ROLE OF ASSIGNED TEAM GOALS IN THE RELATIONSHIP BETWEEN INDIVIDUAL DIFFERENCE FACTORS AND SELF-SET GOALS IN A PRE-TEAM CONTEXT

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy

By

ANUPAMA NARAYAN
B.A., University of Delhi, India, 1995
M.S., Wright State University, 2004

2008
Wright State University

Debra Steele-Johnson, Ph.D.
Thesis Director

John M. Flach, Ph.D.
Department Chair

Joseph F. Thomas, Jr., Ph.D.
Dean, School of Graduate Studies

Committee on Final Examination

Debra Steele-Johnson, Ph.D

David M. LaHuis, Ph.D.

Jean M. Edwards, Ph.D.

Herbert A. Colle, Ph.D.
ABSTRACT


The purpose of the present study was to examine the effects of individual difference factors, i.e., core self evaluations, cognitive ability, and task specific self-efficacy, on self-set goals and whether those effects were moderated by an assigned team goal in a pre-team context. It was hypothesized that the relationship between individual difference factors and self-set goals for potential team members would be differentially affected by the difficulty of the assigned team goal. I assessed these relationships for individual performance and individual satisfaction. In addition, I examined whether gender, task type, and team composition interacted in their effects on self-set goals. A total of 836 university students (404 males and 434 females) participated in this study. Team assigned goal (easy or difficult), team task type (quantitative or verbal) and team composition (all males, all females, and cross-balanced) were manipulated to create 12 experimental conditions. The task was to generate a high school level knowledge test by selecting, solving, and categorizing items from a predetermined test bank that was created for the purposes of this study. To accomplish this, participants set a goal for their
projected contribution to the team after they were assigned the team goal. They worked individually and independently to prepare for the team task in a pre-team context. The study included measures of core self evaluations, cognitive ability, task specific self-efficacy, and self-set goals at the individual level. Results of this study provide initial evidence of the importance of accounting for variance at both the individual and team levels in self-set goals, individual performance and individual satisfaction. Further, the knowledge of an assigned team goal prior to team interaction does affect individual self-set goals, individual performance, and individual satisfaction. This study was an initial effort to understand the joint effects of dispositional and situational factors at the individual and team level on individual motivation and performance in a pre-team context. Future multilevel research is needed to explore other team level factors such as task type, team size, team structure, and team composition and other individual level factors such as conscientiousness and cognitive styles. Most importantly, research simultaneously examining individual and team level factors is required if we are to increase our understanding of the functioning of individuals in pre-team and within team contexts.
# TABLE OF CONTENTS

I. INTRODUCTION .................................................................................................................. 1

   Overview............................................................................................................................. 1

   Teams and/or Work Groups............................................................................................ 7

      Team Effectiveness........................................................................................................ 9

         Factors Influencing Team Effectiveness................................................................. 11

         Measures of Team Effectiveness ............................................................................. 11

         Multi-level Nature of Team Effectiveness............................................................... 12

         Models of Team Effectiveness.................................................................................. 13

   Types of Teams or Work Groups...................................................................................... 15

   Types of Tasks and Task Interdependence ................................................................. 17

   The Role of Temporal Duration in Teams....................................................................... 19

      Socialization of group members ................................................................................. 24

   Broad Approaches to the Examination of Team Effectiveness .................................... 25

      Group Processes.......................................................................................................... 26

      Team Cognition........................................................................................................... 26

      Distal and Proximal Determinants of Motivation....................................................... 27

   Antecedents of Team Effectiveness................................................................................. 30

      Knowledge, Skills, and Abilities (KSAs).................................................................... 31

      Personality................................................................................................................... 31

      Demographics ............................................................................................................ 33
Motivation: Self-Efficacy .............................................................................................. 37

Effects of Individual Difference Factors on Motivation .............................................. 38

Team Motivation .......................................................................................................... 41

Collective Effort Model (CEM) .................................................................................. 42

Goal Setting Theory ....................................................................................................... 44

Goal Choice .................................................................................................................. 45

Mechanisms of Goal Setting ....................................................................................... 46

Types of Goal Setting ................................................................................................... 50

Assigned Goal Setting ................................................................................................. 50

Participative Goal Setting ............................................................................................ 53

Self-Set Goals ............................................................................................................... 53

Goal Commitment ........................................................................................................ 55

Feedback or Knowledge of Results ............................................................................. 56

Task Complexity ........................................................................................................... 57

Individual Difference Factors ..................................................................................... 58

Demographic Variables ............................................................................................... 59

Ability ........................................................................................................................... 59

Personality .................................................................................................................... 61

Personality: Five Factor Model .................................................................................... 64

Core self-evaluations .................................................................................................... 66

Motivation: Task-specific self-efficacy .......................................................................... 75

Group or Team Goal Setting ......................................................................................... 76

Types of Goal Setting in Groups or Teams ................................................................... 79
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hypothesized Model</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of participants in different conditions</td>
<td>115</td>
</tr>
<tr>
<td>2</td>
<td>Frequency distribution of demographic variables for study sample</td>
<td>116</td>
</tr>
<tr>
<td>3</td>
<td>Mean and standard deviations for self-set goals across study conditions</td>
<td>117</td>
</tr>
<tr>
<td>4</td>
<td>Mean and standard deviations for individual performance across study conditions</td>
<td>118</td>
</tr>
<tr>
<td>5</td>
<td>Means, standard deviations, and intercorrelations between continuous study variables</td>
<td>119</td>
</tr>
<tr>
<td>6</td>
<td>Model effects for self-set goals</td>
<td>130</td>
</tr>
<tr>
<td>7</td>
<td>Model effects for individual performance</td>
<td>132</td>
</tr>
<tr>
<td>8</td>
<td>Model effects for individual satisfaction</td>
<td>137</td>
</tr>
<tr>
<td>9</td>
<td>Frequency distribution for team performance for 4 persons and 3 persons teams</td>
<td>192</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

Overview

In our global, fast-paced, and customer-driven economy, work teams are integral to organizational success. Given the essential role played by teams in organizations, it becomes important to increase our understanding of what makes teams effective. Effectiveness is a multi-faceted construct, including factors such as performance and team member satisfaction. Substantial prior research (e.g., Becker-Beck, Wintermantel, & Borg, 2005; Hoegl & Parboteeah, 2003) has examined the effects of both individual differences and team processes (e.g., communication) on these outcomes. However, much of this research (e.g., Moussa, 2000; Bell & Kozlowski, 2002) has focused either only at the individual level or only at the team level. Thus, what is needed now is research examining individual difference and team process effects on effectiveness as emerging jointly from both the individual and team levels. Moreover, whereas much research has focused on processes such as communication and coordination (e.g., Saavedra, Earley, & Van Dyne, 1993), other process variables have remained relatively unexplored. For example, team motivation and its antecedents and consequents have received little research attention (see Kozlowski & Bell, 2003, for a discussion). To address these research needs, I propose to examine the first part of a process model of team effectiveness, specifically focusing on the joint effects of individual differences and team level variables on a relatively unexplored team process variable, i.e., individual goal choice within a team context.
In order to understand factors that play a role in team effectiveness, it is imperative to understand first what a team or work group is. In general, work teams and groups are composed of two or more individuals who exist to perform organizationally relevant tasks, have one or more common goals, interact socially, exhibit task interdependencies (i.e., work flow, goals, outcomes), maintain and manage boundaries, and are embedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity (Alderfer, 1977; Hackman, 1987; Hollenbeck, Colquitt, Ilgen, LePine, & Hedlund, 1998; Kozlowski, Gully, McHugh, Salas, & Cannon-Bowers, 1996). Thus, it is widely accepted that teams or work groups function as a collective (i.e., interact with each other) and also manage relationships with other individuals or groups in the larger system in which the team or work group operates.

The next issue becomes how to define team effectiveness. I propose that team effectiveness is an emergent property of the team, depending on how effective individual team members are at the task as well as team processes such as interaction and communication. Researchers have provided various operational definitions of team effectiveness (Guzzo & Dickson, 1996). In general, researchers have assessed team effectiveness in terms of three categories of criteria: 1) the productive output of team/work group, 2) the social processes that the team has used that enhance team members’ capability to work together interdependently, and 3) team member personal well being (e.g., Hackman, 1990).

Research examining team effectiveness has examined the effects of individual differences on team processes (e.g., communication) and in turn team effectiveness (e.g.,
performance) (e.g., Armstrong & Priola, 2001; Gladstein, 1984). This line of research reflects an input-process-output model. McGrath (1984) proposed the famous and widely used input-process-output (I-P-O) model of team or work group effectiveness. Inputs refer to resources that are available to the team, including internal resources such as team member personality, knowledge, skills, and abilities and external resources such as organizational structure, climate, and policies. Processes refer to the intragroup actions that transform resources into a product. Examples of these actions include strategy development, coordination, decision-making, cooperation, and communication. Outcomes refer to the criteria of team performance (e.g., a tangible product, creative solution to a problem). Recently, researchers have proposed a revision to the I-P-O model to address mediators that might not reflect processes and to address the cyclical nature of team processes.

For example, Ilgen, Hollenbeck, Johnson, and Jundt (2005) have proposed an IMOI model that integrates three aspects not covered in the I-P-O model used extensively in work group research and understanding. This model includes mediational factors instead of the term processes to reflect a broader range of variables that intervene and transmit the influence of inputs to outcomes. These mediational factors include both processes that describe the nature of team member interaction (e.g., behavioural processes such as communication) as well as emergent states that describe cognitive and affective states (e.g., team cohesiveness). It takes into account the non-linear, cyclical path from inputs to outputs and emergent states that are interactions between various inputs and processes or processes and processes that develop over the life of the team and impact team outcomes. They proposed a two dimensional framework based on the time
and the nature of explanatory mechanisms that affected team effectiveness. In keeping with the temporal features, they organized their review around studies that focus on the early stages of team development labeled as the forming stage. This is followed by a functioning stage in which the team develops more experience working together. The last stage is the finishing stage in which the team completes one episode in the developmental cycle and begins a new cycle. Under each stage different affective, behavioural, and cognitive aspects play a role in team effectiveness (see Ilgen, Hollenbeck, Johnson, & Jundt, 2005, for a discussion).

The I-P-O and IMOI models have shaped much of the research on teams. One stream of research has focused on the effects of individual differences on team processes or mediators (for a review, see Ilgen et al., 2005). This research has focused primarily on processes such as strategy development, decision-making, conflict resolution, coordination, cooperation, and communication (e.g., Alper, Tjosvold, & Law, 1998; Gladstein, 1984). These frameworks have had a powerful influence on empirical research in the area of small group and teams, much of which either explicitly or implicitly invokes the I-P-O model. They have also provided valuable information that has lead recent scholars to propose other models of team effectiveness.

Another stream of research has focused on whether individual level variables can be generalized to the team level (homology issue), that is research examining the meaning of team level versions of individual level constructs (e.g., Chen, Bliese, & Mathieu, 2005). To test whether certain constructs are homologous across levels, researchers have modeled those constructs at both the individual and the team levels of analysis in the same sample (e.g., Kozlowski & Klein, 2000). Self-efficacy and
collective efficacy (e.g., Chen, Webber, Bliese, Mathieu, Payne, Born, & Zaccaro, 2002) and job satisfaction and team task satisfaction (e.g., Mason & Griffin, 2002) are examples of constructs which have been examined to determine whether they are homologous across levels.

Research on teams and work groups has progressed tremendously in the last two decades. And, process variables such as communication and cohesion have received substantial research attention. Yet, a large amount of variance in team effectiveness remains unaccounted for. So, I propose to extend prior research by examining the potential joint effects of individual and team level variables on a relatively unexplored process variable, individual goal choice. Although examination of the joint effects of individual and team level variables on team processes has the potential to increase our understanding of team effectiveness, there has been little research on this issue (for exceptions, see Gavin & Hoffman, 2002; Hobman, Borgia, & Gallois, 2004). I note that some constructs might have no effect at the individual level; for example, there is little evidence suggesting that gender plays a role in individual goal choice (Locke & Latham, 1990). However, the gender composition of a team might play a role in individual goal choice (Note: I use the term gender to refer to the biological variable, male and female, not as a socio-attitudinal variable relating to masculinity, androgyny, and femininity). Moreover, team level constructs such as gender composition might moderate the effects of individual level factors such as personality or ability on individual goal choice. Unfortunately, there is paucity of research examining the role of team level moderators of individual level variables on team processes, such as goal choice.
Additionally, although research on teams has examined a variety of process variables (e.g., team cognition, group dynamics), other process variables such as motivation in team contexts have attracted little attention (Kozlowski & Bell, 2003). Thus, I have the opportunity to increase our understanding of team effectiveness by examining the role played by team motivation. Given the robust effects of goal setting on individual performance (for review, see Locke & Latham, 1990) and team performance (O’Leary-Kelly, Martocchio, & Frink, 1994) and the beneficial effects of self-set goals on individual performance (e.g., Locke & Latham, 1990), individual goal choice holds great promise for increasing our understanding of team effectiveness.

Research has demonstrated that individual and team level effects of goal setting on performance are robust (e.g., Locke & Latham, 1990; Resick & Bloom, 1997; Weldon & Weingart, 1993). Further, substantial attention has focused on factors that play a role in goal effects at the individual level, including moderators of goal effects on performance and factors influencing goal choice (e.g., Donovan & Radosevich, 1998). Indeed meta-analytic research on goal setting at the individual level has indicated the strong role played by goal difficulty, goal specificity, and participation (e.g., Tubbs, 1986). Further, research has shown that feedback (e.g., Neubert, 1998), goal commitment (e.g., Klein, Wesson, Hollenbeck, & Alge, 1999), and task complexity (e.g., Wood, Mento, & Locke, 1987) moderate the goal setting → performance relationship. Additionally, researchers (e.g., Phillips & Gully, 1997) have provided evidence that personality, ability, and motivation affect the goal choice process. At the group level, meta-analytic research (O’Leary-Kelly, Martocchio, & Frink, 1994) found that groups that had goals (i.e., assigned, participatively set, or chosen) performed about one standard
deviation better than groups that did not have goals. Thus, research has demonstrated the existence of goal setting effects at both the individual and team levels. However, there is a lack of research on the joint effects of team goals on individual level goal setting.

Teams and/or Work Groups

We begin, then, with a discussion of teams and work groups, addressing types of groups, distinctions between groups and teams, definitions of teams, and the functions of teams in organizations. Living and working together in groups is basic to our experience. Within work groups individuals pursue shared objectives by integrating diverse skills to optimally use their resources for effective performance. Formal and informal groups are part of our daily functioning (Shea & Guzzo, 1987). Formal groups are those that have a set of functions derived from and contributing to the achievement of organizational objectives. These groups are intentionally created by organizations for the purpose of accomplishing organizations missions and objectives. Such groups could be of various types such as project groups, research and development groups, multidisciplinary groups, semi-autonomous groups and cross-functional groups. Informal groups have no formal organizational identity or function but can be present in organizations. Such groups are formed due to friendships, common interests, religious orientations, family backgrounds and other non-work bases. They can be social groups such as people who play sports together individuals who work in the same organization, or people who come together to provide support to each other.

The rapid emergence of groups in the workplace has brought with it a change in terminology: the preference for the word “team” over the word “group” has dominated research and practice in the last two decades (Guzzo & Dickson, 1996). The distinction
between groups and teams has been often not clear although the terms group and team have been used often to refer to different constellations of interactions. The term group has been used in a much broader sense than team and has been applied to a larger number of social and organizational forms (Hackman, 1990). For example, research from the area of group dynamics has focused on therapy groups, T-groups, and self-study groups, where the task of each member is to achieve a personal goal. Teams or work groups, specifically, are embedded in the organizational context. They consist of team members who function and behave in the context of the environment that is created by the team. Their individual personalities, attributes, interactions and responses are a part of this interaction. Individuals are a part of teams, and teams are a part of the organization. Thus, it can be noted that all teams are groups but that not all groups are teams (Landy & Conte, 2005). The definition of a work group overlaps heavily with that of a team, and thus these terms will be used interchangeably.

Conceptually, a team or work group can be viewed as a socially constructed phenomenon or linking mechanism that integrates individual and organizations (Horvath, Callahan, Crowell & Mukri, 1996). Some definitions tend to focus on specific team characteristics classifying teams such as self-managed teams, temporary project teams, or cross functional teams. Some focus on attributes internal to the team such as team composition and team member knowledge, skills and abilities. Dyer (1984) defined a team as constituting of two or more people with a common goal, specific role assignments, and interdependence. Orasanu and Salas (1993) suggested that in addition to goals, roles, and interdependence, other team characteristics include 1) adaptive management of internal resources, 2) more than one information source, and 3) task
relevant knowledge. Sundstrom, DeMeuse and Futrell (1990) defined work teams as interdependent collections of individuals who share responsibility for specific outcomes for their organizations. Guzzo and Dickson (1996) defined a work group as made up of individuals who see themselves and who are seen by others as a social entity, who are interdependent because of the task they perform as members of a group, who are embedded in one or more larger social systems (e.g., organization, community) and who perform tasks that affect others (such as customers or co-workers).

Teams and/or work groups have become an integral part of organizations. However, working together as a team might not come naturally to individuals, especially in settings that are more individualistic in nature. Neither are all individuals likely to bring the same amount of task- or team-related experience to the team. According to Kormanski (1999), the success of teams depends on four critical components. First, there must be a fit between the team and the mission and purpose of the organization. Second, effective leadership, either individual or shared must be present. Third, team members must understand their roles and responsibilities. Fourth, the team must possess or have the potential talents to develop the resources needed to accomplish its assignments. Thus, because teams or work groups are now integral to organizations, organizational effectiveness is driven in part by team effectiveness, increasing the importance of understanding team or work group effectiveness.

**Team Effectiveness**

Team effectiveness is dynamically interrelated with organizational context, boundaries, and team development. Hackman (1987) proposed a three-dimensional conception of work group effectiveness. For a work group to be effective, it should meet
at least one of the following criteria: (1) productive output meets the standards of quantity, quality, and timeliness of the clients, (2) the process of working together increases the capabilities of members to work together interdependently in the future, and (3) the group experience contributes to the growth and personal well-being of team members. This three-dimensional conception has been accepted by other authors (e.g., Guzzo & Dickson, 1996; Sundstrom et al., 1990). More recently, Cohen and Bailey (1997) categorized team effectiveness into three major dimensions according to the team's impact on: (1) performance effectiveness assessed in terms of quantity and quality of outputs, (2) member attitudes, and (3) behavioral outcomes. Examples of performance effectiveness measures include efficiency, productivity, response times, quality, customer satisfaction, and innovation. Examples of attitudinal measures include employee satisfaction, commitment, and trust in management. Examples of behavioral measures include absenteeism, turnover, and safety. Campion, Medsker, and Higgs (1993) proposed a model for work group/team outcomes based on a compilation of various models and summaries. Specifically, they proposed five categories of variables that could act as input factors and affect team outcomes. These categories were (a) job design, (b) task interdependence, (c) group composition, (d) organizational context, and (e) group process. This classification is broader in nature and includes aspects of the team environment (e.g., the organization) that affect team effectiveness.

With increasing research and understanding the criteria for team effectiveness are becoming more complex. Prior operational definitions of team effectiveness have some limitations such as they do not take the task or the time dimension into account. Increasingly, it is evident that these aspects affect team performance and effectiveness.
and thus should be incorporated in the definitions of team effectiveness. Later in the document, I will be addressing the role of task and temporal framework in team effectiveness. Team type is another factor that influences the team effectiveness criteria. Team effectiveness largely depends on the purpose for which a team is made. That is, teams in organizations are complex systems, and team effectiveness is an important issue that needs to take various factors into account. Some broad issues pertaining to team effectiveness are 1) identifying factors that are predictive of team effectiveness, 2) defining and developing measures that can be used to assess effectiveness, and 3) examining the multilevel nature of teams.

