect performance is also an important endeavor. Situational constraints hinder employee performance at work; however, little research has attempted to explain why, when, or how situational constraints adversely affect performance. Based on several different psychological theories (e.g., expectancy theory, theory of planned behavior, cognitive evaluation theory) this study sought to explain *when* and *why* situational constraints affect performance. The goal of this study was to identify both mediators and moderators of the situational constraints-performance relationship. Perceived behavioral control, task satisfaction, and frustration were proposed as mediators of the situational constraint–performance relationship. Ability and motivation were proposed to moderate the relationship between situational constraints and performance.

Why Do Situational Constraints Influence Performance?

The first aim of this study was to explain why situational constraints affect performance. Three possible mediators of the situational constraint-performance relationship were proposed (perceived behavioral control, task satisfaction, and frustration). Perceived behavioral control reflects the amount of control an individual feels over his or her own performance, and takes into account anticipated obstacles (Ajzen, 2005). Therefore, a large number of situational constraints should lead to a low degree of perceived behavioral control, which in turn should lead to lower levels of

performance. A low level of perceived behavioral control was proposed to lead to increased frustration and decreased task satisfaction, because situational constraints hinder individuals from goal attainment (Spector, 1978). Perceived behavioral control and affective reactions were expected to then negatively affect performance.

Consistent with expectations, task satisfaction was negatively affected by situational constraints. As the severity of the situational constraints increased, participants' level of task satisfaction decreased. This finding is consistent with previous research (O'Connor et al., 1982; O'Connor et al., 1984; Peters et al., 1980; Peters et al., 1982; Peters et al; 1988; Phillips & Freedman, 1984). Also, consistent with expectations, participants' frustration levels were adversely affected (increased) by higher levels of situational constraints. These results are consistent with every study that has previously examined the situational constraint-frustration relationship (O'Connor et al., 1982; O'Connor et al., 1984; Peters et al., 1980; Peters et al., 1982; Peters et al., 1988).

Contrary to both theory and expectation, situational constraints were not significantly related to perceived behavioral control. According to the theory of planned behavior, an increase in situational constraints should be associated with a decrease in perceived behavioral control (Ajzen, 1991). A possible explanation for this result is that there may not have been enough variance on the situational constraint variable to detect a significant relationship. Because situational constraints were manipulated, there were only three possible values for this variable, which resulted in a very small amount of variability. To test this explanation, a *perceived* situational constraints measure was also

administered after the Lego© building performance session (α = .65). (See Appendix M.) As suspected, *perceived* situational constraints were significantly related to perceived behavioral control (r = -.20, p < .05).

Contrary to Ajzen's (1991) theory of planned behavior, perceived behavioral control did not mediate the relationship between situational constraints and task satisfaction or situational constraints and frustration. However, when these relationships were tested with the *perceived* situational constraints variable, there was evidence for partial mediation of perceived behavioral control for both task satisfaction and frustration; and Sobel's (1982) significance test confirmed that these partial mediations were statistically significant. Therefore, the lack of variability in the situational constraints variable does not completely explain the lack of significant findings.

Another possible explanation is that the situational constraint manipulations were not strong enough to make individuals feel a significant loss of control over their performance on the Lego© building task. There were virtually no differences in perceived behavioral control across the three conditions. Also, the $15,000 goal for performance on the task was probably not difficult enough as 35% of the participants (28 in the low condition, 15 in the medium condition, and 12 in the high condition) achieved this goal. Locke and his colleagues (Durham et al., 1997; Knight, Durham, & Locke, 2001) recommend that only 10% of individuals should meet or exceed a difficult goal. A stronger manipulation may have yielded different results.

I proposed three mediating mechanisms as explanations for the relationship between situational constraints and performance: perceived behavioral control, task

satisfaction, and frustration. I found no empirical support for perceived behavioral control as a mediator. Unfortunately, results did not vary when the *perceived* situational constraints variable was used instead. Consistent with the theory of planned behavior, both task satisfaction and frustration fully mediated the relationship between perceived behavioral control and performance.

When Do Situational Constraints Influence Performance?