Factors Influencing Team Effectiveness

Various factors play a role in making a team effective. A few theories (e.g., Hackman & Oldham, 1976) have focused on single predictors, such as design of group task. More typically, researchers have focused on multiple categories of predictors, including work design, group characteristics, organizational context and group processes (e.g., Gladstein, 1984; Hackman, 1987; Guzzo & Shea, 1980; Sundstrom, Demeuse, & Futrell, 1980). In a selective review of work group effectiveness, Sundstrom, McIntyre, Halffhill, and Richards (2000) examined five categories of variables potentially influencing effectiveness, namely, organizational context, group composition and size, group work design, intra-group processes and external group processes. Their results indicated that team effectiveness varies based on different combinations of these factors.

Measures of Team Effectiveness

A frequently used measure of team effectiveness is performance. Task performance is defined as the proficiency with which people perform activities that are
formally recognized as a part of their job (Borman & Motowidlo, 1997). If the team meets the goals that were set for it, e.g., successfully makes 100 widgets a day that meet the quality standards set for those widgets, then it can be thought of as a successful and effective team for widget making. Another way in which team effectiveness can be measured is team member satisfaction. Locke (1970) defined job satisfaction as a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences. Thus, work done by team members can vary from individual to individual and affect their performance which in turn is linked to overall team performance and effectiveness.

**Multi-Level Nature of Team Effectiveness**

There are two major issues pertaining to the multi-level nature of teams that play a role in team effectiveness. The homology of constructs and the cross-level relationships between constructs should be considered when assessing team effectiveness (refer Klein & Kozlowski, 2000, for details). Our lives are part of a multilevel world—the individual within the dyad, the group, the organization, society. More recently, organizations are conceptualized as multilevel systems, indicating that every construct is tied to one or more organizational levels (Klein & Kozlowski, 2000). Examples of such levels include the individual employee, teams, departments, organizations, or industries. Employees are embedded in teams or work groups which perform a function. It becomes imperative to clearly delineate a specific organizational level that is of interest and make generalizations at the same level. Generalizing results from single-level to multi-level or vice versa can be erroneous without conceptual understanding of the constructs and thus would affect how team effectiveness is understood.
Models of Team Effectiveness

Further, in an attempt to understand team effectiveness various researchers have proposed different models delineating team effectiveness. These models provide a range of focus from some of the predictors of team effectiveness to why some teams perform better than others.

The input-process-output model, originally proposed by McGrath (1963) is a classic model that has been adopted by researchers to understand teamwork (e.g., Barrick, Stewart, Neubert, & Mount, 1998; Cohen & Bailey, 1997; Hackman, 1987). According to the model a variety of inputs combine to influence intragroup processes, which in turn affect team outputs. Subsequently, researchers have refined and extended McGrath’s classic model.

Gladstein (1984) used the input-process-output approach to develop a general model of group effectiveness. She categorized input factors into group level (group composition and group structure) and organization level factors (resources available and organizational structure). In relation to processes, Gladstein included intragroup and intergroup actions that transformed resources into products. These actions were either maintenance behaviours such as communication and supportiveness or task behaviours such as discussion of strategy or boundary management. She described the outcome of group effectiveness in terms of performance and satisfaction. Finally, Gladstein introduced task as a moderator of the group processes – effectiveness relationship. She posited that the strength and direction of the relationship between group processes (or process variables) and team effectiveness (output variable) would vary depending on the nature of the task (e.g., simple or complex, interdependent, uncertain). Although
Gladstein did not find support for the moderating role of task in her model, subsequent research has supported the importance of task in this relationship (e.g., Van Knippenberg, De Dreu, & Homan, 2004).

In another extension of McGrath’s model, Hackman (1987) indicated that inputs could be broadly grouped into three categories: individual-level factors (e.g., team member attributes), group level factors (e.g., structure and size), and environmental level factors (e.g., task characteristics and reward structures). Further, Hackman described processes as interactions that take place among the team members, including communication patterns, role negotiations, norm generation, efforts towards leadership, and other forms of influence. Researchers have focused on additional processes as well, such as potency (the belief that a group can be effective, Guzzo & Shea, 1992), social support (Drach-Zahavy, 2004), and norm development (Feldman, 1984). Also, Hackman and other researchers have described team outputs, in general, in relation to productivity or the effectiveness of the team as a composite.

Interestingly, most models of team effectiveness have a broad focus and orientation. That is, they make the assumption that the processes and mechanisms underlying team effectiveness are similar regardless of the type of teams or work group, the time duration for which the team has come together, and the type of task to be performed by the team. Levi (2001) indicated that there are a variety of frameworks that have been used to explain the changes that groups or teams go through during their existence. Project theories focus on how the groups change based on the tasks they perform. Stage theories focus on the internal processes of groups change. And, alternative theories explain group process changes as cycles rather than stages. Thus,
there is some evidence that the processes and mechanisms underlying team functioning are influenced by these factors (e.g., Guzzo & Shea, 1992) and warrant attention.

*Types of Teams or Work Groups*

There has been an increasing understanding that teams cannot really be understood independent of the context in which they function. That is, researchers have found that team functioning and effectiveness in one setting do not always generalize to teams in other settings (Guzzo & Shea, 1992). Thus, researchers have begun to examine and propose classification systems for types of teams (e.g., Sundstrom, DeMeuse, & Futrell, 1990). Often these classification systems are based on the task performed by the team. Understanding the type of team/work group being examined is important because different variables are important in different types of teams. For example, research has shown that project teams focus more on external processes whereas production and service teams focus more on work design variables (Sundstrom, McIntyre, Halfhill, & Richards, 2000).

Researchers have proposed several broad classification systems for team or work group types. Some widely used classification systems are those based on the nature of the team function, globalization, and spatial distance. These models can be simple when based on only one of these aspects or complex when focusing simultaneously on multiple factors. Using the nature of team function as their classification system, Sundstrom, DeMeuse and Futrell (1990) differentiated between advice and involvement teams, production and service teams, project and development teams, and action and negotiation teams. In a more recent review, Cohen and Bailey (1997) indicated that there are four types of teams: work, parallel, project, and management. Cohen and Bailey suggested
that the typology they had proposed was broader than and subsumed the team categories proposed by Sundstrom, DeMeuse and Futrell (1990). In contrast, Earley and Erez (1997) focused on the globalization of organizations and based their classification system on cultural composition, describing cross-culture, mixed culture, and transnational teams. In a different approach, Bell and Kozlowski (2003) classified teams on the basis of spatial distance and the use of technology to mediate information, distinguishing between co-located or face-to-face teams and virtual teams.

In a more complex classification system, Devine, Clayton, Philips, Dunford, and Melner (1999) used product type and temporal duration to classify teams. Product type overlaps with the task type and temporal duration refers to the time period over which the team/work group exists. They further go on to distinguish between project tasks that entail information processing such as planning, creating, choosing, deciding and production tasks that involve some degree of hands-on physical activity. In terms of the temporal duration, they distinguish between short term, ad-hoc teams versus long term on-going teams. Crossing these four broad typologies provide a taxonomy of four types of teams, namely, (a) ad-hoc project teams, (b) long term project teams, (c) ad-hoc production teams, and (d) long term production teams. Recently, Kozlowski and Bell (2002) proposed that teams can be distinguished on the basis of: (1) dynamics and coupling to external environments; (2) boundary spanning and permeability; (3) member and workflow interdependencies; and (4) temporal aspect, integrating various previous classifications in their distinction.

Clearly, various factors contribute to team effectiveness. As complexity of teams increases it becomes important to use more complex criteria to understand team
effectiveness. Other than the type of task and type of team or work group another factor that affects team functioning is the temporal duration for which the team comes together. This is addressed in the Devine et al. (1999) and Kozlowski and Bell (2003) classification schemes. Work groups and teams change systematically over time, i.e., they develop. Further group processes have temporal patterns such as differential patterns of interactions between group members and phases or group decision making (Arrow, Poole, Henry, Wheelan, & Moreland, 2004). Time has been acknowledged as an integral aspect of groups (e.g., McGrath, 1984). In a classic work titled, *Time, Interaction, and Performance*, McGrath (1991) considered groups as continuously and simultaneously engaged in three major functions: production, member support, and group well-being. These functions represent the groups’ contribution to the organization, to its members, and to its continued functioning as an intact social unit, respectively. Thus, time plays an important role in team effectiveness and is integrally linked with task type.

*Types of Tasks and Task Interdependence*

The preceding sections addressed ways to classify team or work group types. I mentioned the key role played by task characteristics in team types. Thus, the following section examines different frameworks for understanding types of tasks. Typically, these frameworks focus on tasks in terms of interdependence. A theme that is central through different characterizations of task types is the level of interdependence that the task affords. According to McGrath (1984), an assessment of any group or team performance situation begins with the nature of the task. Thus, it is important to understand the nature of task and the impact of various forms of task interdependence on group processes and outcomes.
Steiner (1972) offered the most complete description of task interdependence, providing an extensive description of various types of tasks and how these tasks would affect the way group members utilize the available resources effectively. Tasks can be unitary or divisible. Unitary tasks are those that cannot be easily or profitably broken into smaller parts. Thus, in order for the individual to make some contribution to the overall group product, it is necessary for the individual members to perform all aspects of the task. Divisible tasks are those in which division of labour is possible. Thus, assembling a car is a divisible task as each worker assembles some part of the car as it moves down the assembly line. Further, Steiner (1972) classified tasks as additive, conjunctive, disjunctive, compensatory, and complementary. Additive tasks are those in which each member of the group/team performs parallel functions and thus the potential productivity of the group is the total of individual member contributions. Conjunctive tasks are those in which group performance is a function of the least competent member. For example, mountain climbers tied together can climb no faster than the slowest climber. Disjunctive tasks are characterized by the productivity of the most competent member of a group. Thus, whether a quiz team can win a contest is determined by the knowledge of the most competent member. Compensatory tasks are those in which the group mean is used to assess work group/team performance. The complementary task is one which permits division of labour and allows each member to work only on his/her specialization or area of expertise such as a surgical team in which each member has a specific role to perform that complements roles that other members are performing.

Similarly, other researchers have examined task interdependence. Thompson (1967) viewed task interdependence as a characteristic of work that is inherent in the
technology of the task (e.g., assembly line work is sequentially interdependent). Task
interdependence can also be a characteristic of the way people behave in executing their
work (e.g., assembly line workers who help each other are more task interdependent than
those who are not). Moreover, Kiggundu (1981, 1983) described task interdependence as
the degree to which group/team members rely on one another to perform their tasks
effectively given the design of their jobs. Thus, when interdependence is high, team
members contribute interactively to task accomplishment, and when it is low, team
members work independently from each other. Also, Wageman (1995) suggested that the
degree and type of interdependence comes from various sources such as the
differentiation of roles, the distribution of skills and resources, the way in which goals are
defined and achieved, and the manner in which reward and feedback is provided for
performance.

Substantial research has examined the role of task interdependence (e.g.,
Saavendra, Early, & Van Dyne, 1993; Van Der Vegt, Emans, & Van De Vliert, 2001; &
Wageman, 1995). Task interdependence has been found to affect the level of cooperation
within the group (Shaw, 1973), group performance (Shea & Guzzo, 1987), the nature of
interpersonal interaction between group members (Gersick, 1988, 1989), and affective
reactions at both the individual and group level (Van Der Vegt, Emans, & Van De Vliert,
2001).

The Role of Temporal Duration in Teams

Another focus of attention pertaining to teams in organizations is the time
duration for which they come together as teams (e.g., McGrath, 1991). The amount of
time available to a team or work group clearly affects the way in which it operates. The
more time that is available, the more the group can spend in developing social relations and analyzing the problem. Thus, time plays an important role in work groups and teams. Organizations can establish work teams that are designed to continue in operation indefinitely. Some work groups have broad band of activities and are together for long time durations such as a crew on a space ship or a construction group. At the same time there are teams that have a planned end, they are put together for a specific task and once the task is completed the team is disbanded. With rapidly changing and challenging work environments, knowledge based teams of professionals from diverse backgrounds come together for a relatively short duration.

I have noted above that the amount of time available influences a team’s operation. There are a variety of theories that address this issue, i.e., group or team development. Most of these theories have similar elements. These theories try to explain why it takes time for a group to develop before it becomes productive. One of the best known group development stage theory was developed by Tuckman and Jensen (1977). A group starts with the forming stage in which group members get to know each other and learn how to operate as a group or a team. The next stage is storming, characterized by conflicts among group members and confusion about group roles and project requirements. The group begins to organize itself to work on the task during the norming stage. Next is the performing stage. In this stage the work group focuses on the task. And, the final stage is adjourning or the dissolution stage. Some groups have planned endings. They disband when the task is completed. Tuckman (1965) developed his theory of group development based on extensive review of work done with therapy
groups and later applied it to development of training groups, and groups observed in natural setting.

In a recent review of literature that considers temporal perspective on groups, Arrow, Poole, Henry, Wheelan, and Moreland (2004) identified six themes that have attracted research attention, for example, how groups change systematically over time and the temporal patterns of group processes. Clearly time and temporal patterns in teams development and functioning are integral to understanding teams.

Groups working on different projects are going to construct time and temporal markers differently. Ancona and Chong (1996) indicated that teams that rely more on external pacers such as an externally imposed deadline should have a different conception of what constitutes “late” as compared to teams that are more internally focused such as an autonomous work group. Seers and Woodruff (1997) indicated that deadlines act as temporal goals, and as with goals, the more proximal a deadline, the greater the motivation. Generally goals include some aspect of a time line in them because goals need to be typically accomplished in a certain time frame, and thus it becomes important to consider time when understanding team effectiveness.

Another way in which groups or team stages can be viewed is based on the characteristics of the projects rather than the development of group processes. McGrath (1990) proposed a model of how project groups or teams function over time. There are four types of functions that a group performs: inception (selecting and accepting goals), problem solving, conflict resolution and execution. In this model a group does not necessarily need to perform all functions in order to be productive and complete its goals. For example, on simple tasks, the group or team may go directly to the execution stage.
from the inception stage without going through the problem solving and conflict resolution stages. However, for more complex problems the group may have to cycle through the four functions a number of times.

Although stage theories are widely used to understand team and group development, not all teams and work groups follow these patterns. Depending on various other factors such as the type of task, organizational constraints, individual differences between team members, some teams skip stages, others get stuck in certain stages, and some others do not follow the stages in the same order as proposed. Thus, with the increasing use of teams today, the boundaries between the stages are often less clear than suggested by most theorists (e.g., Kozlowski & Bell, 2003). Rather than emphasizing a sequence of stages, some group theorists believe that groups go through repeated cycles rather than sequential stages.

Gersick (1988, 1989) observed the developmental processes of 16 project teams (eight field and eight laboratory) with life cycles ranging from 1 week to 6 months and proposed a punctuated equilibrium model of group development. Each team is characterized by its own pattern of development, but all teams experience periods of low activity followed by bursts of activity. In addition each team had a midpoint crisis where they exhibited a concentrated burst of activity, dropped old patterns, re-engaged with their outside supervisors, adopted new perspectives on their work, and made dramatic progress. Next groups/teams executed the plans they had created during the transition. Towards completion, there was a final shift towards task oriented behaviour patterns and a final burst of activity to finish the work and meet the deadline. Thus, it is clear that teams/work groups develop and change their performance patterns over time. Further, it
becomes important to then understand the changes that occur in these transitions. It can be that as team members spend more time together they develop knowledge and skills that facilitate interaction among team members and team performance.

To understand what teams know, how they learn it, and how team performance adaptively changes over time, Kozlowski, Gully, Nason, and Smith (1999) proposed a model of team compilation that integrates team development with team performance at any given point in time. Thus, team performance and adaptability at any given point in time is viewed as the dynamic consequence of a continuous development process. Individual performance is based on individual team members’ task-specific knowledge, skills, and abilities. Dyadic performance includes coordinated role exchanges coupled with individual performance. And team performance then becomes a complex function of specific individual and various dyadic-networked-contributions. Thus, in compilation models, the higher level phenomenon is a complex combination of diverse lower-level contributions (Kozlowski, 1999). As individual members perform tasks in a team, they interact and coordinate with each other, and this process becomes more synchronized as time passes from the initial phase to the later phase. This theory links various aspects of team such as the levels issue, i.e., that team performance and effectiveness is a complex, emergent phenomena that includes individual performance, various interactions among team members and then the team performance. The theory includes the concept of time or temporal duration of teams because teams (especially complex teams) develop over time from being just a collection of individuals to establishing routine patterns of interactions, developing roles and adapting to changes that can be either internal (e.g.,
addition of a new team member) or external (e.g., merger of organization with another organization) to the team.

Again, the models discussed in this section are by no means all inclusive of the models that exist in the team and work group literature. Nonetheless, they provide some orientation regarding how researchers have addressed various aspects of team effectiveness. From a basic simple linear conceptualization of work group and team development (e.g., Tuckman, 1965) there is understanding that team effectiveness is a complex phenomenon involving various aspects that are more than just sum of the basic components.

Socialization of Group Members

A new issue related to the temporal development of teams is how new members are integrated into new, short-term teams or pre-existing teams. Increasingly, organizations are relying on temporary, project based work that requires employees to transition from one team to another either in the new organization or the old one (Feldman, 2000). This rapid movement between teams raises the issue of whether Tuckman’s (1965) model regarding team development would hold true for such transient teams that do not have time to go through all the phases as proposed by Tuckman and Jensen (1967). It is not clear to what extent their model can explain team development in more rapidly changing teams. These models and others trace team development process and then team termination but are not really oriented towards short term teams that comprise of members who do not have the time to understand each other and invest time in the initial rapport formation, norm development and other processes.
There is some recent research that has focused on the entry of a new member in an already existing team and how over time these new members get adjusted to the already existing team dynamics and how the team dynamics changes with the entry of a new member. Some recent research (e.g., Chen & Klimoski, 2003; Chen, 2005) has focused on the socialization of knowledge workers who joined existing high-tech project teams and then on how their performance evolves over time throughout the socialization process. But, there are times, especially in high-technology industries, that teams are formed of all new members who have not known each other before, and thus it becomes imperative to understand the possible factors that affect these newly formed teams and team functioning. Thus, an understanding of how individuals socialize and interact effectively with each other, generate informal norms and roles that facilitate task performance team goal attainment would be beneficial in these new teams. This information can be used to structure teams in a way so that members are not spending time dealing with process losses.

*Broad Approaches to the Examination of Team Effectiveness*

Regardless of the models and the approaches, there are some basic factors that affect team effectiveness, such as team composition, team motivation, team leadership, and team viability. It has been repeatedly found that effective teamwork is not an automatic result of just bringing team members together to accomplish interdependent tasks (Steiner, 1972). There are times when teams consisting of accomplished and expert individuals do not perform effectively. Teamwork is more than work accomplished by a group of individuals and thus, it can be viewed as a result of collective cognitive, behavioural, and attitudinal activity (Salas & Fiore, 2004). Thus, it becomes important to
understand factors that lead to effective team functioning, which in turn facilitates productivity.

**Group Processes**

Researchers influenced by a variety of frameworks and orientations (e.g., group dynamics, mental models, personality, motivation) have studied teams and processes that facilitate team effectiveness. Significant findings from group studies conducted in social psychology (for recent reviews, see Levine & Moreland, 1990; McGrath, 1997; McGrath, Arrow, & Berdhal, 2000) have facilitated the understanding of work group processes. Researchers in social psychology and sociology have focused on the processes by which group members perform a task successfully. Thus, social psychologists have examined aspects such as social loafing, social facilitation, social compensation, leadership, communication, conflict, norms, and cohesion (e.g., Dionne, Yammarino, Atwater, & Spangler, 2004; Karau, & Williams, 1997).