The second goal of this study was to explain when situational constraints influence performance. A number of researchers have proposed that ability and motivation moderate the situational constraint-performance relationship. In fact, many researchers define situational constraints as factors that interfere with the translation of ability and motivation into effective performance (e.g., Dachler & Mobley, 1973; Klein & Kim, 1998; Peters & O'Conner, 1980; Peters & O'Connor, 1988; Peters et al., 1982; Peters et al., 1985; Peters et al., 1988; Steel & Mento, 1986; Steel & Mento, 1989). However, only two studies (O'Connor et al., 1983) have tested an interaction between situational constraints and ability and one of those found an interaction between situational constraints and ability. Only one study has tested and found an interaction between situational constraints and motivation (Peters et al., 1982). This study aimed to contribute to this literature by adding to this limited list of studies that have tested these interactions

Three different types of ability (spatial ability, manual dexterity, and cognitive ability) were used to test the ability as a moderator prediction. It was predicted that ability would moderate the situational constraint-performance relationship such that the

relationship between situational constraints and performance would be strongest when ability was low. It was proposed that high ability individuals would be less affected by the situational constraints, and thus perform better than individuals with low ability placed under the same situational constraints. Contrary to prediction and previous research (O'Connor et al., 1983) the relationship between situational constraints and performance did not change as a function of ability. Consistent with prior research identifying ability as a robust predictor of performance (e.g., Hunter & Hunter, 1986), high ability (particularly manual dexterity and cognitive ability) was consistently related to higher performance on this task. These results did not vary when the *perceived* situational constraints variable was included in the model instead of the manipulated situational constraints variable.

A weak situational constraint manipulation may have also contributed to the lack of support for ability as a moderator. Individuals with all levels of ability tested in this study were able to compensate for the effects of situational constraints, suggesting that the situational constraints may not have been strong enough to inhibit even the individuals with low ability. A stronger situational constraint manipulation may have yielded different results.

Another variable proposed to moderate the relationship between situational constraints and performance was motivation. Three different motivational variables were tested: task-specific self efficacy, intrinsic motivation, and task interest. Contrary to expectation, none of them interacted significantly with the situational constraint manipulation. This relationship was also tested using the *perceived* situational

constraints variable, and again there was no evidence for an interaction between *perceived* situational constraints and motivation in the prediction of performance. This finding is inconsistent with what Peters et al. (1982) found. They operationalized motivation as goal setting and found that it only translated into effective performance in settings where situational constraints were low.

One possible explanation for the lack of support for motivation as a moderator may be that the Lego© building task was not sufficiently motivating. None of the three measures of motivation (i.e., task-specific self efficacy, intrinsic motivation, and task interest) were significantly related to performance on the Lego© building task. This result is surprising given that motivation is a robust predictor of performance (Locke & Latham, 2004). Perhaps retesting this hypothesis using a more motivating task would shed some light on whether situational constraints and motivation indeed interact and if they do interact, what the nature of that interaction is.

Another possible explanation for the lack of significant findings may be due to the fact that motivation was assessed before participants were made aware of the situational constraints imposed on them. Motivation was assessed after the practice session and before participants received instructions for the performance session. Because individuals were unaware that the performance session would be different than the practice session, they could not have taken the situational constraints into account, which may explain why motivation was unrelated to performance on the Lego© building task. Motivation was measured a second time after the Lego© building performance session for a hypothetical additional performance session, and both task-specific self

efficacy (r = -.29, p < .05), and intrinsic motivation (r = -.17, p < .05), significantly correlated with performance on the Lego© building performance session. In addition, this second measure of task-task-specific self efficacy significantly interacted with *perceived* situational constraints in the prediction of performance (β = -.18, $p \leq .05$). However it was in the direction opposite than predicted, such that the relationship between situational constraints and performance was strongest when motivation was high as opposed to low. Neither a second measure of intrinsic motivation nor a second measure of task interest significantly interacted with the manipulated situational constraint variable or the *perceived* situational constraint variable.

The third and final goal of this study was to determine if individuals use task strategies to mitigate the negative effects of situational constraints on performance. Task strategies are methods or procedures that an individual can employ to aid in the attainment of task objectives (Campbell, 1991). Task strategies may be one method that individuals can use to overcome situational constraints and thereby self-regulate their emotions, affective reactions, and energies in a constructive manner. According to social-cognitive theory, self-regulation is necessary for self-efficacy and motivation (Bandura 1986, 1991, 1997), and in turn, performance (Durham et al., 1997).

Consistent with prediction, reactive task strategy use was positively related to task performance. This finding is consistent with previous research (Audia et al., 1996; Earley et al., 1990; Saavedra et al., 1993). The relationship between situational constraints and task strategy use found in this study was different than what was found by Tesluk and Mathieu (1999). They did not find a relationship between proactive task

strategy use and performance. This discrepancy may be due to the fact that the study focused on reactive task strategies and Tesluk and Mathieu (1993) focused on proactive task strategies.