**Team Cognition**

The cognitive processes that arise during the complex and dynamic interaction of teams have been the focus of research on team cognition (e.g., Cannon-Bowers, Salas, & Converse, 1993; Ensley & Pearce, 2001; Klimoski, & Mohammed, 1994; Rentsch, & Klimoski, 2001). The rationale behind this movement is that shared information processing among team members has both inter- and intra-individual outcomes whereby constructs such as encoding, storage, and retrieval of information are thought to be equally applicable to both individuals and teams (Salas & Fiore, 2004). This research stream is based on an attempt to understand how individuals in a team process information and how this information processing affects team effectiveness and has
focused various aspects such as team schema (Rentsch & Woehr, 2002) and metacognition (Hinsz, 2004).

**Distal and Proximal Determinants of Motivation**

Research on group processes from social psychology and research on team cognition have addressed important research questions. However, the current study focuses on a set of factors that have received less research attention, the role of individual difference factors in team effectiveness. There is no overarching conceptual framework in team research that has addressed the role of individual difference factors in teams. However, indirect evidence from research on motivation has provided us with a framework for examining the role of individual difference factors in teams. Specifically, Kanfer (1990) conceptualized individual differences affecting motivation in two broad categories namely, distal and proximal. Distal factors are generally stable and not easily altered whereas proximal factors are unstable and malleable. Distal determinants of motivation are broad, general characteristics of persons. For example, individual differences in personal tendencies such as need for achievement and generalized self-efficacy reflect distal determinants of motivation. Distal traits such as personality and ability are influential in choice behaviour and effort. These stable factors are likely to have an indirect effect on action, for example, in determining what resources are available during task engagement.

In general, the effects of distal factors are manifested through proximal determinants of behavior. Proximal factors influencing motivation are typically aspects that are more malleable in nature such as self-regulation (e.g., self-evaluation, self-monitoring, and self-reactions) and task specific self-efficacy. Thus, distal factors
emphasize indirect effects on action whereas proximal theories include mechanisms that control the execution of actions during task engagement. This framework has been useful in examining individual motivation and behavior (e.g., Kanfer, 1990) and has the potential to increase our understanding of individual motivation and behavior in teams as well.

Although specific individual difference factors will be addressed in more detail below, in brief, research examining stable individual difference factors has focused on team composition and its effects on team effectiveness. Historically, research addressing the role of team member personality in work group effectiveness has produced mixed results (Driskell, Hogan, & Salas, 1987). However, more recent research has provided evidence for the effects of Big Five factors on team performance. For example, Van Vianen and De Dreu (2001) found that conscientiousness and agreeableness were positively related to performance in most types of teams. Other researchers (e.g., Barry & Stewart, 1997; Numen & Wright, 1999) have found support for the role of extraversion and conscientiousness in team performance. Similarly, Halfhill, Neilsen, Sundstorm, and Weilbaechear (2005) found that personality composition correlated with group performance of military service teams and proposed that groups develop norms around their collective personality traits. This line of research suggests the importance of team member personality in team effectiveness and highlights the need for examination of other individual difference factors such as gender, age, race that could affect team performance.

Similarly, although proximal motivation factors will be discussed in more detail below, I note here that little research has considered directly motivation in teams
(Kozlowski & Bell, 2002). Furthermore, I suggest that one proximal model of motivation, goal setting, has potential for increasing our understanding of team effectiveness. Psychologists have focused on the motivation of individuals in the workplace, specifically in terms of motivation effects on job performance and job satisfaction. This research has lead to a variety of models, including equity-theory (e.g., Adams, 1965), expectancy-value models (e.g., Porter & Lawler, 1968; Vroom, 1964) and goal setting (e.g., Locke, 1968; Locke & Latham, 1990). However, my focus in the current study is on goal setting theory. Goal setting addresses antecedents and consequences of purposive action.

Multiple reviews and meta-analyses in the goal setting literature at the individual level have indicated that there is substantial support for the basic principles of goal setting theory. It has been widely supported that specific, difficult goals when accepted lead to better performance than specific easy goals, general goals such as “do your best” goals, or no goals (for reviews, see Locke & Latham, 1990; Locke, Shaw, Saari, & Latham, 1981; Tubbs, 1986). This relationship is robust and has been demonstrated in a variety of settings in the field as well as the laboratory. Further, researchers have examined numerous mediators, moderators and antecedents of the goal–performance link (for review, see Locke & Latham, 1990).

Given the robust effects observed for goals at the individual level and the suggestion that goals play an integral role also in team functioning, research needs to examine the role of goals in teams. This is consistent with research that has defined teams as sets of individuals working to achieve some common goal (e.g., Gladstein, 1984; Hackman, 1987; Guzzo & Shea, 1980; Sundstrom, Demeuse, & Futrell, 1980).
**Antecedents of Team Effectiveness**

Prior streams of research on teams (e.g., Dionne et al., 2004; Gladstein, 1984) have focused on processes such as communication, conflict, and metacognition, examining their effects on team effectiveness. A smaller amount of research has focused on the effects of individual differences (e.g., personality, gender) on team processes, primarily focusing on stable individual differences rather than more malleable individual factors (e.g., Kozlowski & Bell, 2002; West, Borrill, & Unsworth, 1998). Moreover, little research has examined the role of motivation as a mediator of individual differences on team effectiveness.

Thus, research is needed examining motivation as a factor influencing team effectiveness and examining antecedents of motivation in a team context. Fortunately, research exists providing either direct or indirect evidence supporting the effects of individual differences on motivation and in turn team effectiveness. Of particular promise in their effects on individual motivation in team contexts are individual knowledge, skills, and abilities, personality, and demographics. Guzzo and Dickson (1996) referred to factors such as these as team member composition, suggesting that the attributes of individuals, such as skills, abilities, experiences, and personality can influence team effectiveness. Similarly, Harrison, Price, and Bell (1998) highlighted the potential importance of such factors, examining the influence of surface level (demographic; e.g., age, sex, race) and deep level (attitudinal; e.g., beliefs, values, abilities, skills, experiences) factors on team integration.
Knowledge, Skills, and Abilities (KSAs)

In brief, individuals have some basic task specific knowledge, skills, and abilities that they bring to a team. Teamwork requires the basic individual knowledge, skills, and abilities relevant to the technical work and must integrate these effectively. There has been some interest in assessing the effect of individual member KSAs as well as team KSAs on team performance. In a recent meta-analysis, Devine and Philips (2001) indicated that the mean cognitive ability of team members accounted for about 8.6% variance in team performance which was about twice as much as the cognitive ability of the most intelligent member. LePine (2003) in a study of team adaptation demonstrated that after an unforeseen change in the task context, teams with members high on cognitive ability, achievement, and openness had superior performance. Thus, the set of individual differences that predict performance in a changing situation may be distinct from those that predict performance in a routine situation. In a study on emergent leadership, Kickul and Neuman (2000) found that cognitive ability and the personality traits of extraversion and openness to experience distinguish leaders from followers in a simulated group setting. Thus, research clearly indicates that team member cognitive ability plays an integral role in team performance and various team processes such as leader emergence.

Personality

Personality has been defined to include internal factors such as dispositions and interpersonal strategies that explain individual’s behaviours and the unique and relatively stable patterns of behaviours, thoughts, and emotions shown by the individuals (Hogan, Hogan, & Roberts, 1996). Personality has been conceptualized from various theoretical
perspectives and at various levels of abstraction and breadth (John & Srivastava, 1999; McAdams, 1995).

There is substantial literature that supports the use of personality testing especially during selection and recruitment. Meta-analyses have indicated that personality traits are related to various occupational and work related criteria such as job performance, training effectiveness, and job satisfaction (Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001, Salgado, 1997, Tett, Jackson, & Rothstein, 1991). But, the role of personality at the group/team level in the organization has attracted little attention (Klimoski & Jones, 1995). If personality plays a role at the individual level in terms of job performance and teams/groups consist of individuals working together to attain a common goal, individual personality should affect team effectiveness and outcomes.

Comparatively, little research has examined the effects of personality traits of group members and the effects of these on group outcomes, and this research has met with mixed success (Driskell, Hogan, & Salas, 1987). Other research has examined the effects of specific personality traits on group processes and task performance (VanVianen & De Dreu, 2001). Driskell, Hogan and Salas (1987) enumerated three major factors that have impeded progress in examining personality and group effectiveness. The first is an emphasis in the field of personality on the psychopathological aspects that has few implications for understanding the effectiveness of a group under normal circumstances. The second is a lack of consensus on the definition of personality. The third is the failure to specify adequately personality effects in the context of specific task environments.
Driskell, Hogan and Salas (1987) presented a model to provide a rational basis for analyzing the effects of personality on group performance. They indicated that personality will best predict performance for consistent types of tasks. Personality affects performance by influencing skill, effort, and strategy differentially. Van Vianen and De Drew (2001) studied the effects of personality composition on team processes and team performance. Using the Big-Five personality taxonomy, they found that relatively high minimum level of conscientiousness and agreeableness lead to better performance in most types of teams. Similarly, other researchers (e.g., Barry & Stewart, 1997; Neuman & Wright, 1999) have found support for the roles of extraversion and conscientiousness in team performance. Halfhill, Neilsen, Sundstorm and Weilbaecher (2005) studied personality composition of military service teams and found that personality composition correlated with group performance. Further, Halfhill et al. proposed that groups develop norms around their collective personality traits. Finally, researched has suggested that a mix of individual traits within a team context might be beneficial and that the appropriateness of a particular mix is contingent on the individual traits of interest, the nature of a particular task, and the desired team outcome (Barrick, Stewart, Neubert, & Mount, 1998).

Demographics

The nature of workforce demographics has changed considerably over the past few decades, including increases in gender diversity, cultural diversity, and age diversity (Bower, Pharmer, & Salas, 2000). Work groups/teams have the possibility of being diverse, and thus individual team members might have to deal with people who differ in gender, age, and culture. Diversity in team composition can affect team effectiveness.
Some research has suggested that demographic diversity does not always improve team performance, but over time diversity might become less important to team performance than psychological diversity (Harrison, Price, Gavin, & Florey, 2002).

Of particular concern in the current study is gender. Teams today are likely to include both men and women, regardless of whether they operate in business or academic settings. I will use the terms ‘gender’ and ‘sex’ interchangeably to describe the self-identified, physiological groups of male and female to avoid any misconceptions. Two types of gender-related effects may influence individual experiences in teams: sex effects and sex-dissimilarity effects (Tsui & O’Reilly, 1989). Sex effects occur when women’s and men’s experiences differ. Sex-dissimilarity effects occur when individuals’ experiences vary as a function of the degree to which they are different from team mates with respect to sex (Tsui, Egan, & O’Reilly, 1992). In an integrative review on the effect of gender composition on team performance, Wood (1987) found a small yet positive effect of mixed-sex teams on team performance. In general mixed–sex teams outperformed same sex teams, although this relationship was not significant. However, all male groups outperformed all female groups. This finding was also supported by Stokes, Steele-Johnson, and Narayan (2006) who found that all male dyads outperformed all female and mixed dyads in a logistics task.

There are various factors such as the team task, social stereotypes, prior experience of team members that may have been inherently suitable for one sex over the other. Men in mixed sex teams typically display more self assertion and dominance, whereas women typically display more deference and warmth (Dovidio, Ellyson, Keating, Heltman, & Brown, 1988). However, Bayazit and Mannix (2003) did not find a
significant relationship between gender diversity and member’s perceived team performance. Cady and Valentine (1999) reported that increases in gender diversity in teams results in negative evaluation of the teaming process and lower levels of psychological attachment. Further, they found that as a team becomes more sex diverse, the quantity of ideas decreased.

The relationship between job satisfaction and gender has provided mixed results. Some studies have shown that women are more satisfied than men (e.g., Sloane & Williams, 1996). Other studies have shown men to be more satisfied than women (e.g., Chiu, 1998). Although most of the research in this area reports no significant differences in relation to job satisfaction between the sexes (e.g., Witt & Nye, 1992), team processes lend a complexity to this construct at the individual team member level that needs more attention.

Research examining team composition in terms of gender/sex and ethnicity has focused on the effects of team communication on team processes and effectiveness (Swezey & Salas, 1992). Communication involves transmission of information from one team member to another in common language (Landy & Conte, 2004). Communication is important in teams because of the interactive work they engage in. Good communication facilitates coordination between team members and affects team effectiveness. Campion, Medsker, and Higgs (1993) indicated that group communication was related to team productivity and that gender/sex and ethnically diverse groups communicated more formally and less frequently than homogeneous groups (Milliken & Martins, 1996).
Similarly, research conducted in education psychology has found gender differences in interactions between boys and girls. In science classes, for example, Madhok (1992) discovered that in majority-female groups, girls deferred to the boy; in majority-male groups, the boys ignored and insulted the girls; in all-female groups, girls had an almost equal interaction, but showed lack of confidence in understanding the experiment and difficulty even with basic procedures; in equal-male-and-female groups, status-seeking comments were low and on-task comments were high for both males and females; in all-male groups there was a wide range of turn-taking. This research clearly indicated that there are some differences between men and woman and the way they communicate with each other in a small group environment. Thus, overall there are conflicting results on the effects of gender diversity in team performance and there is a consensus on the need to understand the complex dynamics of gender in team effectiveness. One finding of gender diversity on team performance is that balanced cross-gender teams may be more advantageous than all-male or all-female teams (e.g., Orlitzky & Benjamin, 2003). Although, most research on gender composition in teams has focused on team level outcomes (e.g., team performance) and there is no research that I found looking at the effects of team gender composition on individual team member outcomes (e.g., individual performance).

In conclusion, it can be noted that team input factors are important for the effective functioning of any team. When there is more than one individual working together with another individual(s), the complexities and the dynamics of the work group change depending on what teamwork KSAs each individual has, as well as team member ability, personality and demographic diversity. Thus, when teams are formed it is
important to take these factors into consideration, instead of just forming teams based on the technical competence of each team member for a given task. And, once formed, gender issues in team composition should be acknowledged and managed. Lack of consideration of these aspects could lead to an ineffective team embroiled in dealing with interpersonal problems instead of team goal attainment. Prior to this I have been focusing on more stable individual differences such as ability, personality, and demographics, but there are more malleable factors such as self-efficacy that individuals differ on and are more proximal determinants of motivation.

**Motivation: Self-Efficacy**

Bandura (1986) defined self-efficacy as judgments of one's own capabilities to organize and execute courses of action needed for to meet a specific performance criterion. Expectations regarding efficacy influence the amount of effort individuals will expend and how long they will persist in the face of obstacles and aversive experiences (e.g., failure). Bandura suggested that efficacy expectations vary on three dimensions that have important performance implications: magnitude, strength, and generality. Magnitude relates to the fact that efficacy expectations of individuals may be limited to the level of task difficulty, with success on a complex task showing a greater effect on an individual's efficacy. The strength of efficacy expectations varies, as individuals with stronger expectations of mastery persevere longer than those with weaker expectations. Efficacy expectations differ in generality, as some experiences may create a generalized sense of efficacy and others are limited to a specific situation. The generality component of self-efficacy is malleable in nature and gets manifested in task-specific self-efficacy. Thus, to predict behavior successfully in a given situation or on a specific criterion,
measurement of self-efficacy should be task-specific (Weigand & Stockham, 2000). However, other researchers (e.g., Chen, Gully, & Eden, 2001; Scholz, Dona, Sud & Schwarzer, 2002) believe that self-efficacy is a measurable trait that predicts behavior across domains. Previous successes and failures in one's life, according to these researchers, produce a generalized self-efficacy that is relatively stable across situations.

By surveying over 19,000 participants in 25 countries, Scholz et al. (2002) presented a convincing argument that general self-efficacy is a uni-dimensional, universal trait. Bandura (1997) indicated that such generalized beliefs about the self are not good proximal predictors of behavior. In support of this view, Chen et al. (2000) found that task-specific self-efficacy (TSSE) and general self-efficacy (GSE) were highly correlated, and that the effects of trait-like GSE on performance were mediated by TSSE, which they considered to be a more direct measure of motivational state.

In different studies, both TSSE and GSE have successfully predicted performance. Major meta-analyses (Stajkovic & Luthans, 1998) have demonstrated the predictive power of TSSE. TSSE should predict task performance better than GSE for any single domain whereas GSE should be a better predictor of behavior across domains (Scholz et al., 2002). However, direct comparisons of the two constructs are difficult, as there are few studies that measure both TSSE and GSE simultaneously (Chen et al., 2000).

Effects of Individual Difference Factors on Motivation

As can be noted from prior literature review, research has focused primarily on various input factors such as personality, demographics that affect various team processes such as communication and coordination. Recent reviews (e.g., Ilgen et al., 2005) have
also drawn attention to emergent cognitive and affective states such as trust and bonding, that are not really processes but develop over the life of a team and impact team outcomes. Yet, there is no mention of motivation as a part of this emergent state. Individual team members would have some initial levels of motivation to work on the team task, but as they interact with other members and work on the task, this initial motivation can change as individual team members interact with other members and become more familiar with the task. This change in motivation will have repercussions on individual team member performance and overall team effectiveness. Despite the important role that motivation plays in individual performance, it seems to be a neglected area in the field of teams. Stevens and Campion (1994) have proposed a framework to address the role of interpersonal and self management KSAs. Most prior research has focused on interpersonal KSAs. One self management KSA that they identified was goal setting, which is an important motivational construct from the individual level literature and this framework needs more attention.

Team effectiveness depends on members’ ability to successfully manage interpersonal relationships with one another. Varney (1989) referred to this individual capacity as “interpersonal competence” and indicated its importance in maintaining healthy relationships and reacting to others with respect for ideas, emotions, and differing standpoints. Stevens and Campion (1994) identified 14 specific teamwork KSAs under two broad categories namely, interpersonal and self-management KSAs that are desirous for successful team performance. Interpersonal KSAs incorporate dimensions of conflict resolution, collaborative problem solving, and communication. Self management KSAs include goal setting, performance management, and coordination dimensions.
Subsequent to the development of the taxonomy of teamwork KSAs, Stevens and Campion (1999) developed a valid test for measuring teamwork KSAs within a specific individual. Recently, McClough and Rogelberg (2003) found that teamwork KSAs does predict individual team member behaviour, and the predictive relationship is not subject to an individual’s perception of self-efficacy. The test was also found to be generalizable across types of teams.

One self management KSA identified is goal setting. Goal setting is a well documented individual level performance management technique (Mento, Steel, & Karren, 1987). Similarly, a clearly defined mission or purpose is important for team effectiveness. This aspect has both conceptual (e.g., Bell & Kozlowski, 2003; Gladstein, 1984) and empirical (e.g., Weingart, 1992) support. Further, goal difficulty level should be appropriate to team competency for the team to be effective (Weingart, 1992). Again, just as for an individual, team goals must be challenging but attainable (O’Leary-Kelly, Martocchio, & Frink, 1994). In a team environment goal acceptance by each member is a critical because any conflict or disagreement between team and individual goals or between team member individual goals can cause problems for team functioning and affect team effectiveness.

In conclusion, individuals need teamwork KSAs above and beyond taskwork KSAs to be successful in a given team environment. Goal setting is one such KSA that requires attention. Individual team members should be able to set a goal that is difficult and challenging for them but take into consideration the overall team goal and the goals of other team members. Team performance and outcome could suffer if team members taking, the overall purpose, or team goal into consideration do not set congruent goals.
Team Motivation

The majority of theory and research on motivation has been focused on the individual level. There is relatively little research that has specifically examined motivation as it operates in team contexts or at team level (Bell & Kozlowski, 2002). Moreover, much of what is known about motivation at the team level comes from social psychology wherein group behaviour has been studied extensively.