It was further speculated that the relationship between situational constraints and task strategy use would be curvilinear such that when constraints are very high or very low few strategies would be employed, but when situational constraints are moderate more strategies would be employed. Experimentally manipulated situational constraints were not significantly related to task strategy use. This relationship was also tested using the *perceived* situational constraints variable, and again there was no evidence for a curvilinear effect between *perceived* situational constraints and task strategy use.

The final variable examined as an explanation for when situational constraints relate to performance was task strategies. It was expected that the relationship between situational constraints would be weaker when the number of task strategies used was high rather than low. Contrary to expectation, situational constraints negatively related to performance regardless of strategy use. A potential explanation for this finding is that task strategy use was operationalized as a composite frequency score. The greater number of strategies used and the greater the frequency with which they were used led to a higher task strategy use score. Perhaps the measurement of task strategies was inadequate and should include the quality of the strategies employed. The hypothesized interaction between situational constraints and task strategy use was also tested using *perceived* situational constraints in place of the manipulated situational constraint

variable. Similarly, there was no evidence for task strategy use moderating the relationship between *perceived* situational constraints and performance.

Figure 3 shows the final model depicting the relationships between situational constraints, perceived control, affective reactions, task strategies, and performance. The empirical model shows that situational constraints are directly related to task satisfaction, which means that the more situational constraints an individual experiences at work, the less satisfied that individual will feel, which may in turn affect that person's performance on the job. Situational constraints also relate directly to frustration with the task, meaning that as situational constraints increase, frustration with the task increases as well. There is also evidence for a mediation effect of affective reactions on the relationship between situational constraints and performance. Task strategy use also related directly to performance, in that the more strategies an individual employed, the better they performed.

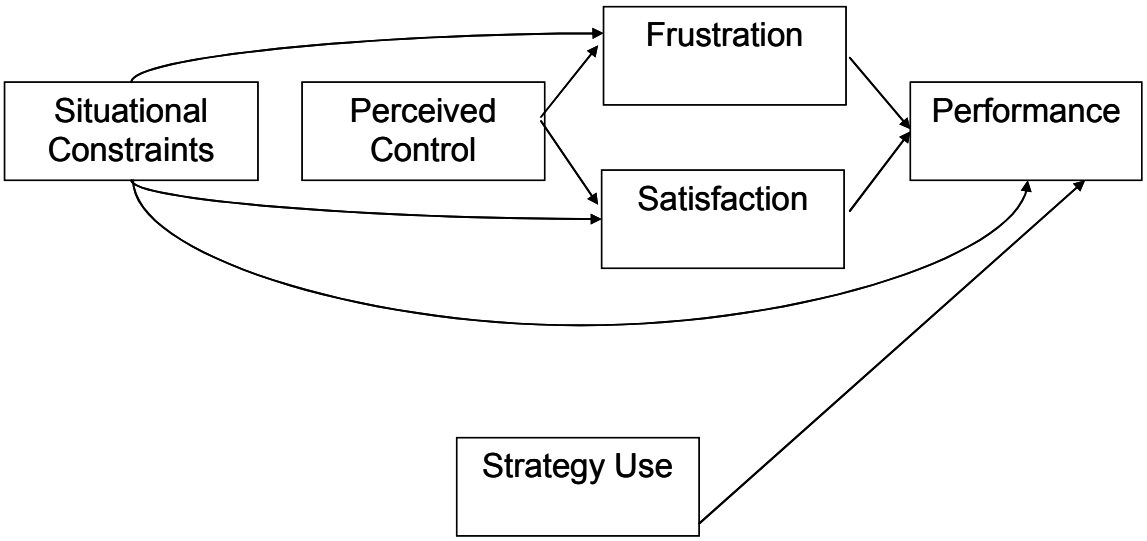

Figure 3. Final model depicting the relationships between situational constraints, perceived control, affective reactions, task strategies, and performance.

Limitations and Directions for Future Research

This study has several limitations. The first of which is inherent to any study conducted in a lab setting, limited external validity. The Lego© building task is a highly contrived task and thus the findings based on this task may not generalize beyond the lab setting. Therefore, the results of this study may not be applicable to when and why situational constraints affect performance in an actual work setting. A lab study was chosen in order to ensure a high degree of control over the amount and type of situational constraints imposed on each individual, as well as to control for any extraneous variables. This control gives the study high internal validity, however it sacrifices external validity. Future researchers should attempt to test this model or a similar model again in the lab setting, using a stronger situational constraints

manipulation. Doing this could lead to a clearer understanding of the relationships between the variables included in this study, as well as to create a model that could generalize across tasks and settings.