It is important to consider the manner in which team motivation differs from individual motivation by attempting to understand the mechanisms that might explain motivation at the team level, an area that has been neglected by researchers (Weaver, Bowers, Salas, & Cannon-Bowers, 1997). Weaver and colleagues proposed a model describing team performance as a function of taskwork ability, teamwork ability, taskwork motivation, and teamwork motivation. Teamwork is a set of identifiable behaviors, cognitions, and attitudes that interact to influence a team's performance. Teamwork refers to activities involved in achieving coordination and cooperation between team members (e.g., communicating, helping behavior, etc.). Taskwork refers to behaviors that are necessary in the actual execution of task i.e. dealing with the technical aspects of the job such as using the tools, knowledge and skills to perform the task. Weaver and colleagues asserted that the teamwork demands are additional demands that affect team performance. And these demands might be affected by different motivational forces as compared to individual task demands.

Teamwork motivation refers to factors that directly influence whether teamwork abilities (e.g., communication and coordination skills) will be utilized in the context of some team task performance situation. Weaver et al. (1997) considered attitudes,
collective orientation and cohesion as variables related to teams’ process that in turn could affect team performance. There is complex interdependence between taskwork motivation, teamwork motivation, taskwork ability and teamwork ability that results in overall team performance. This complex interdependence can be in terms of task interdependence, goal interdependence, and/or feedback interdependence. This model also highlights the importance of goals and goal structures. Weaver et al. called for a need to determine which level of goal setting will be most effective in optimizing team performance. To foster teamwork motivation requires more than what is needed to motivate an individual. Teams are subject to more influences than an individual and various situational components such as team context, task interdependence, team member attitudes might affect team motivation. In this conceptual paper, Weaver and colleagues extended the construct of motivation to the teams and called for more research in this area. I have not been able to find any empirical work that supports this model, though various components of this model, i.e., teamwork and taskwork have been used by researchers to further conceptualize various team phenomena (e.g., Cooke, Kiekel, Salas, Stout, Bowers, & Cannon-Bowers, 2003). Further, this model has a generalist, prescriptive approach and is not clear on the level of conceptualization (i.e., individual or team) in its focus. Yet, Weaver et al.’s model is one of the earlier works that recognized the importance of team motivation as an important aspect of team performance.

**Collective Effort Model (CEM)**

A key model addressing motivation in groups is the Collective Effort Model (CEM; Karau & Williams, 2001). Researchers have acknowledged that the motivation level of individual group members is often a key determinant of group performance (for a review,
see Hackman, 1987). But, individuals working in a group may demonstrate different patterns of motivational effects. Research has indicated that individuals might reduce their efforts when working collectively—a phenomenon known as social loafing (Karau & Williams, 1993). However, social loafing is not inevitable, and a number of factors have been found to reduce or eliminate the effect. Several interpretations of social loafing invoke the concept of evaluation (e.g., Harkins, 1987; Williams, Harkins, & Latané, 1981). These viewpoints suggest that social loafing occurs because working collectively often makes each group member's inputs difficult to identify and evaluate. Research has shown also that two criteria must be met for evaluation of inputs by any source (one's boss, one's coworkers, or one-self) to be possible. Individual team members’ output must be known or identifiable, and there must be a standard (personal, social, or objective) with which this output can be compared (Harkins, 1987).

Karau and Williams’ (1993) Collective Effort Model (CEM) explains and integrates the existing research on social loafing and has important implications for a variety of naturally occurring phenomena in groups and work teams. The model suggests that individuals will be willing to exert effort on a collective task only to the degree that they expect their efforts to be instrumental in obtaining outcomes that they value personally. When those outcomes that are tied to the collective situation or to the group's performance are not perceived as important, meaningful, or intrinsically satisfying, individuals are unlikely to work hard. Moreover, even when the relevant outcomes are highly valued, individuals are unlikely to work hard if their effort is not expected to lead to performance that will be instrumental in obtaining those outcomes. Valued outcomes can consist of either objective outcomes such as pay or subjective outcomes such as
enjoyment, satisfaction, feelings of group cohesiveness and belonging, and feelings of self-worth. However, it is the individual's evaluation of the outcome rather than the outcome itself that determines its valence (e.g., Deci, 1975). Because the CEM is focused primarily on group phenomena, it places special emphasis on group-level outcomes that have implications for the individual's self-evaluation. Research has repeatedly demonstrated that individuals are motivated to maintain a favorable self-evaluation (e.g., Brown, Collins, & Schmidt, 1988; Greenwald & Pratkanis, 1984; Tesser, 1988). Group performance settings produce the potential for self-evaluation from a variety of relevant sources (Leary & Forsyth, 1987).

Thus, self-evaluation processes within groups and social categories are important and collective settings that provide a great deal of information (especially positive information) relevant to one's self-evaluation and self-validation have the potential of being more motivating to individuals than settings that provide less information. Also, self-evaluation information can come from a variety of sources, and those sources that provide information relevant to one's role in valued reference groups may be especially influential. In a work group environment, various forms of self-evaluative information coupled with other factors such as other team members, team goals, team tasks, and the time for which a team has come together could affect individual team members’ goal directed behaviour.

Goal Setting Theory

Goal setting theory is an individual-level model based on the premise that much of human action is purposeful, in that it is directed by conscious goals. The theory’s core premise is that the simplest and the most direct motivational explanation of why some
people perform better on work tasks than others is because they have different performance goals. Goal setting theory has indicated that there is a linear relationship between goal difficulty and subsequent performance over a wide range of performance (see Locke & Latham, 1990, for a review). This linear function plateaus when individuals reach the limits of their ability at high goal difficulty levels. Mento, Steele and Karren (1987) indicated that goal difficulty and goal specificity performance effects appear stable across type of study (e.g., experimental or correlational), type of subjects (e.g., educational level), and differing feedback and incentive conditions. Substantial research has demonstrated the robust effect of specific difficult goals on performance (e.g., see Locke & Latham, 1990, for a review). Other research has focused on factors affecting the goals chosen or commitment to assigned goals.

**Goal Choice**

A variety of factors have been identified that influence individuals’ choice of goals. For example, an individual is likely to choose a goal that s/he perceives as attainable (Bandura, 1986). Also, the person’s belief that a given goal is important or desirable influences the goals chosen. Various studies have shown that past performance or perception of past performance (e.g., Campion & Lord, 1982), ability or perceived ability (e.g., Vance & Colella, 1988), and prior experiences of success and failure (e.g., Vance & Colella, 1988) play a role in goal choice. Other factors that have been found to influence goal choice are group norms and normative information (Meyer & Gellatly, 1988), role modeling (Earley & Kanfer, 1985), competition (Hinsz, 2005), group goals (Matsui, Kakuyama, & Ongaltco, 1987), and social influence in the form of pressure and encouragement (Garland & Adkinson, 1987). Goal choice typically is assessed by asking
individuals to report their intended effort levels (Strickland & Galimba, 2001).

According to Locke et al. (1981), studies in which there is free goal choice (as opposed to assigning goals to individuals) would be more sensitive in detecting effects attributable to individual differences.

*Mechanisms of Goal Setting*

In order to understand factors affecting goal choice, a key factor in the present study, a clearer understanding first is required regarding the goal setting process, including the mediators and moderators of goal effects on performance. The three primary motivational mechanisms delineated in this research domain that are activated consciously or habitually once an individual commits to a goal and decides to act on it are: effort, persistence, and direction (see Locke & Latham, 1990, for a review).

First, goals regulate the amount of effort that individuals expend in a given task based on the difficulty level of the task or goal. Goals have been found to affect performance by influencing the way individuals allocate *effort* to tasks (Blau, 1993; Kanfer 1990). Research has indicated that effort and arousal change with the demands made on the person, when the person accepts the demands (e.g., Locke & Latham, 1990). Thus, under high demand conditions, individuals have to use more of their total capacity than under low demand conditions and also, allocate more attention to the task at hand as compared to other tasks (Locke & Latham, 1990). Resource allocation theorists have defined effort in terms of attention (Kanfer & Ackerman, 1989). Effort is assumed to be a limited capacity resource that can be allocated to a range of different activities, including off-task, on-task, and self-regulation activities. These allocations can vary in terms of intensity and persistence. Various studies have demonstrated that goals regulate
effort expenditure (e.g., Locke, Shaw, Saari, & Latham, 1981; Strickland, & Galimba, 2001). Some studies have used tasks that directly reflect physical effort such as the use of an ergometer (Bandura & Cervone, 1983, 1986). Others have suggested that rate of work or rate of performance is a linear function of goal difficulty when ability is controlled for. For example, Bandura and Schunk (1981) found that subjects with specific hard goals on a subtraction task worked faster than those with do your best goals. Another set of studies has focused on subjective effort ratings from people in different rating conditions. Subjects with hard goals rated themselves as putting forth more effort than those with easier goals (Cannon-Bowers & Levine, 1988; Earley, Wojnaroski, & Prest, 1987). In other research, third parties made effort assessment. Meyer, Konar, and Schacht (1983) had subjects read work scenarios specifying subjects’ goal levels and then make ratings of the degree to which they thought the job holders should exert effort. Their results indicated that recommended effort ratings were linearly related to goal difficulty. Other studies have focused on the time spent on a task as a measure of effort intensity. For example, research (Brown & Leigh, 1996; Fisher & Ford, 1988) has indicated that self reported effort and time spent on task are positively associated with task performance.

Second, goals motivate individuals to persist in their activities over time. Individuals who have difficult goals are more likely to persist and work longer as compared to those who have easy and/or vague goals. Traditionally, persistence is thought of as consistency in effort over time (Locke & Latham, 1990). This is measured in terms of time spent at an activity such as number of attempts to solve a problem or time spent writing a paper. A number of studies have shown that when individuals have
specific and challenging goals, they tend to work longer at a task than when they have nonspecific or easier goals (Locke & Latham, 1990). Singer (1981) examined the effect of goal-setting on persistence at practicing a task when unlimited practice time and alternative activities are available. Undergraduates were placed in a goal-setting or a control group setting and allowed to make as many attempts as they wanted to learn a complicated photo-electric mirror maze. Results indicated that the groups that were provided with short- and long-term goals persisted longer at the task than did the control group. In a recent study, to understand the motivational processes and persistence of weight loss dieting, Strong and Huon (1999) found that individuals whose motivation to diet was highly controlled (i.e., characterized by the need for approval, and the sense that one’s self-esteem is dependent on achieving behavioural success, [Deci & Ryan, 1985, 1990; Ryan, 1995]) were more inclined to persist for longer periods than those whose motivation was less controlled.

A third mechanism that plays a role in goal setting is direction. Goals direct activity towards actions that are goal relevant and away from those activities that are not goal relevant. This bi-directional effect of goal is automatic (Locke & Latham, 1990). Goals also activate goal relevant stored knowledge and skills that individuals might possess. Having specific goals draws attention to a given task and can facilitate effort towards goal attainment more than having no goals or do your best goals. Further, some aspects of self regulation play a role in goal direction. According to the volitional view of self regulated learning (Corno & Kanfer, 1993; Kuhl, 1992), participants control their attention, handle intrusive emotions, and use techniques of self motivation to energize and maintain their goal enactment. Thus, once a goal is present, the direction that an
individual might pursue to attain that goal would depend on one’s self concept and perception of obstacles related to successful goal attainment especially when the task is difficult.

However, there are some tasks (e.g., complex, heuristic) in which goal setting does not have a simple effect on performance. In such tasks, goal setting can have weaker or dysfunctional effects on performance (Johnson & Kanfer, 1992). For example, specific, challenging goals can be harmful to initial performance in complex tasks (e.g., Earley, Connolly, & Ekegren, 1989). Thus, in some situations, the mechanisms namely, effort, persistence and direction, are not sufficient for goal attainment, and individuals use cognitive resources to identify or develop strategies or action plans to perform the task and attain the goal (Locke & Latham, 1990).

Whereas Locke and his colleagues (e.g., Locke & Latham, 1990) have referred to effort, persistence, and direction as direct mechanisms, they have identified also one indirect mechanism through which goals affect performance—strategy development. Research has indicated that goals stimulate execution of known strategies (Locke & Latham, 1990). When individuals have goals, they try to figure out a way those goals can be attained. If the task is simple or familiar, and the individuals have the relevant base of knowledge and experience, identifying or developing a strategy to attain the given goal is not difficult. The task strategies in such situations could also be the ones that have been explicitly taught, provided, or primed. Thus, when given a goal, individuals select and execute known task strategies spontaneously (Locke, Durham, Poon, & Weldon, 1997).

Another way in which goals affect strategy development is by influencing the amount of planning in which an individual engages. Studies have indicated that specific,
hard goals result in more planning than do your best goals (e.g., Earley & Perry, 1987). Gollwitzer, Fujita, Oettingen (2004) suggested that planning a task strategy can be an effective self-regulatory strategy to attain goals. A certain type of plan, such as an if-then plan makes it easier to detect, recall, and attend to critical situations. Such a plan also enables the individual to respond quickly, efficiently, and even without conscious intent, once the critical situation is encountered. In this way, forming if-then plans facilitate action in an effective manner when goal opportunities are available.

Goals can influence also the quality of planning or strategy development. For example, Chesney and Locke (1991) found that specific, challenging goals were associated with higher planning quality in a business strategy computer simulation. When goals are easy, individuals believe that they will be successful regardless of the way they approach the task, and thus they do not have to formulate a careful strategy. However, as goal difficulty increases, individuals’ need to plan also increases (Locke, Durham, Poon, & Weldon, 1997).

*Types of Goal Setting*

Further, in addition to addressing mechanisms through which goals affect performance, research has examined various moderators of goal—performance relationship. The goal—performance relationship is moderated by several factors such as the types of goal setting, goal commitment, feedback, task complexity, and various individual difference factors.

*Assigned Goal Setting*

The prior discussion examined mechanisms through which goals affect performance. However, the effect of those goals can depend in part on the way in which
goals are set. Goals can be assigned, set participatively with an authority figure or in a group, or selected by the individual. The different types of goals can be discussed in terms of the degree of influence an individual has in determining goal levels.

Goals that are assigned by others (e.g., employers, teachers, parents) are referred to as assigned goals. Assigned goal setting emphasizes attainment of a predefined goal that does not necessarily preclude goal attainment by others. Whether an individual is motivated by an assigned goal depends on who assigns the goal and how the persuasive message is framed. Locke and Latham (1990) reviewed studies that measured personal goals chosen after goals were assigned and found a strong correlation ($r = .52$) between the two. About 25% of variance in personal goals is explained by assigned goals, indicating that even with assigned goals individuals show considerable variability in their personal goals. A recent study by Elston and Ginis (2004), comparing the effects of self-set versus assigned goals on exercisers' self-efficacy to perform a novel grip-strength task, reiterated the beneficial effects of assigned goal on improving performance.

Prior research has indicated that assigned goals have less beneficial effects than self-set goals (for review, see Locke & Latham, 1990). But, research has indicated that the way in which a goal is assigned affects goal commitment and subsequent performance. If the goal is assigned in a way that increases commitment, then an assigned goal can be as beneficial as a self-set goal. Latham, Erez and Locke (1988) found that differences between effectiveness of assigned versus participatively set goals were mostly attributable to characteristics of the research setting. They found that when research methods were kept constant, assigned goals produced similar effects on performance relative to participatively set goals. Latham et al. identified a tell and sell
strategy of assigning goals in which the subjects were provided with a rationale for why the task was an important one, were given some indication that the task was reachable, and were assigned a goal using a warm and friendly tone. This form of assigning goals was clearly superior to a tell format in which the goals were assigned without any explanations and using an abrupt tone. Latham et al. suggested that a tell and sell strategy is more effective because it affects individuals’ self-efficacy. And, substantial research has demonstrated that self-efficacy has a beneficial effect on performance and is an important mediator of goal setting effects on performance (e.g., Bandura, 1986, 1998).

In another review, Gollwitzer and Moskowitz (1996) indicated that it really does not seem to matter whether goal setting is determined from outside via assigned goals, freely chosen by the individuals themselves as in self-set goals, or set in interaction with others through participative goal setting. According to Locke and Latham (1990), characteristics of the source such as legitimacy and trustworthiness play an important role in whether the assigned goal is transformed into a personal goal (or self-set goal). They indicated that assigned goals affect performance through their effects on personal goals (or self-set goals) and on self-efficacy. A main purpose of an assigned goal is to influence an individual to select a personal goal or self-set goal of the same difficulty level.

Although assigned and self-set goals are usually correlated, there could be differences between them because individuals are not usually completely committed to what others ask them to accomplish. Thus, all things being equal, if goal commitment is held constant then goal difficulty has the expected relatively linear effect on over a wide range of performance. Self-set goals facilitate greater commitment towards difficult
goals as compared to assigned goals. A high level of commitment to an assigned goal can lead to similar performance as a self-set goal of same difficulty.

*Participative Goal Setting*

As mentioned above, participative goal setting is an alternative to assigned goal setting. The reason for using participative goal setting is to increase a person’s acceptance of and commitment to goals. Substantial research has examined the effects of goals set participatively (e.g., see Locke & Latham, 1990 for a review). Results of such studies have indicated that participation in goal setting affects performance to the extent that participation leads individuals to set a specific goal and/or a more difficult goal than would have been assigned unilaterally by an experimenter or supervisor (Latham & Steele, 1983). In a series of studies, Latham and colleagues found that participation had no beneficial effect on goal commitment or performance when goal difficulty was held constant (Latham, Erez, & Locke, 1988). Similarly, in a meta-analytic review, Tubbs (1986) found that average effect size for assigned goals was similar to that of participatively set goals.

*Self-Set Goals*

I have now discussed the effects of assigned goals and participatively set goals. I complete this section with a discussion of self-set goals. Self-set goals are goals that an individual sets for him/herself when there are other no explicit goals. Thus, individual needs, wishes, and other higher order goals influence self-set individual goals. Self-set goals facilitate and guide individual action by anticipating a desired outcome. By setting goals for themselves, individuals give direction to their actions and create self-incentives to persist until they attain their goal (Bandura, 1989). Ryan, Sheldon, Kasser, and Deci
(1996) stated that the content of goals that individuals have reflects their needs. Autonomy, competence, and social integration needs are expected to promote goal setting focused on self-realization rather than materialistic gains.

Thus, personality and concept of self should play a role in self-set goals. According to Carver and Scheier (1999), individuals possess a set of goals that are organized hierarchically. Individuals focus on that goal which is most important at a given point in time. Goals at higher levels in the hierarchy are more salient because they are close to the core sense of self, relative to goals at lower levels in the hierarchy. The highest level of a goal hierarchy reflects goals related to the overall concept of self. Thus, to the extent that being a conscientious person is an integral aspect of my concept of self and identity, conscientiousness would be reflected in the way I value work.

However, despite the similarity in outcomes, different processes play a role in self-set individual goal setting than in participative individual goal setting. For example, self-set individual goals are influenced by others through social context cues (Cantor & Fleeson, 1994). Further, people generally select goals that are desirable and feasible (Ajzen, 1985; Locke & Latham, 1990). Desirability is indicated by the possible attractiveness of possible short-term and long-term consequences of goal attainment. These consequences could be related to anticipated self-evaluations, evaluations by significant others, progress towards some higher order goal, or external rewards to having attained a goal (Heckhausen, 1977). Some aspects on which feasibility depends are: individuals’ judgments of their capabilities to perform relevant goal directed behaviours (e.g., self-efficacy expectations; Bandura, 1997), individuals’ beliefs that goal directed behaviors will lead to the desired outcome (i.e., outcome expectations; Bandura, 1997),
or individuals’ judged likelihood of attaining desired outcome (i.e., generalized expectations; Oettingen, 1996).

**Goal Commitment**

Goal commitment refers to individuals’ determination to try for a goal (Locke, Shaw, Saari, & Latham, 1981). Goal commitment is important because research has shown that only those individuals who are committed to a goal apply effort toward goal attainment (e.g., Hollenbeck & Klein, 1987). Further, Locke (1968) indicated that goal commitment moderated the relationship between goal difficulty and performance. A more recent review by Klein, Wesson, Hollenbeck and Alge (1999) reaffirmed the role of goal commitment as a moderator. Commitment entails the intent to extend effort, over time, towards to accomplishment of an original goal and emphasizes an unwillingness to abandon or lower the original goal (Campion & Lord, 1982; Hollenbeck & Klein, 1987). Some researchers (for review, see Locke & Latham, 1990) have indicated also finer conceptual distinctions between the initial agreement with the goal as a standard (i.e., acceptance), intention to attain the goal (i.e., commitment), and the maintenance of those intentions over time (i.e., determination). Although these finer subtle distinctions can be made, research has failed to demonstrate concrete, viable distinctions between these concepts. Thus, these terms have been be used interchangeably or under the broad umbrella of commitment (for review, see Locke & Latham, 1990). Despite some debate over the terms, goal commitment seems to have emerged as the more inclusive term and has received more attention in recent years (Klein et al., 1999). Goal commitment is assessed often with a questionnaire (e.g., Hollenbeck, Klein, O’Leary, & Wright, 1989).
However, goal commitment has been assessed also by examining the discrepancy between an assigned goal and the personal goal an individual selects.

*Feedback or Knowledge of Results*

However, without knowledge of one’s performance, goals alone do not have any continuing motivational impact. Thus, it becomes important to understand the role of feedback in goal setting. A widely accepted finding in psychological research is that knowledge of results or feedback affects performance (Ilgen, Fisher, & Taylor, 1979). The relationship between feedback and goals is a complex one. Neither goals nor knowledge of results is sufficient to improve performance; both are equally important.

Feedback can serve either as a moderator or an antecedent for the goal—performance relationship. Characteristics of feedback (e.g., quantity, sign) can affect the relationship between goals and performance (Mesch, Farh, & Podsakoff, 1994). Additionally, feedback can influence the goals individuals choose and in turn influence performance (Locke, Shaw, Saari, & Latham, 1981; Locke & Latham, 1990). Feedback tied to goal progress was the specific type of feedback that was initially studied (e.g., Erez, 1977). But, in addition to performing an informational function, feedback can also perform a motivational function (Ilgen, Fisher, & Taylor, 1979). Feedback provides individuals with information regarding the accuracy and progress of their performance and motivates individuals by affecting perceptions of competence and accomplishment (Earley, Northcraft, Lee, & Lituchy, 1990).

The combination of goals and outcome feedback can affect self regulation of effort and persistence by informing individuals regarding the discrepancy between the goal and performance. This performance discrepancy can be motivating to the individual.
unless the magnitude of the discrepancy is so large that it reduces self-efficacy and commitment to reach the goal (Neubert, 1998). A recent meta-analysis (Neubert, 1998) indicated that adding feedback to goal setting has substantial value in affecting performance positively across conditions varying in goal difficulty and performance criteria ($d = .63$). Adding feedback to goal setting nearly doubled the incremental impact over goal setting in complex tasks ($d = 1.02$) as compared to simple tasks.

**Task Complexity**

As noted above, feedback can serve as a moderator or an antecedent of goal effects on performance. However, research has revealed other factors that also moderate the goal-performance relationship. One such moderator is task complexity. Task complexity has received considerable attention as a potential moderator of performance relations in both goal setting and feedback research (e.g., Earley et al., 1990; Neubert, 1998). Various researchers have tried to describe the nature of task complexity. One well-accepted model (Wood, 1986) suggested that complex tasks differ from simple tasks in terms of number of information cues and adaptive requirements of the task. Tasks with few information cues and relatively routine operations are considered simple whereas tasks with that are considered complex have multiple information cues and require a number of unique or novel operations.

Meta-analytic research has supported the moderating role of task complexity in goal effects on performance, indicating that the effect of goal setting compared to a control condition is greater for simple tasks ($d = .76$) than complex tasks ($d = .42$; Wood, Mento, & Locke, 1987). In simple tasks, goal setting is thought to provide ample information to motivate effort and persistence as well as to direct strategies towards goal
attainment. But, in complex tasks that involve multiple information cues or unique operations, the attentional resource demands of goals might have dysfunctional effects on performance (e.g., Johnson & Kanfer, 1992). That is, monitoring goal progress requires attentional resources. When the task is novel or complex, individuals might need to devote all of their attentional resources to the task and thus drawing attentional resources away from the task to monitor goals can have dysfunctional effects on performance (Johnson & Kanfer, 1992). Kluger and DeNisi (1996) supported Johnson and Kanfer’s results, similarly suggesting that goals can hinder performance in initial skill acquisition for a complex task by drawing attention away from learning that may be instrumental for later performance.

**Individual Difference Factors**

Individual differences may also moderate the goal—performance relationship. There has been some contradictory evidence in this area with some research indicating effects of individual difference factors in goal setting process (e.g., Gellatly, 1996; Martin & Murberger, 1994) whereas other research has failed to find any effects of individual difference factors in goal setting (e.g., Kalnbach & Hinsz, 1999). Consistent with Kanfer’s model, these factors can be described as either being distal determinants or proximal determinants of motivation. Distal factors would include more stable factors, such as demographic variables, ability, and personality that might have either main effects on performance, moderate goal effects on performance, or act as antecedents of goals. Proximal factors would include more malleable factors, such as self-efficacy, that similar to distal factors such as ability, can have either main effects on performance or moderate goal effects on performance. Moreover, as will be discussed below, proximal
factors, such as self-efficacy can serve as an antecedent of goals, i.e., can influence goal choice.

Demographic Variables

Again, demographic variables such as sex, race, or education can either be moderators of the goal—performance relationship or antecedents of goal choice. Little research has examined the effects of demographic variables on the goal—performance link. Locke and Latham’s (1990) review of that research has indicated that level of education did not moderate the effects of either participative or assigned goals and that age was not related to goal effects (i.e., goal setting was effective for children and adults). Further, their review revealed that goals significantly increase the performance of both males and females using either assigned and participatively set goals (see Locke & Latham, 1990, for review). In the literature review, I was unable to find any research that assessed demographics as antecedents of goal choice.

Ability

Our focus in the current study is on cognitive ability in contrast to other types of ability such as physical ability. The term cognitive ability refers to an individual difference in the capacity to acquire knowledge, solve problems, and apply reason to situations (Landy & Conte, 2004). General cognitive ability and broad content abilities are thought to underlie individual differences in attentional capacity (Kanfer & Ackerman, 1989). Similar to other stable factors such as task complexity and demographics, ability can either be a moderator of the goal—performance relationship or an antecedent of goal choice. Researchers have classified cognitive ability as a distal construct that is not specific to certain tasks or situations and is stable over time (Hough
& Schneider, 1996). Research has demonstrated that cognitive ability is an important predictor of performance on a variety of tasks (e.g., Ree, Earles, & Teachout, 1994), including selection and training tasks in general (e.g., Hausknecht, Trevor, & Farr, 2002) and academic learning in particular (Furnham, Chamorro-Premuzic, & Dougall, 2002; Phillips & Gully, 1997). Further, research has indicated that general cognitive ability and broad content abilities are important predictors of performance during all stages of practice for inconsistent information processing tasks (Ackerman & Cianciolo, 2000). Moreover, general cognitive ability affects the rate at which individuals acquire task skills after controlling for initial status wherein high ability individuals tend to learn faster than low ability individuals (Deadrick, Bennett, & Russell, 1997).

Some research indicates that ability moderates the goal—performance link. Kanfer and Ackerman (1989) found that goal setting interventions (i.e., assigned goals combined with feedback and do-your-best goals combined with feedback) may be potentially more useful among low ability individuals than high ability individuals when implemented after the initial phase of skill acquisition. In an extension of Kanfer and Ackerman (1989) studies, Harris, Tetrack, and Tiegs (1993) also found that individuals with low ability have the most to gain or lose through evaluative feedback. Specifically among three ability groups, those with the lowest ability had the highest and the lowest level of satisfaction with performance and perceived competence under positive and negative feedback conditions, respectively.

In addition, to its role as a moderator of the goal—performance relationship, ability might also be an antecedent to goal choice. That is, Locke and Latham (1990) indicated that cognitive ability relates to performance through its effects on task specific
self-efficacy and goal choice. Other research examining has found that self-set goal levels are strongly related to ability (e.g., Campion & Lord, 1982; Matsui, Okada, & Kakuyama, 1982; Thomas & Mathieu, 1994). Therefore, it becomes important to understand the role that ability plays in goal setting. Finally, in addition to actual ability effects, perceptions of ability also play a role in performance. For example, individuals who have perceptions of high levels of ability in general are prone to setting more difficult goals for themselves than those who have perceptions of low levels of ability (e.g., Thomas & Mathieu, 1994). Thus, ability or perception of one’s ability plays an important role in goal setting; ability or perceived ability can moderate goal effects on performance and might also be antecedents to goal choice.

*Personality*

Contemporary personality theorists believe that human behavior is organized around the pursuit of goals (e.g., Austin & Vancouver, 1996; Bandura, 1989; Elliot & Dweck, 1988; Little, 1999; Pervin, 1982, 1989). Personality can be construed via two different approaches. In one approach, it is understood as a system of mediating units (e.g., goals, expectancies) and psychological processes or cognitive affective dynamics, conscious and unconscious, that interact with the situation (Mischel & Shoda, 1998). Thus, an individual’s consistent choice of difficult personal goals could be reflective of personality variables (Campbell, 1982). The second approach, dispositional or trait theory, posits broad stable traits, factors, or behavioral dispositions as its basic units. Earlier, G. W. Allport (1937) indicated that there were traits with motivational components. But, with the beginning of the cognitive revolution, interest in cognition increased to the extent that it dominated nearly all fields (Pervin, 1989). In his cognitive
social learning reconceptualization of personality, Mischel (1973) suggested that, in addition to the regulation of action by external consequences, individuals regulate their own behavior by self-imposed goal (standards) and self-produced consequences. Cantor (1990) indicated that life tasks can bridge the gap between dispositions and behavior by representing the cognitive strategies individuals use to express their underlying dispositions. Further, Costa and McCrae (1994) viewed goals as causal outcomes of dispositions; that is, people’s life pursuits are, directly or indirectly, an expression of their traits.

A central issue for personality, as indicated by Allport (1961) concerns the organization of goal systems, that is, how an individual is able to maintain stability in goal system functioning while remaining flexible to meet changing internal and external demands. Most contemporary personality psychologists indicate that goals energize and direct behavior. Further, there is an emphasis on the idea that understanding a person means understanding the person’s goals (Carver & Scheier, 1999). Goals differ in the level of abstraction and time duration such that usually goals that are more abstract are higher in the level of hierarchy and apply for a longer time (e.g., being a self-sufficient person). Goals that are relatively closer to observable behavior are usually more concrete and finite (e.g., making dinner for yourself). Thus, the first more abstract goal concerns being a particular kind of person and the second concerns completing a specific kind of action that, may be indicative of the more abstract higher level goal in our behavior. This indicates that overall overarching broad abstract goals can be subdivided into constituent elements, which translate into behaviors’ that indicate the existence of the overall abstract goals. In terms of personality these overarching broad abstract goals
or ‘principles’ (Powers, 1973) can be considered as trait-like dispositional factors that influence an individuals functioning in different situations. Read, Jones, and Miller (1990) found that people see actions as related to traits if the actions are seen as moving the actor towards a goal that is related to the trait.

According to Pervin (1989) the goal concept suggests a more motivational view of an individual than that suggested by the trait concept, though clusters of goals and plans may be expressed in traits. Further, he indicates that goals and self are intrinsically linked to one another in the person. Goals contribute to the definition of the self and are expressed through self-directed action. Although goal concepts have been part of the cognitive framework, there is little research to indicate how goal and goal systems develop and how they are integrated with other aspects of personality. Locke and Latham (1991) indicated that personal goals affect performance and assigned goal influence personal goals. Personal goals (or self-set goals) in turn should also be influenced by individual differences because in the same situation some individuals set more difficult goals as compared to others. Most researchers would agree that there are individual differences in motivation, yet there is no clear understanding of the link between individual differences in personality and work motivation or the tools to reliably and accurately predict individual differences in motivation (Klein & Fein, 2005). Locke, Shaw, Saari and Latham (1981) indicated that the only thing consistent about the studies of individual differences in goal setting is their inconsistency. Thus, there is little to guide researchers in choosing personality constructs and in determining whether to examine those constructs as moderators of the goal—performance relationship or as antecedents of goal choice.
Various personality factors have been examined in isolated studies primarily as antecedents of goal choice. There is little research examining personality variables in goal—performance relationships (Levy & Baumgardner, 1991). In one exception, Beehr and Love (1983) suggested that personality characteristics such as higher order need strength may act as moderator for the goal–performance relationship. Somewhat more research has examined personality variables (e.g., need for achievement, conscientiousness) as antecedents of self-set goals (e.g., Locke & Latham, 2002). Gellatly (1996) found that conscientiousness affected goal choice. Similarly, Judge and Ilies (2002) estimated a true score correlation of .22 between consciousness and goal choice (operationalized as goal level or difficulty). Locke, Shaw, Saari and Latham (1981) and Campbell (1982) have suggested that individual difference in locus of control and self esteem may influence goal choice. Goal orientation is another individual difference factor that could play a role in the goal—performance relationship either as a moderator or an antecedent. Yet, goal orientation researchers have seldom taken into consideration the findings from goal setting theory (Seijts, Latham, Tasa, & Latham, 2004). Empirical research conducted largely in training and academic contexts has indicated that mastery orientation is associated with motivation to learn and other motivational constructs (e.g., the choice of goal level) but such relationships have not been consistently demonstrated (e.g., Colquitt & Simmering, 1998; Lee, Sheldon, & Turban, 2003). Research findings on performance orientation have been even more inconclusive (Klein & Fein, 2005).

**Personality: Five Factor Model.** Thus, prior research offers little guidance in the effects of personality in a motivational context. Ample research and a few meta-analyses
have indicated that personality traits are related to various occupational criteria such as job performance, training proficiency and job satisfaction (Barrick & Mount, 1991; Connolly & Viswesvaran, 2000; Salgado, 1997; Tett, Jackson, & Rothstein, 1991). A consistent and widely accepted framework of traits that has attracted ample attention is the Big Five personality taxonomy (Costa, McCrea, & Dye, 1991). The five personality dimensions identified under this taxonomy are: Openness to experience, Conscientiousness, Extraversion, Agreeableness and Emotional Stability (positive end of Neuroticism). Factor analysis supports the robustness and generalizability of the five factor model across different theoretical frameworks, assessments, rating sources, and cultures (Saucier & Goldberg, 1998). In a recent meta-analytic review on the relationship of personality to performance motivation, Judge and Ilies (2002) found neuroticism to be negatively related to performance motivation and conscientiousness to be positively related to performance motivation. The other Big Five traits – extraversion, openness to experience, and agreeableness – generally displayed weaker correlations with motivational criteria, and the direction of the correlations was somewhat inconsistent across criteria. This provides some support for the trait perspective in motivation research.

Although, the five-factor model has provided a helpful basis for furthering systematic study of individual differences, some researchers have suggested that not all traits are captured by the five-factor model (e.g., Paunonen & Ashton, 2001). Kanfer and Heggestad (1997) indicated that the five-factor model is not the best model to use in examining the motivational processes because the factors are relatively broad and thus, include more much more than just motivational processes. Thus, it becomes necessary to
conceptualize and test the effect of some relevant personality factors on motivational and self-regulatory processes such as goal setting.

**Personality: Core self-evaluations.** One such dispositional personality factor is the construct of core evaluations (Judge, Locke, & Durham, 1997). Core evaluations are fundamental bottom line evaluations that individuals hold about themselves, the world, and others. Core evaluations influence people’s appraisals of themselves, the world, and others and do so subconsciously. Thus, situation specific appraisals (e.g., evaluation of one’s work or colleagues) are affected by these deeper and more fundamental self appraisals; even though most people are not aware of the influence of their self-evaluations have on their perceptions or behaviour as they occur (Bono & Judge, 2003). This construct holds promise in the understanding individual differences in goal choice behaviour because this construct has a cognitive-evaluative component that is central to the construct of motivation, specifically manifested in goal setting theory.

People tend to appraise events in a consistent and stable manner across situations. Because this appraisal style is fundamental and is represented in many situation-specific evaluations, this appraisal style can be directly related to the self and the self-concept. Initial work on core evaluations indicated that core-self-evaluations were the most important (Judge, Locke, Durham & Kluger, 1998). Individuals with positive core self-evaluations appraise themselves in a consistently positive manner across situations and see themselves as capable, worthy and in control of their lives (Judge et al., 1998). It is the *self-evaluative* component of this construct that should play a role in self-regulatory mechanisms underlying personal goal setting in a given situation and thus, interesting to study.
Core self-evaluation is a higher order trait composed of four lower-level traits: self-esteem, locus of control, neuroticism, and generalized self-efficacy. Together these four traits amount to a fundamental appraisal of one’s “worthiness and capability as a person” and reflect one’s bottom line appraisal of people, events, and things in relation to oneself (Judge, Locke, & Durham, 1997). This is a relatively new construct and whether this broader factor really works better than the individual components is yet to be established. In the meantime, there is research indicating that core self-evaluation is a viable broader construct and affects job satisfaction, motivation, and performance (Bono & Judge, 2003).

The concept of core self-evaluations as proposed by Judge, Locke and Durham (1997) is an attempt to understand dispositions that could affect satisfaction. Judge and colleagues were specifically interested in understanding if there were any dispositional mechanisms that play a role in job satisfaction. Job satisfaction has been of interest to researchers in the field of Industrial and Organizational Psychology and is by far one of the most widely researched area in the field. Locke (1976) defined job satisfaction as a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences. Many theories concerning the causes of job satisfaction have been proposed. They fall into one of the three categories: 1) situational theories, 2) dispositional theories and 3) interactive theories (Judge, Parker, Colbert, Heller & Ilies, 2001). Situational theories suggest that job satisfaction results from the nature of one’s job or other aspects of the environment. Situational theories include Hertzberg’s two factor theory and Hackman and Oldham’s (1976) job characteristics theory.

Dispositional approaches to job satisfaction have two broad categories of studies. One
category includes indirect studies that have attempted to demonstrate a dispositional basis for job satisfaction through inference. The second category includes direct studies that assess a direct measure of the construct that is supposed to indicate the relationship between a personality trait and job satisfaction. One such construct is that of core self-evaluations proposed by Judge, Locke, and Durham (1997). There are a few studies that have related core self-evaluations to job satisfaction. Judge and Bono (2001) in a meta-analysis found that the overall core trait correlated .37 with job satisfaction. Finally, interactive theories of job satisfaction are those that consider both the person and the situation. Value-percept theory proposed by Locke (1976) is an example of an interactive theory for job satisfaction.

As discussed previously, there has been some research that has shown some links between core self-evaluations and job performance and job satisfaction (Judge & Bono, 2001). But, there has not been much research on the relationship of core self-evaluations and goal choice as this construct has a self-evaluative component that should be explored on goal setting context. Although this superordinate dispositional trait has not been researched in the motivational context of goal setting, it does hold promise in facilitating understanding of some dispositional antecedents of goal choice. Further, the factors that constitute it, namely, self-esteem, generalized self-efficacy, locus of control, and emotional stability are widely studied and researched in the field of psychology. Thus, a review of the component traits and their role in motivation and performance is highlighted next.