Another limitation of this study is the external validity of the nature and level of the manipulations is unknown. There is very little normative data on how many or how often situational constraints are experienced in a work setting, making it difficult to design a study that approximates a true work experience. I used a rational approach to determine what constituted as a high, moderate, or low level of situational constraints. Therefore, the effects of situational constraints found in this study may be task dependent. A normative study that assesses the amount of situational constraints experienced by employees across a wide range of jobs would be the first step in addressing this limitation. If the average amount of situational constraints were known, both between job and within jobs, these data could be used as benchmarks for manipulation levels. Thus, situational constraint manipulations would more accurately reflect what high, moderate, and low levels of situational constraints actually look like in work settings.

A third limitation of this study, related to the second, is that the situational constraint manipulation may not have been strong enough. More than 22% of the individuals in the high situational constraint condition met or exceeded the goal of $15,000 in profit, suggesting that situational constraints may not have been as much of a hindrance as was intended. Additionally, the number of participants who met the performance goal in the moderate situational constraint condition (15) was not

significantly different from the number of people who met the performance in goal in the high situational constraint condition (12), which indicates that there may not have been enough of a difference in the amount or number of situational constraints between the moderate and high situational constraint conditions. Future researchers may want to use a stronger situational constraint manipulation. By increasing the number and/or the strength of the situational constraints imposed, future researchers may be better able to answers questions about when and why situational constraints negatively affect performance.

A fourth potential limitation of the study is one that is innate to the design of the study. Situational constraints was a manipulated variable with only three levels. Thus, the amount of variance in situational constraints was severely restricted. With less variance, there is less potential for the variable to significantly relate to other study variables. Future researchers should focus on measuring *perceived* situational constraints as a continuous variable when they experimentally manipulate situational constraints. Assessing each participant's perceptions of situational constraints may be more effective than treating a categorical situational constraint variable as a continuous variable. Post-hoc analyses using a continuous measure of *perceived* constraints revealed significant relationships that did not emerge with the trichotomized experimental manipulation variable. However, the *perceived* situational constraints variable did not generate different relationships with the proposed moderators. It may be that a stronger manipulation and a continuous situational constraint variable are necessary to reveal these hypothesized relationships.

A final limitation may have been the way that task strategy use was measured. Experimenters coded the number of each type of task strategy that was used, and then a composite of the number of strategies used was created. This may be a problem as some strategies may have been more effective in some situations than on others or some strategies may have been more helpful in some conditions than in others. The composite frequency measure also implies that the more strategies that an individual used the better. However, this is most likely not the case. A very high score may have been more indicative of switching task strategies too often, rather than more successful task strategy use. Instead of assessing the frequency with which task strategies were used, assessing the quality of the task strategies used and/or the number of unique task strategies employed would probably give a clearer picture of how task strategy use relates to both situational constraints and performance on the Lego© building task.

Conclusions

This study had two purposes. The first was to explain why situational constraints affect performance. The data showed that situational constraints relate directly to both task satisfaction and frustration but not to perceived behavioral control. Perceived behavioral control did not mediate the relationship between situational constraints and affective reactions (task satisfaction and frustration), nor did perceived behavioral control, or affective reactions mediate the relationship between situational constraints and performance. However post-hoc analyses revealed that frustration did in fact partially mediate the relationship between *perceived* situational constraints and performance. In addition, both task satisfaction and frustration fully mediated the

relationship between perceived behavioral control and performance, indicating that perceived behavioral control affects performance through affective reactions.

The second purpose of this study was to explain when situational constraints affect performance, by examining ability, motivation, and task strategy use as potential moderators of the situational constraint-performance relationship. None of these variables significantly interacted with situational constraints to predict performance. An experimental manipulation that was too weak and a lack of variability in the situational constraint variable may have prevented me from finding significant relationships.

In conclusion, although this study failed to support many of the proposed hypotheses, it confirmed that situational constraints negatively affect performance. This negative association between situational constraints warrants further research aimed at exploring the mechanisms by which situational constraints affect performance.

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APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

1. Sex ___Male ___Female

2. Age ____years

3. Race ____ Caucasian ___African American ___Hispanic

___ Asian ____Other (specify) _____

4. How many hours of college credit will you have at the end of the semester? _____

5. What is your major? _____ (if undecided, indicate as such)

7. What is your classification?

(a) Freshman (b) Sophomore (c) Junior (d) Senior (e) Other _____

8. What was your SAT/ACT score? _____

9. Was your SAT scored on a 1600 or 2400 scale?

(a) 1600 (b) 2400

10. What is was your high school GPA? _____

11. Which hand is your dominant hand?

(a) right (b) left

APPENDIX B

LEGO© BUILDING PRACTICE SESSION DOCUMENTS

TASK 1: MANUFACTURING TASK INSTRUCTIONS

- I need you to pretend that you work in an organization that manufactures cars, robots, and boats.
- Here are the models, the diagrams, and configurations for each product.
- Note that the products are built with multiple colors and no blocks of the same color are touching.
- In this exercise, you will purchase Lego© materials from me with an ordering form, build the products, and sell them back for profit.
- **Your goal is to make as much profit as possible in 10 minutes.** It does not matter which type of products you make. **The more profit you make, the better.**
- You have $12,000 to purchase your initial materials. You cannot "borrow" more money, but you can use the money that you earn to buy more raw materials.
- Here is the market information sheet, which lists the prices to buy the materials for each model, the total price for each model, and the prices to sell each model.
- **On the ordering form you won't specify the colors. I will fill the order from these cups, which are a mix of colors. If you run out of a color, you can exchange Legos© of the same shape for the color you need.**
- To sell your products, you must place them in the designated area. After a product is placed in the selling area, no changes are allowed.
- If a product has Legos© of the same color next to each other or does not match the shape of the model, I will tell you that the product is defective, but I won't tell you what is wrong with it. You will not earn any money for that product, and you will lose the Legos© you used to build it.
- At any time during the task, you may request a time check. I will read the time on the stopwatch. If you are wearing a watch or have a cell phone visible, please put it out-of-sight.
- After the building time expires, you may not sell any more products. I will not purchase unfinished products or excess materials.
- Remember, your goal is to make as much profit as possible in 10 minutes.

TASK 1: MARKET INFORMATION

Supply Price

Component	Cost
2 x 2	50
2 x 4	40
Wheels	100

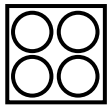
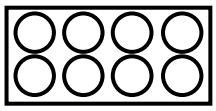
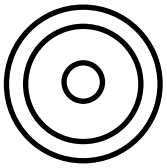
Product	Cost
Car	880
Boat	1000
Robot	950

Selling Prices

Product	Market Price
Car	2450
Boat	2320
Robot	1990

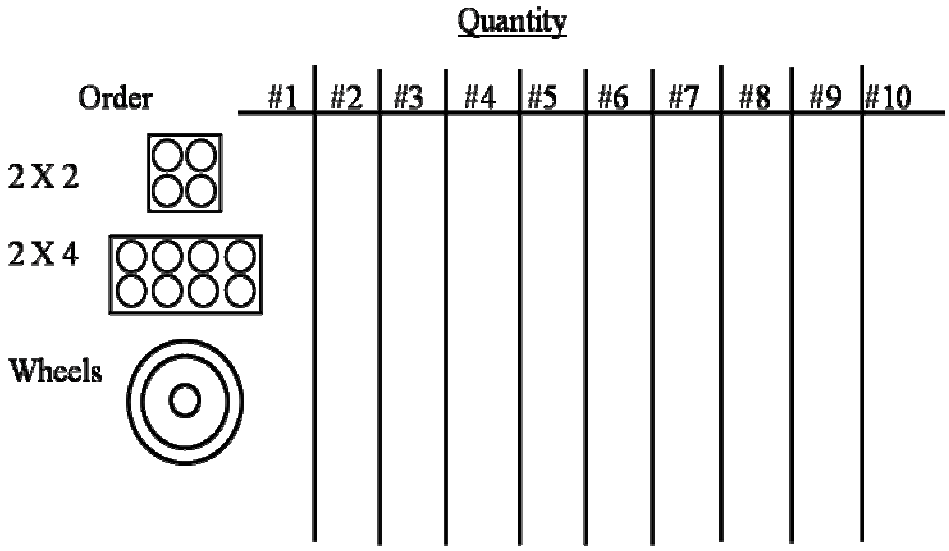
LEGO© CONFIGURATION FOR EACH PRODUCT

Lego© Components

		Car	Boat	Robot
2 x 2		0	12	11
2 x 4		17	10	10
Wheels		2	0	0

*Note: All wheels (regardless of size and color) are considered equivalent.