*Neuroticism* or emotional stability is one component of core self-evaluations. Neuroticism is one of the most frequently studied traits in psychology (e.g., Digman,
Neuroticism is a broad dimension of normal personality characterized by a tendency to experience chronic negative emotions and to display related behavioural and cognitive characteristics (Costa & McCrea, 1980). Research has indicated that neuroticism has affect-related processes that lie at the core of the trait (McCrea & Costa, 1987). Highly neurotic individuals have been found to have generally negative view of themselves and the world. Individuals who are high in neuroticism are likely to experience a diverse array of negative mood states such as anxiety, depression, hostility, and guilt (Watson, 2000).

Neuroticism is associated with various cognitive and perceptual characteristics. There is a possibility that individuals who score high on this disposition tend to be introspective and ruminative and as a result might be prone to different types of psychosomatic complaints (Watson, 1988). High scorers also are prone to negativistic cognitive/explanatory styles such that they interpret ambiguous stimuli as reflecting threat or danger and focus differentially on negative aspects of themselves, others and the world in general. Neuroticism is quite stable (McCrae & Costa, 1984). The other end of the continuum reflects emotional stability. In general, neuroticism has been found to increase the tendency to perceive, report, or act upon general physical sensations rather than the development of physical illness itself. Emotional stability typically reflects a tendency to perceive low anxiety, control, and personal security, and a tendency to perceive an absence of depression vs. anxiety, somatic complaints, feeling of insecurity, and hostility.

Neuroticism predisposes individuals to a wide range of psychiatric disorders and gender differences in neuroticism are reflected in the epidemiology of major
psychopathology (Costa, Terracciano, & McCrae, 2001). However, because neuroticism is a broad domain of negative affect and part of the five factor model, there is research that explores the role of neuroticism in work environments. Van Den Berg and Feij (1993) found that emotionally stable job incumbents experienced less job strain, had better appraisal of their own job performance, and were less inclined to seek another job than emotionally unstable people. In a recent meta-analysis, Judge and Ilies (2002) found a consistent negative relationship between neuroticism and performance motivation (i.e. goal setting motivation). Gender differences on neuroticism have been reported, with women scoring higher than men (Lynn & Martin, 1997). Thus, there are indications in research regarding the role of individual level neuroticism or emotional stability in performance.

*Self-esteem* is the second of four components of core self-evaluations. Most often, self-esteem is used to refer to a personality variable that captures the way people generally feel about themselves (Rosenberg, 1965). This form of self-esteem is referred to as global self-esteem or trait self-esteem and is relatively enduring both across time and situations. This term is used to refer to the way people evaluate themselves and their various attributes and abilities. Self-esteem is a form of self-evaluation because it is affected by the way people evaluate or appraise their abilities and personality characteristics. Thus, people with high self-esteem might think that they have many more positive qualities than people with low self-esteem in general. This is widely accepted as a self-evaluation and thus, part of the personality construct of core self-evaluations (Judge, Locke, & Durham, 1997).
There are two ways in which self esteem can be defined. The affective framework is feeling based or affective in nature. This framework of self-esteem suggests that unconditional feelings of belonging and sense of mastery comprise the essence of high self-esteem. These feelings typically develop early in life, largely as result of parent-child interactions. Thus, early experiences lay the foundation for high self-esteem or low self-esteem. Later experiences might affect this aspect of self esteem, but later experiences are not as consequential as initial experiences. In the cognitive orientation, self-esteem results from a conscious decision that people make regarding their worth as a person. It is a personal judgment of worthiness that is expressed in the attitudes the individual holds towards himself. If one thinks that one has many socially desirable qualities, then one is likely to have high self-esteem (for details, see Coopersmith, 1967; Rosenberg, 1979).

There has been some research in the area of self esteem and goal setting. Based on the definition of self esteem, it seems reasonable that individuals with high self esteem and sense of self worth will set higher and challenging goals for themselves as compared to individuals with low self esteem. Scholars working with the global self-esteem construct (e.g., Brockner, 1988) posited that self-esteem is central to the explanation of employee attitudes (e.g., job satisfaction), motivation, and performance. Martin and Murberger (1994) found that high self esteem was positively related to the difficulty of self-set goals. Hollenbeck and Brief (1987) found a three way interaction between goal origin, goal difficulty, and self esteem on levels of performance. When goals were assigned, there was a positive goal difficulty—performance relationship, but only for individuals high in self esteem. Other research has failed to find any role of individual
differences (i.e., self esteem, locus of control, and need for achievement) in goal setting (Kalnbach & Hinsz, 1999). Thus, there seems to be contradictory evidence that self esteem is related to goal setting and performance, and this area needs more research to understand the self esteem—goal choice relationship in performance.

Research has also linked self esteem with job satisfaction and in general found a significant relationship between self-esteem and job satisfaction (e.g., Alavi & Askaripur, 2003; Garske, 1996). These studies indicate that people with high self-esteem and high job satisfaction perform their work much better than others, and thus increase the output of the organization, which is economically beneficial to the organization. At the same time, they enjoy working with each other, cooperation and developing relationships which is beneficial to the organization.

*Locus of control* is the third component of core self-evaluations. Locus of control refers to individuals’ beliefs about the causes of events in their lives. Rotter (1966) defined locus of control as the degree to which individuals believe that they control events in their lives (internal locus of control) or believe that environment or fate controls events (external locus of control; Rotter, 1966). According to Lefcourt (1982), it is not the simple registering of success and failure experiences that is pertinent to the generalized expectancy of internal versus external locus of control, but rather it is the interpretation of the cause of those behaviours. Morrison (1997) found that external locus of control was related to neuroticism, low subjective well being, low conscientiousness, and low agreeableness.

Some research on motivation and locus of control has indicated that subjects with a more internal locus of control spent relatively more time on-task under the self-set goal
condition whereas those with a more external locus of control spent more time on-task when an authority figure (i.e., coach) set their goals (e.g., Lambert, Moore, & Dixon, 1999). Researchers have found a relationship also between locus of control and job satisfaction. Internal locus of control has been found to be positively related to job satisfaction, whereas external locus of control is negatively correlated with job satisfaction for school teachers (Bein, Anderson & Maes, 1990; Santangelo & Lester, 1985), school administrators (Richford & Fortune, 1984), hospital employees (Kasperson, 1982), police officers (Lester, 1987), factory workers (Achamamba & Kumar, 1989), and bank and insurance employees (Kulcarni, 1983). This indicates that locus of control plays a role in satisfaction with one’s performance or outcome on a given task.

*Generalized self-efficacy* represents the fourth component of core self-evaluations. Recent research has focused on the distinction between task-specific self-efficacy and generalized or global self-efficacy (e.g., Wang & Richard, 1988). In this document, I will use the term global self-efficacy to denote the generalized, stable self-efficacy and self-efficacy to refer to task-specific self-efficacy. Several researchers have suggested that generalized self-efficacy is a motivational trait and task-specific self-efficacy is more of a state-like construct that is motivational in nature. Thus, task specific self-efficacy will be discussed as a motivational construct later in the document. Global self-efficacy refers to an individual’s belief in his/her ability to perform and execute action for attainment of objectives across a myriad of situations. Individuals with high global self-efficacy deal more effectively with failures and persist in the face of failure (Gist & Mitchell, 1992); they are more likely to set difficult goals rather than easy
ones and strive to attain them. Global self-efficacy is a belief that implies it has a cognitive-evaluative component making it suitable to be included in the construct of core self-evaluations (Judge, Bono, & Durham, 1997).

Global self-efficacy is an integral part of self motivation (Bandura, 1999). It is partly on the basis of self perceptions that individuals select what they do, how much effort they invest, and how long they persist at them (Schunk, 1981). Those who have low global self-efficacy may be easily discouraged by failures, whereas those who are assured of their capabilities for goal attainment may enhance their efforts and persist until they attain their goals (Bandura & Cervone, 1983). Thus, global self-efficacy is an integral aspect of goal setting (goal choice) process.

Researchers have found considerable overlap between global self esteem and global self-efficacy. Although these two constructs appear similar, global self-esteem and global self-efficacy may make somewhat unique contributions to our understanding of behavior. Whereas some researchers believe that beliefs about the self comprise one general factor, others suggest that self-evaluations are domain-specific (Byrne & Shavelson, 1986; Marsh, 1986, 1987; Marsh, Parker, & Barnes, 1985). One may have positive general feelings of worth or high global self-esteem and still have specific negative beliefs about one’s abilities in a given area or low task-specific self-efficacy. Research has proposed also some overlap between the constructs of locus of control and global self-efficacy. The individual views himself/herself in conjunction with things that befall him/her and the meaning that is derived of those interactions between the self and the experiences. To the extent that locus of control is an indication of the perceived relationship between one’s action and the outcomes in one’s life, global self-efficacy has
been described as combining the notion of locus of control with notions of perceived competence or self-worth (e.g., Thomas, Iventosch, & Rohwer, 1987).

*Motivation: Task-specific self-efficacy.* The individual difference factors discussed up to this point, i.e., demographics, ability, and personality, have all reflected stable, distal determinants of motivation. However, there are also malleable individual difference factors that reflect proximal determinants of motivation. Substantial research has examined one proximal determinant of motivation, task-specific self-efficacy, in its role in the goal–performance relationship (e.g., Hollenbeck, & Brief, 1987; Locke et al., 1981). As noted above (p. 65), I will refer to dispositional self-efficacy as global self-efficacy and task-specific self-efficacy as self-efficacy. An individual’s self-efficacy has been found to affect goal choice, with higher self-efficacy being associated with the setting of higher goals and ultimately better performance (e.g., Thomas & Mathieu, 1994). Although self-efficacy contains some ability components, self-efficacy has been found to contribute to goal level independent of ability (Locke & Latham, 1990).

Self-efficacy refers to beliefs regarding one’s capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1997). Unless individuals believe that they can have desired effects due to their actions, they have little incentive to act. People’s beliefs in their efficacy have diverse effects. Such beliefs influence the courses of action that individuals choose to pursue, the amount of effort they expend on a given task, the amount of time they spend given the hurdles they might face while doing a task, whether their thought patterns are those that facilitate the process or hinder it, what emotions they experience when they are dealing with the environment and a given task, and the level of accomplishment that they realize. Thus, self-efficacy
represents task and situation (domain) specific cognition (Bandura, 1986). Self-efficacy beliefs are performance related appraisals of an individual within a context, that is, how well one believes one can perform given the social context and on the particular task. Individuals acquire information from four sources that affect their sense of self-efficacy (Bandura, 1997). These sources are: vicarious learning, verbal persuasion, performance accomplishments and emotional arousal.

Self-efficacy is an important motivational construct. It influences individual choices, goals, emotional reactions, effort, coping and persistence. It changes as a result of learning, experience and feedback (Gist & Mitchell, 1992). Goals are an important component of motivation and learning. Goals motivate individuals to exert extra effort and persist, facilitate focusing attention on relevant task features and strategies that help in task accomplishment (Locke & Latham, 1990). Self-efficacy beliefs have been found to influence performance through effects on effort, persistence and perseverance (Bandura, 1997) that are core mechanisms through which goals affect performance also. Thus, it can be noted that specific self-efficacy should affect goal choice in a given task situation. And to the extent that self-efficacy in a given situation would lead to increased motivation to perform that task, it should also affect satisfaction when the goals are met and individual has performed to the given standards.

*Group or Team Goal Setting*

The goal setting literature reviewed up to this point in the document focused on the individual level. At the individual level, research has indicated that assigned goals explain an average of 25% variance in personal goals (Locke & Latham, 1990), and assigned goals influence individuals’ personal goals through goal acceptance and
commitment (Hollenbeck & Klein, 1987). Clearly, given the impact that goals have on motivating individuals’ performance, goals have been used also to motivate the performance of work groups or teams (e.g., O’Leary-Kelly, Martocchio, & Frink, 1994; Weldon & Weingart, 1993). However, at the group level it is important to remember that there are other aspects of social interactions (such as social perceptions, cooperation, attraction, conflict, comparison, stereotypes, communication, to name a few) that might affect team motivation, performance, satisfaction, and effectiveness. Thus, to understand the role that group goal setting plays in performance of both the individual team member and the team overall, it is important to consider the effect of individual members on each other as well as the importance of coordination of group activities.

In the last three decades there has been a shift in organizations towards more group based work (Ambrose & Kulik, 1999). However, due to additional complexities associated with groups or teams, the literature on group goals is not as well organized as the individual goal setting research. Purposive behaviour in groups has attracted research attention for the last several decades (Zander, 1971,1980), yet sustained interest in group goal setting only began in the late 1980’s (Ambrose & Kulik, 1999; Matsui, Kakuyama, & Onglatco, 1987).

Zander (1971) proposed that four types of goals can exist in groups: 1) each member’s goal for the group is the outcome that each member privately would like to see the group attain, 2) the group’s goal is the result of an overt agreement among members on what they jointly expect the group to accomplish, 3) the group’s goal for each member is the level of output the group expects each participant to achieve, and 4) each member’s
goal for himself or herself is the personal goal an individual brings to the group as modified by the special demands of the group.

Zander’s (1971) focus was primarily on participative goal setting within the group when he indicated that given the multiplicity of possible goals within groups, goal setting may emerge spontaneously as groups attempt to allay the ambiguity in possible goals. As Hollensbe and Guthrie (2000) suggested, this might be particularly true in groups that are small, efficacious, functionally interdependent, and strongly normative. In a study of processes that mediate the group goal–group performance relationship, Weingart and Weldon (1991) found that when given a group goal, some group members spontaneously translated it into a specific individual goal.

Goals for group performance usually coexist with goals for individual performance. When these goals are in conflict, the team can become dysfunctional and ineffective (Guzzo & Dickson, 1996). Research has indicated mixed support for the role of group goals and individual goals in team effectiveness (e.g., Ambrose & Kulik, 1999; Weldon & Weingart, 1993). This could be because group goal setting is multi-level in nature and is prone to complexities that are associated with such constructs. Thus, it is important to understand the role of goal setting at both the individual and the team level and the boundary conditions that affect this process to further understand team effectiveness.

However, despite the increased complexities in group or team situations, the core finding of goal setting research from individual level has been replicated in groups across different tasks, settings, and methods used to set goals (i.e., self-set versus assigned) and has been found regardless of whether performance has been measured in terms of
quantity, quality or speed (Gibbons & Weingart, 2001; Weldon & Weingart, 1993). Thus, groups working towards specific, difficult goals perform better than those working without a specific goal or ‘do-your-best’ goals and group performance increases with goal difficulty (Weldon & Weingart, 1993).

Further, Weingart and Weldon (1991) indicated that group goals can improve group performance in two ways. Having group goals can motivate group members to improve the performance of their own assignments by working harder at their tasks because their personal goals become more salient to them. Alternatively, individuals can work hard because they identify with the group and believe that group success depends in part on their own success. Thereby, suggesting a positive main effect of group goal on self-set goal.

Weingart and Weldon (1991) also indicated that group goals can activate challenge seeking motives such as a desire to feel efficacious or to test one’s own abilities. In a group or team, members share some responsibility of the task. Regardless of the kind of task (e.g., additive, interdependent), a challenge to the group can be viewed as a challenge to oneself, and as a result group members can be more motivated to meet the goal. Challenge seeking motivation at the individual level can thus override the motivation to loaf (Weingart & Weldon, 1991).

*Types of Goal Setting in Groups or Teams*

Team goals are connected to both individual and team performance and effectiveness. Team goals can be assigned or set participatively. Individual team member goals within a team goal situation can be assigned, set participatively, or self-set. Thus, there can be various combinations of team and individual goal setting in a given
situation. In organizations, supervisors usually assign team goals (Manz & Sims, 1987). Group members focus more attention, work harder and persist longer on tasks when working towards a specific, difficult group goal (Weingart, 1992). However, the assignment of goals affects individual task performance, in part by influencing personal goals (i.e., the goal an individual actually intends to pursue). For example, Weldon, Jehn and Pradhan (1991) found that post-hoc reports revealed that when groups felt that their assigned goals were inappropriate, they set their own goals, and these “actual” goals attenuated the difference in performance between groups assigned low and high goals. Team goals could be set participatively when team members are involved in the goal setting process as might be the case in an autonomous work group.

Under an assigned team goal condition, there are various outcomes at the individual level. Harkins and Lowe (2000) found that an external source such as the experimenter or a higher authority figure was a more potent source of motivation than the self or the individual participant. Thus, when the experimenter set goals (assigned goals) and could evaluate performance, goal setting effects were produced, whether the participant had the requisite experience on the task and whether the task was interesting. Based on the goal setting research (e.g., Locke & Latham, 1990) such self-set goals under assigned goal conditions should be motivating and improve performance. Also, Utman (1996) found that the potential for self-evaluation produced goal setting effects only when there were assigned goals and the task was ego involving. Thus, research has indicated that assigned goals are more potent than self-set goals and the potential for evaluation for an authority figure is more potent than self-evaluation.
Some research has shown beneficial effects for participatively set goals whereas other research has shown dysfunctional effects (e.g., O’Leary-Kelly, Martocchio, & Frink, 1994; Wegge, 2000). O’Leary-Kelly, Martocchio, and Frink (1994) in a meta-analysis of group goal studies found that groups that had goals (i.e., assigned, participatively set, or chosen) performed about one standard deviation better than groups that did not have goals. In a narrative review of the influence of group goals on group performance they found a positive goal effect in 78% of the studies that employed an assigned goal and in 100% of the studies that employed participatively set goals. Wegge (2000) found that, compared to “do your best” goals, striving for difficult group goals that were set participatively in a group discussion improved work and group performance. However, he did not find a significant difference between goals set participatively and assigned difficult goals. Interestingly, Wegge (2000) also found that, as compared to assigned group goals, participatively set group goals could decrease intrinsic motivation, group cohesion, and the readiness for social compensation. In a recent study, Wegge and Haslam (2005) reported that all groups (i.e., groups with directive goal setting, participative goal setting, and participative goal setting with individual goal setting) with specific and difficult group goals performed better than groups with ‘do-your-best’ goal. Further, they also found that group goal setting increased team identification, the readiness to compensate for other weaker group members, the value of group success, and the value of group failure.

Group Goal Commitment

At the individual level goal commitment is a necessary condition for goal setting to work (Hollenbeck & Klein, 1987). To the extent that there is no commitment to goals,
goal setting does not work (Locke, Latham, & Erez, 1988). In a team, an individual team member can be committed to his/her personal goal, or to the team goal, or to both the self-set goal and the team goal. There is some evidence that group goal commitment, defined as group members’ attachment to a goal and determination to reach that goal, is positively related to group task performance (Weldon & Weingart, 1993). There are various reasons why individual team members can feel committed to group goals. According to Weldon and Weingart, these reasons fall into five broad categories: goal attainment satisfies individual needs and desires; group members identify with the group; group members accept procedures used to set goal; group members are inspired by the vision of a charismatic leader; and personal goals of individual group members are compatible with group goal attainment.

However, other aspects of social interactions, such as concern about the motivation of others in the team, possible effects of social loafing, or lack of information on past performance of the group also can influence an individual team member’s team goal commitment. There is some research on the effects of such factors on team goal commitment, but it is inconclusive in nature. Mulvey and Klein (1998) found that perceived loafing had a negative impact on the group’s goal commitment. Weingart and Weldon (1991) indicated that information about past performance on a task is not necessary to create commitment to goal attainment. Aubé and Rousseau (2005) indicated that under assigned team goal conditions, commitment to team goals influences team performance as assessed by supervisors, and team goal commitment helps enhance the quality of group experience and team viability. They also found a moderating effect of
task interdependence on the relationship between team goal commitment and team effectiveness.