LEGO© ORDER FORM



APPENDIX C

PERFORMANCE SESSION DOCUMENTS

LOW CONSTRAINT CONDITION

TASK 2: MANUFACTURING TASK INSTRUCTIONS

- Once again I need you to pretend that you are a business organization that manufactures cars, robots, and boats.
- Here are the models, the diagrams, and configurations of each product.
- Note that the products are built with multiple colors and no blocks of the same color are touching.
- In this exercise, you will purchase Lego© materials from me with an ordering form, build the products, and sell them back for profit.
- **Your goal is to make at least $15,000 in profits during 20-minute performance period.** It does not matter which type of products you make. **The more profit you make, the better.**
- You have $12,000 to purchase your initial materials. You cannot "borrow" more money, but you can use the money that you earn to buy more raw materials.
- Here is the market information sheet, which lists the prices to buy the materials for each model, the total price for each model, and the prices to sell each model.
- **On the ordering form you won't specify the colors. I will fill the order from these cups, which are a mix of colors. If you run out of a color, you can exchange Legos© of the same shape for the color you need.**
- To sell your products, you must place them in the designated area. After a product is placed in the selling area, no changes are allowed.
- If a product has Legos© of the same color next to each other or does not match the shape of the model, I will tell you that the product is defective, but I won't tell you what is wrong with it. You will not earn any money for that product, and you will lose the Legos© you used to build it.
- At any time during the task, you may request a time check. I will read the time on the stopwatch. If you are wearing a watch or have a cell phone visible, please put it out-of-sight.
- After the building time expires, you may not sell any more products. I will not purchase unfinished products or excess materials.

- **Remember, your goal is to make at least $15,000 in profits during 20-minute performance period.**

LOW CONSTRAINT CONDITION

TASK 2: MARKET INFORMATION

Supply Price

Component	Cost
2 x 2	100
2 x 4	100
Wheels	150

Product	Cost
Car	2000
Boat	2200
Robot	2100

Selling Prices

Product	Market Price
Car	3460
Boat	3200
Robot	3000

MODERATE CONSTRAINT CONDITION

TASK 2: MANUFACTURING TASK INSTRUCTIONS

- Once again I need you to pretend that you are a business organization that manufactures cars, robots, and boats.
- Here are the diagrams and configurations of each product.
- Note that the products are built with multiple colors and no blocks of the same color are touching.
- In this exercise, you will purchase Lego© materials from me with an ordering form, build the products, and sell them back for profit.
- **Your goal is to make at least $15,000 in profits during 20-minute performance period.** It does not matter which type of products you make. **The more profit you make, the better.**
- Unlike before, you have $8,000 to purchase your initial materials. You cannot "borrow" more money, but you can use the money that you earn to buy more raw materials.
- Unlike before, the prices to purchase supplies and sell products change every 10 minutes as indicated on the market information sheets.
- Here is the market information sheet, which lists the prices to buy the materials for each model, the total price for each model, and the prices to sell each model.
- **On the ordering form you won't specify the colors. I will fill the order from these cups, which are a mix of colors. If you run out of a color, you can exchange Legos© of the same shape for the color you need.**
- To sell your products, you must place them in the designated area. After a product is placed in the selling area, no changes are allowed.
- If a product has Legos© of the same color next to each other or does not match the shape of the model, I will tell you that the product is defective, but I won't tell you what is wrong with it. You will not earn any money for that product, and you will lose the Legos© you used to build it.
- At any time during the task, you may request a time check. I will read the time on the stopwatch.
- After the building time expires, you may not sell any more products. I will not purchase unfinished products or excess materials.
- Remember, your goal is to make at least $15,000 in profits during 20-minute performance period.

MODERATE CONSTRAINT CONDITION

TASK 2: MARKET INFORMATION

1st ten minutes (0:00 - 10:00)

Supply Price

Component	Cost
2 x 2	80
2 x 4	60
Wheels	60

Product	Cost
Car	1140
Boat	1340
Robot	1480

Selling Prices

Product	Market Price
Car	1990
Boat	2780
Robot	2490

TASK 2: MARKET INFORMATION

2nd ten minutes (10:00 - 20:00)

Supply Price

Component	Cost
2 x 2	100
2 x 4	100
Wheels	150

Product	Cost
Car	2000
Boat	2200
Robot	2100

Selling Prices

Product	Market Price
Car	3460
Boat	3200
Robot	3000

HIGH CONSTRAINT CONDITION

TASK 2: MANUFACTURING TASK INSTRUCTIONS

- Once again I need you to pretend that you are a business organization that manufactures cars, robots, and boats.
- Here are the diagrams and configurations of each product.
- Note that the products are built with multiple colors and no blocks of the same color are touching.
- In this exercise, you will purchase Lego© materials from me with an ordering form, build the products, and sell them back for profit.
- **Your goal is to make at least $15,000 in profits during 20-minute performance period.** It does not matter which type of products you make. **The more profit you make, the better.**
- Unlike before, you now have $4,000 to purchase your initial materials. You cannot "borrow" more money, but you can use the money that you earn to buy more raw materials.
- Unlike before, the prices to purchase supplies and sell products change every 5 minutes as indicated on the market information sheets.
- Here is the market information sheet, which lists the prices to buy the materials for each model, the total price for each model, and the prices to sell each model.
- **On the ordering form you won't specify the colors. I will fill the order from these cups, which are a mix of colors. If you run out of a color, you can exchange Legos© of the same shape for the color you need.**
- To sell your products, you must place them in the designated area. After a product is placed in the selling area, no changes are allowed.
- If a product has Legos© of the same color next to each other or does not match the shape of the model, I will tell you that the product is defective, but I won't tell you what is wrong with it. You will not earn any money for that product, and you will lose the Legos© you used to build it.
- At any time during the task, you may request a time check. I will read the time on the stopwatch.
- After the building time expires, you may not sell any more products. I will not purchase unfinished products or excess materials.
- Remember, your goal is to make at least $15,000 in profits during 20-minute performance period.

HIGH CONSTRAINT CONDITION

TASK 2: MARKET INFORMATION

1st five minutes (0:00 - 5:00)

Supply Price

Component	Cost
2 x 2	80
2 x 4	60
Wheels	60

Product	Cost
Car	1140
Boat	1340
Robot	1480

Selling Prices

Product	Market Price
Car	1990
Boat	2780
Robot	2490

TASK 2: MARKET INFORMATION

2nd five minutes (5:00 - 10:00)

Supply Price

Component	Cost
2 x 2	100
2 x 4	100
Wheels	150

Product	Cost
Car	2000
Boat	2200
Robot	2100

Selling Prices

Product	Market Price
Car	3460
Boat	3200
Robot	3000

TASK 2: MARKET INFORMATION

3rd five minutes (10:00 - 15:00)

Supply Price

Component	Cost
2 x 2	50
2 x 4	50
Wheels	50

Product	Cost
Car	950
Boat	880
Robot	1050

Selling Prices

Product	Market Price
Car	1930
Boat	1900
Robot	2480

TASK 2: MARKET INFORMATION

4th five minutes (15:00 - 20:00)

Supply Price

Component	Cost
2 x 2	50
2 x 4	40
Wheels	100

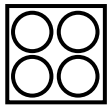
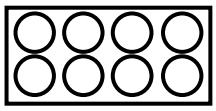
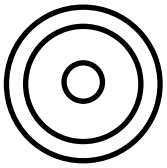
Product	Cost
Car	1050
Boat	1300
Robot	940

Selling Prices

Product	Market Price
Car	2480
Boat	2200
Robot	2100

LEGO© CONFIGURATION FOR EACH PRODUCT

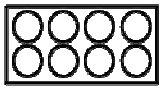
Lego© Components

		Car	Boat	Robot
2 x 2		0	12	11
2 x 4		17	10	10
Wheels		2	0	0

*Note: All wheels (regardless of size and color) are considered equivalent.

LEGO© ORDER FORM

Quantity

Order	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
2 X 2 										
2 X 4 										
Wheels 										

APPENDIX D

STEP-BY-STEP PLAN WORKSHEET

Exp. Code _____	Task 1 □ Task 2 □

1._____

_____

2._____

_____

3._____

_____

4._____

_____

5._____

_____

6._____

_____

7._____

_____

8._____

_____

9._____

_____

APPENDIX E

MANIPULATION CHECK ITEMS

1. How much money did you have during the 20 minute performance session?

__$12,000 __$8,000 __$4,000

2. How many times did the prices to buy and sell Legos© change during the 20 minute performance period?

__0 times __1 times __3 times

3. Were the Lego© models available during the 20 minute performance session?

__Yes __No

APPENDIX F

PERCEIVED BEHAVIORAL CONTROL SCALE

	Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1. Whether or not I perform well on the Lego© building task is entirely up to me.	A	B	C	D	E
2. I have a high degree of personal control over my performance on the Lego© building task.	A	B	C	D	E
3. Whether I perform well on the Lego© building task is beyond my control.	A	B	C	D	E
4. I believe that I have the ability to perform well on the Lego© building task.	A	B	C	D	E
5. I see myself as being capable of performing well on the Lego© building task.	A	B	C	D	E
6. I am confident that I will be able to perform well on the Lego© building task.	A	B	C	D	E
7. If it were entirely up to me, I am confident that I would be able to perform well on the Lego© building task.	A	B	C	D	E