Task Interdependence

At the individual level, task complexity moderates the goal—performance relationship (Neubert, 1998). In a team, the level of task interdependence between team members increases the complexity of the task. Thus, the team task affects individual and team performance. Task interdependence influences the degree to which group/team members rely on one another to perform their tasks effectively. This integrally affects the goals that are set by the individual team member for himself or herself and/or participatively by the team. Various requirements of the task make a team task more or less complex in nature and this influences various team processes such as the goals individual team members set for themselves. Weingart and Weldon (1991) summarized research that examined goal setting effects for additive or pooled tasks and found performance improvements due to goal setting. This could be because in additive tasks each team member works almost individually to attain the team goal. However, this could change with increased interdependence between team members for an interdependent task.

In an interdependent team task, team members can have various goal setting conditions, e.g., team assigned goal and individual self-set goals, team participatively set goal and individual member assigned goals. These various combinations of team and individual goal setting and the degree of task interdependence have implications for team performance and effectiveness. Mitchell and Silver (1990) studied the effects of different goal setting conditions namely, individual goals, group goals, both individual and group
goals, and no specific goals for groups working on interdependent task of tower building. They found that subjects in the individual goal conditions performed worst when compared to other goal conditions. They concluded that in a situation where the task is interdependent and both individual and group goals are used, it is important that an individual’s goal is set such that its attainment facilitates the attainment of group goal. Similarly, Crown and Rosse (1995) found that when group members received individual goals, the group performed more poorly than when individuals received other goal combinations. Thus, on an interdependent task, individual goals were associated with more competition between group members and that competition compromised team performance. When team members received only group goals or goals that maximized the individual’s contribution to the group (i.e., groupcentric goal) the gain in group performance was not as substantial as when group and groupcentric goals were given in combination. A combination of both groupcentric and team goals can elicit cooperation between team members which is crucial for team goal attainment on an interdependent task.

Hypotheses and Research Questions

Teams are becoming an integral aspect of organizations. Team performance and effectiveness can be understood using a multilevel systems and processes framework. To understand factors that affect team outcomes, it is important to take into consideration the interaction between macro level (e.g., team, department, and organization) and micro level (e.g., individual) factors. Teams are higher level units that influence functioning of lower level units, i.e., individual team members. Thus, the relationship between team
member individual difference factors (such as motivation and personality) and team performance may vary across different teams.

In the present study I will examine the joint effects of team goals, team composition, task type, and individual difference factors (i.e., cognitive ability, personality, motivation, and gender) on individual goal choice within a team context. Specifically, I am interested in the paths highlighted in Figure 1. Research has indicated that core self-evaluations is related to goal-setting behavior (Erez & Judge, 2001). An individual high on core self-evaluations is thought of as well adjusted, positive, self-confident, efficacious and believing in his/her own agency. Thus, core self-evaluations should affect motivation, specifically goal choice, positively. Also research has indicated that cognitive ability is strongly related to self-set goals (e.g., Campion & Lord, 1982), indicating that individuals with high cognitive ability should set higher and more difficult goals for themselves in comparison to individuals with lower cognitive ability. Further, self-efficacy affects goal choice (e.g., Thomas & Mathieu, 1994). Self-efficacy refers to beliefs regarding one’s capabilities to organize and execute courses of action required to perform a task successfully. Thus, to the extent that an individual has a high level of self-efficacy for a given task, he/she is likely to set higher goals for themselves as compared to someone who has comparatively low self-efficacy.

H1: Individuals’ core self-evaluations will be positively related to self-set goals.

H2: Individuals’ cognitive ability will be positively related to self-set goals.

H3: Individuals’ self-efficacy will be positively related to self-set goals.

Usually, teams are put together for a specific purpose and thus have an assigned goal that they have to attain. In such situations, individual team members typically are
not assigned individual goals, especially if the task is interdependent in nature. Some research (e.g., Weingart & Weldon, 1991) has indicated that group members working towards an assigned group goal felt more personal challenge than group members working without an assigned goal. Groups working towards specific, difficult goals perform better than those working without a specific goal or with ‘do-your-best’ goals (O’Leary-Kelly, Martocchio, & Frink, 1994). Thus, the difficulty of an assigned team goal should influence the difficulty of goals individuals set for themselves.

H4: An assigned team goal will be positively related to individual team members’ self-set goals.

Further, I propose that the relationship between individual team members’ personality, ability, motivation and their self-set goals will vary depending on the level of assigned team goals. No research has directly examined the role of assigned team goals as a factor affecting the relationship between individual personality (i.e., core self-evaluations), motivation (i.e., self-efficacy), and ability (i.e., cognitive ability) and individual self-set goals. However, theory and indirect evidence from related research suggests the following relationships. That is, core self-evaluations, ability, and self-efficacy have a common underlying theme in that they all address the resources an individual can apply to tasks—either actual innate resources (i.e., ability) or the perception that he/she can use those resources effectively and optimally in a given situation.

Further, these individual differences are likely to vary by the team goal, i.e., individuals who possess or perceive they possess more resources will demonstrate greater benefits when difficult team goals are assigned as compared to individuals who lack or perceive that they lack the resources to meet the demands that a difficult team goal places
on their resources. Thus, individuals’ core self-evaluations should more strongly influence individuals’ self-set goals when resource demands are high, i.e., in response to a difficult team goal, as compared to when resource demands are low, i.e., in response to an easy team goal. Further, individuals’ cognitive ability should more strongly influence individuals’ self-set goals in difficult team goal condition as compared to an easy team goal condition. Finally, individuals’ self-efficacy should more strongly influence individuals’ self-set goals in response to a difficult team goal as compared to an easy team goal. Thus, I propose the following hypotheses:

H5: The relationship between individuals’ core self-evaluations and self-set goals will be differentially affected by the difficulty of the assigned team goal.

Figure 1 Hypothesized model
Specifically, the relationship between individuals’ core self-evaluations and their self-set goals will be stronger for a difficult assigned goal as compared to an easy assigned goal.

**H6:** The relationship between individuals’ cognitive ability and self-set goals will be differentially affected by the difficulty of the assigned team goal. Specifically, the relationship between individuals’ cognitive ability and their self-set goals will be stronger for a difficult assigned goal as compared to an easy assigned goal.

**H7:** The relationship between individuals’ self-efficacy and self-set goals will be differentially affected by the difficulty of assigned team goal. Specifically, the relationship between individuals’ self-efficacy and their self-set goals will be stronger for a difficult assigned goal as compared to an easy assigned goal.

One way in which team composition has been operationalized is gender composition (Gladstein, 1984). Existing research has demonstrated inconclusive findings on the consequences of gender diversity in team performance (Horwitz, 2005). Further, there is research that shows that the relationship between team composition and team performance is moderated by task type (Bower, Pharmer, & Salas, 2000). One explanation for gender effects on team performance is that task type triggers gender stereotypes that in turn affect performance (Fox & Sollers, 2001). Similarly, there is some research at the individual level indicating gender effects on individual performance (Brannon, 2002). Also, research suggests that task type moderates the gender—performance relationship (Passig & Levin, 1999). However, as found with the team level, research examining gender effects on individual performance has also produced
mixed results (Kite, 2001). Finally, I did not find any research examining gender effects on individual self-set goals. Moreover, no research exists that examines whether gender effects on self-set goals are moderated by gender composition and task type. Thus, I propose a research question to examine these effects.

R1: The relationship between team member gender and self-set goals is moderated by team composition and task type.

Another important outcome of team effectiveness is task performance. Task performance is defined as the proficiency with which people perform activities that are formally recognized as a part of their job (Borman & Motowidlo, 1993). This can be examined either at the team or the individual level. In the current study I am interested in individual team member performance. Individuals with high core self-evaluations will perform most jobs better than individuals with low core self-evaluations (Erez & Judge, 2001). There is ample evidence that cognitive ability affects job performance, such that individuals high in cognitive ability have a higher likelihood of performing a given job better than individuals with low cognitive ability (e.g., Hunter & Hunter, 1984; Schmidt & Hunter, 1998). Further, there is evidence that individual self-efficacy is positively related to performance and satisfaction (Gist & Mitchell, 1992). Although performance is not a primary focus of the current study, substantial research has shown that personality, cognitive ability, and motivation (i.e., self-efficacy) affect performance. The following hypotheses are proposed to replicate previous research findings.

H8: Individuals’ core self-evaluations will be positively related to individual team member performance.
H9: Individuals’ cognitive ability will be positively related to individual team member performance.

H10: Individuals’ specific self-efficacy will be positively related to individual team member performance.

Further, I propose a second research question to examine whether the effects of individual difference factors on individual team member performance vary depending on team goal difficulty level. I have not found any research that has examined this relationship, and thus I propose this as a research question.

R2: The relationship between individual difference factors (i.e., core self-evaluations, cognitive ability, and self-efficacy) and individual member performance varies depending on the difficulty of assigned team goal.

We propose a third research question to examine the effects of assigned team goal on the relationship between individual difference factors (i.e., core self-evaluations, cognitive ability, and self-efficacy) and individual team member satisfaction. There is prior research that has indicated that core self-evaluations affect job and life satisfaction (e.g., Judge et. al., 1998). Research has found a positive relationship between intelligence and job satisfaction (Ganzach, 1998) although this relationship is moderated by complexity of the task. Also some research has indicated a relationship between self-efficacy and job satisfaction (O’Neill & Mone, 1998). I have not found any research that has whether individual difference factor (i.e., core self-evaluations, cognitive ability, and self-efficacy) effects on individual satisfaction vary depending on team goal difficulty level. Thus, I propose a research question to examine this effect.
R3: The relationship between individual difference factors, i.e., core self-evaluations, cognitive ability, and self-efficacy and individual member satisfaction varies depending on difficulty of the assigned team goal.
II. METHOD

Study Overview

The study was designed to enable examination of the effects of individual difference factors, i.e., core self-evaluations, cognitive ability, and task specific self-efficacy, on self-set goals and whether those effects were moderated by an assigned team goal. In addition, I examined whether gender, task type, and team composition interacted in their effects on self-set goals. To accomplish this, participants performed an additive task at individually and in teams consisting of four members. Team goals, task type, and team composition were assigned conditions. The study included measures of core self-evaluations, cognitive ability, task specific self-efficacy, and self-set goals. Further, additional measures to enable examination of research questions and alternative explanations were also administered.

Participants and Design

Eight hundred and forty undergraduate students from a Midwestern university with an open enrollment policy participated in this study. Out of the 840 participants, 4 were removed from the analysis due to incomplete data on the dependent variables, resulting in the final sample of 836 participants. Each experimental condition had approximately the same number of participants. Each experimental condition had approximately the same number of participants as depicted in Table 1. There were 404 males (48.3%) and 434 females (51.7%) with mean age of 19.25 years ($SD = 2.58$). The majority of subjects (i.e., approximately 74.5%) were freshmen and Caucasian (68.4%).
These sample demographics are consistent with the demographics of the subject pool at the university where the data was collected.

Further, participants were evenly distributed across the task types (i.e., quantitative and verbal) in terms of sex, \( \chi^2 (1, N = 836) = 0.18, p = .89 \); college rank, \( \chi^2 (4, N = 836) = 7.56, p = .11 \); and race \( \chi^2 (4, N = 836) = 7.66, p = .105 \). Participants were evenly distributed across assigned goal condition (i.e., difficult and easy) in terms of sex, \( \chi^2 (1, N = 836) = 0.51, p = .47 \); college rank, \( \chi^2 (4, N = 836) = .996, p = .91 \); and race \( \chi^2 (4, N = 836) = 1.21, p = .877 \). Table 2 lists frequencies of demographic categories by experimental conditions.

**Power Analysis**

The statistical power of a significance test is the probability of rejecting H\(_0\), given the effect size in the population, the significance level, and the sample size N. A general convention is that adequate power exists when there is 80% chance of detecting a significant effect when it is present (Cohen, 1992). LaHuis and Ferguson (2007) conducted Monte Carlo simulations to assess the number of groups, group size, and effect size in relation to power estimates for three variance components and indicated that an effect size of .30 could be detected for group size of 4 and 100 groups around 83% of the times. Further they present the percentage of samples that indicated significant cross level interactions. For 100 groups of 3 members a moderate effect size (detecting 4% of the variance) can be obtained 100% of the time. In the present study, I have 836 participants nested in 209 four person teams. Thus, there is enough power to detect a moderate effect size.
Experimental Task

The task involved a team developing a high school level general knowledge test. Teams used items that individual team members selected and solved from a predetermined test bank as well as items selected and solved by the team. Based on the assigned condition, the test was either quantitative or verbal in nature. The rationale for selecting these two areas was that participants were college students and thus had some basic knowledge and familiarity with these areas. Due to this prior familiarity with the material, participants should be able to set goals for themselves. The task involves both individual and team level performance. The task was moderately complex and interdependent in nature. A pilot study was conducted to develop this task (see Appendix A). Further, results from the pilot study were used to calculate the difficulty level of assigned team goals for the actual project. To develop the final test, team members were required to interact with each other and keep track of certain rules (see Appendix B).

The first part of the task involved individual performance. During this part, individual team members were provided with a test bank of either verbal or quantitative items (depending on the assigned task type condition). These test banks had multiple choice questions taken from various standardized SAT/ACT practice books (see Appendix B-1 & B-2 for sample items). Individual team members solved items and categorized each item into one of three difficulty levels (i.e., easy, moderate, or difficult).

The second part of the task involved teamwork. During this phase, all team members worked together to assemble the final test. Each individual team member contributed to the team the items s/he has solved and categorized. The team worked
together to select items from those contributed to include on the final test. The team followed certain rules to assemble the final test (See Appendix C).

Manipulations of Independent Variables

Assigned Team Goal

Two assigned team goal conditions were used. A difficult goal was operationalized as a goal achievable by only 20% of the population whereas an easy goal was one that is attainable by 80% of the population. These goal levels were determined based on pilot data (see Appendix A). Thus, in the difficult goal condition, teams were asked to assemble a test with a length that was achieved by only 20% of the teams in the pilot study. The test length in the easy goal condition was that length achieved by 80% of the teams in the pilot study. Further, participants were provided with sub-goals relating to the exact number of problems that should be included within each difficulty level (i.e., 30% easy, 40% moderate, 30% difficult). Pilot data was used to determine these sub-goals.

Task Type

Two types of tasks were used. Participants were randomly assigned to the quantitative (i.e., male oriented task type) or to the verbal (i.e., female oriented task type) test development condition.

Team Composition

Three types of team compositions were used. Participants were randomly assigned to same gender or mixed gender conditions. Specifically, males had an equal chance of participating in an all male or cross-balanced (i.e., 2 males and 2 females)
condition; similarly, females had an equal chance of participating in an all female or cross-balanced (i.e., 2 males and 2 females) condition.

Measures

*Manipulation Check Measures*

**Team Goal Difficulty**

Perceived assigned team goal difficulty was measured using a 5-item measure created for the purposes of this study (see Appendix D-1). Individual participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (7). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated high perceived team goal difficulty. A sample item is “The assigned team goal is a difficult goal.”

*Confirmatory factor analysis: Team goal difficulty measure.* I conducted a confirmatory factor analysis on the assigned team goal difficulty measure that was created for the purposes of this study. Analyses were conducted using SPSS 15.0 (SPSS Inc., 2007) and Amos 7.0 (Arbuckle, 2007) statistical software. Several statistics were used to evaluate model fit, including the chi-square statistic, comparative fit index (CFI), the root-mean-square-error of approximation (RMSEA), and the standardized root mean squared residual (SRMR). For the CFI, good model fit is indicated by a value close to .95. Values of less than .06 for the RMSEA and less than .08 for the SRMR are considered indicators of good model fit (Hu & Bentler, 1999).

The first measurement model that I tested was a one-factor model in which all five items were allowed to load on one latent factor. This model reflected no factorial complexities and no correlations among error terms. Although the standardized factor
loadings in this model were > .40, the model did not provide an acceptable fit to the data \( \chi^2 (df = 5, N = 836) = 55.50, p = .001; CFI = 0.93; RMSEA = 0.11; SRMR = 0.05 \). I examined the modification indices for this model for suggested areas of improvement of model fit. Two correlated error terms (Item 1 and Item 4) when freely estimated resulted in an improvement of the model fit as indicated by the modification index of 35.31. These two items “the assigned team goal is a difficult goal (Item 1)” and “the assigned team goal is a challenging goal for the team (Item 4)” are measuring common synonyms for the same feeling state of difficulty level of the team goal. Thus, conceptually it was feasible to correlate these two error terms and reanalyze this model. The one-factor solution with correlated error terms did provide a good fit \( \chi^2 (df = 4, N = 836) = 12.34, p = .01; CFI = 0.99; RMSEA = 0.05; SRMR = 0.02 \). Further, the scale demonstrated moderate level of internal consistency (\( \alpha = .68 \)).

**Team Goal Commitment**

Commitment to the assigned team goal was assessed using a 7-item self-report measure adapted from Hollenbeck, Klein, Wright, and O’Leary (1989). The purpose of this measure was to assess participants’ commitment to the assigned team goal. Items were adapted to reflect commitment to a team goal because the Hollenbeck et al. measure was designed to assess commitment to individual goals (see Appendix D-2). Participants responded on a 5-point Likert-type rating scale, ranging from strongly agree (1) to strongly disagree (5). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated that individuals have high goal commitment. Hollenbeck et al. reported a coefficient alpha of .80 for
their measure. In the present study, the internal consistency reliability for this measure was .76. A sample item is “I think this is a good assigned team goal to shoot for.”

**Task Perceptions**

I used an adapted version of the 5-item measure developed by Stokes and Steele-Johnson (2001) as a manipulation check for task type (see Appendix D-3). I altered this measure by including a gender neutral response category to Items 1-3. The purpose of this measure was to assess participants’ perceptions of the task as masculine, feminine, or gender neutral. The task perceptions measure was scored by converting responses to Items 4 and 5 from responses ranging from 1 to 7 to responses ranging from 1 to 3 (i.e., 1.0, 1.33, 1.67, 2.0, 2.33, 2.67, and 3.0). I then created a composite score by calculating the average of five items. Composite scores above 2.0 were considered as female task type, and composite scores below 2.0 were considered male task type. If manipulation of task type was successful, participants in the quantitative task type perceived it to be a male oriented task type and those in the verbal task type would perceive it to be a female oriented task type. Stokes and Steele-Johnson reported a coefficient alpha of .82 for this measure. A sample item is “Would you describe the contents of this task as more male oriented, female oriented or as gender neutral?” The internal consistency reliability for this measure was .69 for the current sample.

**Individual Goal Commitment**

Individuals’ commitment to self-set goals was assessed using a 7-item self-report measure developed by Hollenbeck, Klein, Wright, and O’Leary (1989) (see Appendix D-4). Participants responded on a 5-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (5). Negatively keyed items were reverse scored, and
participants’ responses to all items were averaged such that a high score indicated that individuals have strong commitment to their self-set goals. Hollenbeck et al. reported a coefficient alpha of .80 for their measure. A sample item is “I think this is a good self-set goal to shoot for.” The internal consistency reliability for this measure in the current study was .81.

Primary Measures

Ability

The Wonderlic Personnel Test (Wonderlic, 1983) was be used to assess participants’ general cognitive ability level. This measure was a 12-minute timed test of general verbal, math, and analytical abilities that is used widely in research. Test-retest reliabilities for the measure range from .82 to .94 (Wonderlic, 1983).