APPENDIX G

TASK-SPECIFIC SELF EFFICACY SCALE

	Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1. I have no doubt that I will do well on the Lego© building task.	A	B	C	D	E
2. I think that my performance will be more than adequate on the Lego© building task.	A	B	C	D	E
3. I have many concerns about my ability to do well on the Lego© building task.(R)	A	B	C	D	E
4. I feel good about my capability to do very well on the Lego© building task.	A	B	C	D	E
5. I feel confident in my ability to perform well on the Lego© building task.	A	B	C	D	E

APPENDIX H

INTRINSIC MOTIVATION SCALE

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I feel a sense of personal satisfaction when I do the Lego© building task well.	A	B	C	D	E
2. I take pride in doing the Lego© building task as well as I can.	A	B	C	D	E
3. I feel unhappy when my work on the Lego© building task is not up to my usual standard. (R)	A	B	C	D	E
4. I try to think of ways of doing the Lego© building task effectively.	A	B	C	D	E
5. When I do the Lego© Building task well, it gives me a feeling of accomplishment.	A	B	C	D	E
6. When I perform the Lego© building task well, it contributes to my personal growth and development.	A	B	C	D	E
7. Doing the Lego© building task well increases my feeling of self-esteem.	A	B	C	D	E

APPENDIX I

TASK INTEREST SCALE

Please indicate the extent to which you agree with each of the following statements. The Lego© building task is….	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1. monotonous (R)	A	B	C	D	E
2. exciting	A	B	C	D	E
3. boring (R)	A	B	C	D	E
4. interesting	A	B	C	D	E
5. dull (R)	A	B	C	D	E
6. stimulating	A	B	C	D	E
7. complex	A	B	C	D	E

APPENDIX J

FRUSTRATION SCALE

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Trying to complete the Lego© building task was a very frustrating experience.	A	B	C	D	E
2. Being frustrated comes with the Lego© building task.	A	B	C	D	E
3. Overall, I experienced very little frustration while performing the Lego© building task. (R)	A	B	C	D	E

APPENDIX K

TASK SATISFACTION SCALE

	Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1. All in all, I am satisfied with the Lego© building task.	A	B	C	D	E
2. In general, I don't like the Lego© building task. (R)	A	B	C	D	E
3. In general, I like the Lego© building task.	A	B	C	D	E
4. Generally speaking, I am very satisfied with the Lego© building task.	A	B	C	D	E
5. I am generally satisfied with the kind of work I did on the Lego© building task.	A	B	C	D	E
6. I frequently thought of quitting the Lego© building task. (R)	A	B	C	D	E

APPENDIX L

TASK STRATEGY USE CHECKLIST

Please place a hash-mark next to a strategy every time that a participant uses each strategy

1. Made an order before he/she ran out of pieces_____
2. Delay buying_____
3. Buying pieces for multiple models_____
4. Buying pieces for one model at a time_____
5. Building the most profitable_____
6. Building the easiest_____
7. Putting wheels on last_____
8. Building more than one model at a time_____
9. Delay selling_____
10. Calculating Profits (during the task)_____
11. Use pictures drawn during planning_____
12. Check the plan_____
13. Check Market Information Sheets_____
14. Check Configuration Sheets_____
15. Mapping to similar colors _____
16. Arranged supplies_____
17. Traded Legos©_____
18. Quality check (in process)_____
19. Quality check (final)_____
20. Time Check_____
21. Ask how much money is left_____
22. Continued to build the same model even though the strategy is not working_____

Comments (Any additional strategies used)_____

_____

_____

APPENDIX M

PERCEIVED SITUATIONAL CONSTRAINT SCALE

	Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
1. The amount of task-related information that I received was insufficient.	A	B	C	D	E
2. The amount of task-related information that I received was adequate. (R)	A	B	C	D	E
3. The amount of money that I began the task with was insufficient.	A	B	C	D	E
4. The amount of money that I began the task with was adequate. (R)	A	B	C	D	E
5. The amount time that I was given was insufficient.	A	B	C	D	E
6. The amount of time that I was given was adequate. (R)	A	B	C	D	E

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Publications

Mumford, M. D., Scott, G., Marcy, R. T., Tutt, M. T., & Espejo, J. (2006). Pathways to outstanding leadership: A comparative analysis of charismatic, ideological and pragmatic leadership. In M. Mumford, *Pathways to outstanding leadership.*(p.p. 215-245). Mahwah, NJ: Lawrence Erlbaum Associates.