Core Self-Evaluations

The 12-item Core Self-Evaluation Scale (CSES; Judge, Erez, Bono, & Thoresen, 2003) was used to assess individuals’ core self-evaluations (see Appendix D-5). Participants responded on a 5-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (5). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated a high level of core self-evaluations. A sample item is “I am capable of coping with most of my problems”. Judge et al. reported a test-retest reliability of .81 for this measure. Further, Judge et al. reported internal consistency reliabilities for the scale ranging from .81 to .87. In the present study, the internal reliability coefficient was .81.
Task Specific Self-Efficacy

Task specific self-efficacy was assessed using the 10-item self-report measure developed by Riggs, Warka, Babasa, Betancourt, and Hooker (1994). Items were adapted to reflect self-efficacy specific to the present task (see Appendix D-6). Participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (7). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated that the individual had high task specific self-efficacy. A sample item is “I have confidence in my ability to do this task.” Riggs et al. reported a coefficient alpha of .86 for the original scale in their study. In the present study, the internal reliability coefficient for this measure was .81.

Self-Set Goals

Participants reported their self-set goals and sub-goals for each of the three difficulty levels (see Appendix D-7). Each participant indicated the number of items from the test bank that he/she can solve in 30 minutes. Participants also identified the number of easy, moderate, and difficult items they planned to solve and categorize.

Individual Satisfaction

Two aspects of satisfaction were assessed. Individuals’ satisfaction with the task itself was measured using a 5-item measure adapted from Griffin, Bateman, Wayne, and Head (1987) (see Appendix D-8 Items 1-5). Participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (7). Negatively keyed items were reverse scored, and participants’ responses to all items averaged such that a high score indicated high satisfaction with the task itself. Griffin and colleagues
reported a coefficient alpha of .91 for the measure. A sample item is “This task was interesting and challenging.” In the present study, the internal reliability coefficient for this measure was .81.

A 3-item subscale adapted from The Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979) was used to assess individuals’ satisfaction with their performance on the task (see Appendix D-8 Items 6-8). Participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (7). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated high satisfaction with performance on the task. Cammann and colleagues reported an internal consistency reliability estimate of .77 although subsequent studies have found higher reliabilities (e.g., .87; Jex & Gudanowski, 1992). A sample item is “In general, I liked working on this task.” In the present study, the internal reliability coefficient for this measure was .70.

**Demographics**

A demographics measure was administered to assess various demographic variables such as gender, race, and education (see Appendix D-9). Information on gender was used in tests of hypotheses and research questions. Other variables were used to describe the nature of the sample and to assess alternative explanations.

**Individual Performance**

Individual team members’ performance was operationalized in two ways. First, performance was assessed by calculating the number of items an individual attempted to solve and categorized as easy, moderate, or difficult. The total number of items
attempted was used in tests of research questions. Second, performance was assessed by the number of items individual participants were able to correctly solve. The number of items correctly solved were used in tests of alternate explanations.

Additional Measures to Examine Post Hoc Explanations

A number of measures were included to enable tests of alternate explanations and exploratory relationships. Analyses and results involving these measures have not been reported in the current document.

Global Self-Esteem

Rosenberg’s (1965) 10-item measure was used to assess self-esteem. Participants responded on a 4-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (4). Participants’ responses to all items were summed such that a high score reflected high self-esteem (see Appendix D-10). Fleming and Courtney (1984) reported an internal consistency reliability of .88 for the scale. The internal reliability coefficient for this measure in this study was .86. A sample item is “I feel that I have a number of good qualities”.

Generalized Self-Efficacy

The 8-item New General Self-Efficacy scale (Chen, Gully, & Eden, 2001) was used to measure generalized self-efficacy (see Appendix D-11). Participants responded on a 5-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (5). Participants’ responses to all items were averaged, with a high score indicating high levels of generalized self-efficacy. A sample item is “I will be able to successfully overcome many challenges”. Chen et al. (2001) reported internal consistency reliabilities
for the scale ranging from .85 to .91 and a test-retest reliability estimate of .86. The internal reliability coefficient for this measure in this study was .88.

Locus of Control: Levenson

Locus of control was measured using the 8-item Internality subscale of Levenson’s (1981) Internal, Powerful Others, and Chance (IPC) Scale (see Appendix C-12). Participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (-3) to strongly agree (3). Participants’ responses to all items were summed such that high scores indicated a more internal locus of control, i.e., the individual expects to have control over his or her life. To avoid negative values, 24 points were added to scores on each scale. A sample item is “My life is determined by my own actions.” Levenson (1974) reported a Kuder-Richardson reliability of .64 for the Internality subscale. The internal reliability coefficient for this measure in this study was .63.

Locus of Control: Rotter

Locus of control was measured also using the 29 statement pairs (23 items and 6 filler items) developed by Rotter (1966). Participants used a forced choice format to select appropriate statements (see Appendix D-13). Internal statements were paired with external statements. One point was given for each external statement selected, and these were summed for the total score on the measure. High scores indicated a more external locus of control. Rotter reported an internal consistency coefficient of .70 for this measure. A sample set of statements is “a. Many of the unhappy things in people's lives are partly due to bad luck. b. People's misfortunes result from the mistakes they make.” The internal consistency reliability for this measure was .66.
Neuroticism

Twenty items from the Five Broad NEO domains of the IPIP website (http://ipip.ori.org/) were used to assess neuroticism (see Appendix D-14). Participants responded on a 5-point Likert-type rating scale, ranging from very inaccurate (1) to very accurate (5). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated that the individual was more emotionally stable and less neurotic. The internal consistency reliability reported on the website for the scale is .91. A sample item is “often feel blue.” The internal reliability coefficient for this measure in this study was .93.

Trait Competitiveness

A 4-item measure developed by Helmreich and Spence (1978) was used to assess trait competitiveness. (see Appendix D-15). Participants responded on a 5-point Likert type rating scale, ranging from very inaccurate (1) to very accurate (5). Participants’ responses to all items was averaged such that a high score indicated high levels of trait competitiveness. Brown, Cron, and Slocum Jr. (1998) reported a coefficient alpha of .84. A sample item is “I enjoy working in situations involving competition with others.” The internal reliability coefficient for this measure in this study was .79.

The Big Five Inventory

A measure developed by John (1991) was used to assess the Big Five personality traits: Extraversion (8-items), Agreeableness (9-items), Conscientiousness (9-items), Neuroticism (8-items), and Openness (10-items) (see Appendix D-16). Participants responded on a 5-point Likert-type rating scale, ranging from disagree strongly (1) to agree strongly (5). Scale scores were computed as the mean rating of items on each scale.
after reverse scoring the negatively keyed items with high scores indicating high levels of
the assessed construct. Benet-Martínez and John (1998) reported coefficient alphas
ranging from .80 to .87 for the five subscales. A sample item is “I see myself as someone
who…is talkative.” The internal reliability coefficients in this study for the five
personality traits were as follows: Extraversion = .84; Agreeableness = .77;
Consciousness = .74; Neuroticism = .83; and Openness to Experience = .76.

Perceived Task Complexity

I used a 10-item measure developed by Stokes and Steele-Johnson (2001) to
assess perceived task complexity (see Appendix D-17). Participants responded on a 7-
point Likert-type rating scale, ranging from not at all (1) to very (7). Responses to all
items were averaged such that a high score indicated that the participant perceived the
task to be very complex. Stokes and Steele-Johnson (2003) reported a coefficient alpha
of .89 for this measure. A sample item is “How complex did you find this task?” The
internal consistency reliability for this measure in the current sample was .80.

Perceived Task Interdependence

For the current study I developed a 5-item measure to assess perceived task
interdependence (see Appendix D-18). Participants responded on a 7-point Likert-type
rating scale ranging from strongly disagree (1) to strongly agree (7). Scale scores were
computed as the mean rating of item responses with a high score indicating higher levels
of perceived task interdependence. A sample item is “To meet the assigned team goal,
team members had to frequently coordinate their efforts with each other.”
Confirmatory factor analysis: Perceived task interdependence. I conducted a confirmatory factor analysis on the team task interdependence measure that was created for the purposes of this study. The first measurement model that I tested was a one factor model in which all five items were allowed to load on one latent factor. This model reflected no factorial complexities and no correlations among error terms. This one-factor solution did provide a good fit \( \chi^2 (df = 4, N = 836) = 12.34, p = .01; \ CFI = 0.985; \ RMSEA = 0.05; \ SRMR = 0.02 \) with factor loadings ranging from .4 to .7. Thus, for the purposes of this study, I retained the one factor solution. Further, the scale demonstrated moderate level of internal consistency (alpha = .68).

Group/Team Task Satisfaction

Two subscales of the group task satisfaction measure developed by Mason and Griffin (2005) were used to assess individual team members’ perceived satisfaction with his/her team’s performance (see Appendix D-19). One subscale was used to assess individuals’ perceptions of the team’s satisfaction with the team task itself (see Appendix C-19 Items 2, 4, and 6). The second 3-item subscale was used to assess individuals’ perceptions of the team’s satisfaction with the team’s internal environment (see Appendix C-19 Items 1, 3, and 5). For each item, participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (7). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated high perceived satisfaction with team task itself and with the team internal environment. Mason and Griffin reported coefficient alphas of .87 (task itself) and .81 (internal work environment) for these scales. A sample group task satisfaction item is “Our team is happy with the way I work together as a group.” In the
current study, the internal consistency reliability for perceived satisfaction with team task itself was .75 and perceived satisfaction with internal work environment was .63.

Additionally, a 3-item subscale adapted from The Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979) was used to assess individuals’ perception of the team’s satisfaction with its performance on the task (see Appendix D-19; Items 7, 8, and 9). Participants responded on a 7-point Likert-type rating scale ranging, from strongly disagree (1) to strongly agree (7). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated high perceived team satisfaction with performance on the task. Cammann and colleagues reported an internal consistency reliability estimate of .77, although subsequent studies have found higher reliabilities (e.g., .87; Jex & Gudanowski, 1992). A sample item is “In general, our team liked working on this task.” In the current study, the internal consistency reliability for this subscale was .69.

**Team Member Satisfaction**

Two aspects of team member satisfaction were assessed. Individuals’ satisfaction with team task itself was measured using a 5-item measure adapted from Griffin, Bateman, Wayne, and Head (1987) (see Appendix D-20 Items 1-5). Participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (1) to strongly agree (7). Negatively keyed items were reverse scored and participants’ responses to all items were averaged such that a high score indicated high satisfaction with the task itself by an individual team member. A sample item is “This task was interesting and challenging in the team.” Griffin and colleagues reported a coefficient
alpha of .91 for the original measure. In the current study, the internal consistency reliability for this subscale was .83.

A 3-item subscale adapted from The Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979) was used to assess individuals’ satisfaction with his/her performance on the task in the team (see Appendix D-20 Items 6-8). Participants responded on a 7-point Likert-type rating scale, ranging from strongly disagree (1) strongly agree (7). Negatively keyed items were reverse scored, and participants’ responses to all items were averaged such that a high score indicated high satisfaction with performance on the task in the team. Cammann and colleagues reported an internal consistency reliability estimate of .77, although subsequent studies have found higher reliabilities (e.g., .87; Jex & Gudanowski, 1992). A sample item is “In general, I liked working on this task in the team.” In the current study, the internal consistency reliability for this subscale was .71.

Mathematics/English as a Gendered Domain

I used 3-items from each of the three subscales of mathematics as a gendered domain developed by Forgasz, Leder, and Kloosterman (2004) to assess the extent to which individuals stereotype mathematics as a gendered domain, i.e., the extent to which they believe mathematics may be more suited to males (MD), to females (FD), or regarded as a gender-neutral domain (ND) (see Appendix D-21 Items 1-9). Each subscale had 16-items but for the purposes of the present study, I used only 3-items from each subscale for a total of 9-items. Because this was an exploratory measure and because of time constraints in the present study, I developed these 3-item shortened versions of the original subscales by selected for each subscale the three items with the
highest item-factor loadings. Participants responded on a 5-point Likert type rating scale, ranging from disagree strongly (1) to agree strongly (5). Scale scores were computed as the mean rating of items on each scale after reverse scoring the negatively keyed items with high scores indicating high levels of the assessed construct. Forgasz and colleagues reported internal consistency reliability estimates as .90 for MD, .90 for FD and .84 for ND. A sample item from the MD sub-scale is “Men are mathematically more intelligent than women.” The internal consistency reliabilities for the truncated 3-item subscales in the present study were .82 for MD, .76 for FD and .38 for ND.

I used three 3-item subscales to assess English as a gendered domain. I adapted the 3-item subscales designed to assess mathematics as a gendered domain to reflect English as a gendered domain (see Appendix D-21 Items 10-18). Participants responded on a 5-point Likert-type rating scale, ranging from disagree strongly (1) to agree strongly (5). Scale scores were computed as the mean rating of items on each scale after reverse scoring the negatively keyed items with high scores indicating high levels of the assessed construct. A sample item from the MD sub-scale is “more boys than girls care about doing well in English.” The internal consistency reliabilities for the modified and truncated 3-item subscales in the present study were .84 for MD, .87 for FD and .56 for ND. Based on these reliability indices, I did not use the subscales assessing mathematics/English as a neutral domain for any further analysis because of low levels of internal reliabilities.

Self-Set Goal (Post Task)

Participants again reported self-set goals and sub-goals for each of the three difficulty levels (see Appendix D-22) after task completion. Each participant indicated
the number of items from the test bank that he/she could solve in 30 minutes if they were asked to repeat this task with the same assigned team goal, task type and team composition. Participants again identified the number of easy, moderate, and difficult items they planned to solve and categorize.

*Team Performance*

Team performance was operationalized as the number of items on the test assembled by the team in each of the easy, moderate, and difficult categories. Team performance was assessed also by the number of correctly solved items on the final test assembled by the team.

*Procedure*

Teams were composed of four participants each. Upon arrival, participants were seated around table in the center of the room facing each other. Participants first completed the informed consent. Next, they received task instructions describing the purpose of the study and indicating that participants will perform an individual task first and then a team task (see Appendix D-1).

Participants completed the following measures: the Wonderlic Personnel test, Core Self-Evaluations survey, Emotional Stability subscale from the Big Five survey, New Generalized Self-Efficacy survey, Self-Esteem survey, Locus of Control – Internality subscale from the Internal, Powerful others, and Chance (IPC) Scale, and Rotter’s Locus of Control survey. After participants had completed these surveys, they performed a 10-minute practice session on the individual task to get more familiar with the kind of questions that were in the test bank. For the quantitative condition,
participants were provided with a formula sheet and a calculator to reduce the test-like conditions that they might experience.

Then, the experimenter assigned a team goal to the participants. Participants responded to the task specific self-efficacy measure. Then participants were asked to set a goal for themselves. Each participant completed additional surveys, including an assigned team goal difficulty measure, assigned team goal commitment measure, and an individual goal commitment survey.

Subsequently, participants worked individually for 30 minutes on the task. Participants were provided with a 300-item test bank. Participants were encouraged to skip around the test bank packet and to attempt at least one question for each difficulty level (i.e., easy, moderate, and difficult). After the 30-minute session was completed, participants were asked to respond to measures of task satisfaction, task perception, trait competitiveness, and the Big Five Inventory.

Participants were provided with a 5 minute break after which they began the team task. Participants were seated around a table in the center of the room and asked to introduce themselves. Before they start working together, they were given detailed task instructions for the team task (see Appendix D-2). Also, participants were reminded of the rules that they need to follow while developing the test (see Appendix A), the assigned team goal, the rewards associated with team performance. Next, participants were asked to develop a strategy that they would like to follow to attain the assigned team goal. They were given 10 minutes to develop this strategy. For the team task, individual team members were provided with different color pens that helped keep track of the work
done during the team task and distinguish it from the work done during the individual session. Participants worked on the team task for 30 minutes.

Upon completion of team task, team members were asked to go back to their individual tables and complete additional surveys. Participants completed measures of team/group satisfaction measure, task complexity, team task interdependence measure, team member satisfaction, mathematics and English as a gendered domain, and demographics.
III. RESULTS

Normality, Homogeneity of Variance, and Linearity

All variables were examined for accuracy of data entry and missing values. Outliers were assessed and assumptions of multivariate analysis were checked. The missing values on survey measures for 162 participants were replaced by the mean for those individuals on those surveys. Out of the 840 participants, 4 were removed from the analysis due to incomplete data on the dependent variables, resulting in the final sample of 836 participants.

Frequency distributions for all study variables were examined to ensure that all variables were normally distributed. Two components of normality are skewness and kurtosis. For normal distributions, the values of skewness and kurtosis are zero. As the sample size increases, the standard error for both skewness and kurtosis decrease thereby increasing the likelihood that minor deviations from normality will not make a substantive difference in the analysis. Given that the sample in the present study consists of 836 participants, it can be considered to be large enough to withstand violations, if any, to this assumption.

Further, all predictors were not highly linearly correlated. To assess the level of multicollinearity between predictors, variance inflation factors were calculated. A variance inflation factor of more than 10 is indicative of multicollinearity. No predictors had a value of more than 10 for the variance inflation factor, indicating low levels of multicollinearity in the given sample. Even though I collected the data in teams and thus
it was clustered, the variance for residuals in predicting the criterion variable was same at all levels of the predictor, i.e., the assumption of homoscedasticity was not violated.

Further, these residuals were independent of each other. This was assessed using the Durbin-Watson d statistic to assess sequential correlations of adjacent error terms which ranges from 0 to 4 and should be about 2. For the present sample, I obtained a Durbin-Watson d of 2.18, indicating independence of residuals.

Mahalanobis distance was calculated to assess multivariate outliers. The criterion for multivariate outliers in Mahalanobis distance is at $p < .001$. Mahalanobis distance is evaluated as chi square with degrees of freedom equal to the number of variables and the critical value associated with those variables. The predictors for the present study were core self-evaluations, task specific self-efficacy and cognitive ability. Thus, $\chi^2_{crit} (3) = 16.266, p = .001$ was the cutoff for multivariate outliers. Two cases were rejected based on this criterion (i.e., subject numbers 098389 and 101404). Further analyses were conducted excluding and including these cases to determine whether these outliers affected conclusions drawn from analyses.

Initial Group Differences

Tables 1 and 2 display the distribution of participants in different conditions and the frequency of distributions of gender, age, rank and race for the study sample. Tables 3 and 4 display means and standard deviations of participants self-set goals and performance across study conditions. The means, standard deviations, and intercorrelations between continuous study variables is shown in Table 5.
Table 1

*Number of participants in different conditions*

<table>
<thead>
<tr>
<th>Team Composition</th>
<th>Assigned Goal</th>
<th>Easy</th>
<th>Difficult</th>
<th>Easy</th>
<th>Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Task Type</td>
<td>Quantitative</td>
<td>Verbal</td>
<td>Quantitative</td>
<td>Verbal</td>
</tr>
<tr>
<td>All Male</td>
<td></td>
<td>76</td>
<td>72</td>
<td>72</td>
<td>68</td>
</tr>
<tr>
<td>All Female</td>
<td></td>
<td>72</td>
<td>76</td>
<td>76</td>
<td>72</td>
</tr>
<tr>
<td>Mixed</td>
<td></td>
<td>64</td>
<td>68</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>
Table 2

*Frequency Distributions of Demographic Variables for Study Sample*

<table>
<thead>
<tr>
<th>Demographic Category</th>
<th>Gender</th>
<th>Age</th>
<th>Rank</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>18</td>
<td>Freshman</td>
<td>Caucasian</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>19</td>
<td>Sophomore</td>
<td>African American</td>
</tr>
<tr>
<td>Frequency</td>
<td>404</td>
<td>20</td>
<td>Junior</td>
<td>Hispanic</td>
</tr>
<tr>
<td>Percent</td>
<td>48.3%</td>
<td>21</td>
<td>Senior</td>
<td>Asian</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22</td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>25+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>432</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>51.7%</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 836*
### Table 3

*Mean and standard deviations for self-set goals across study conditions*

<table>
<thead>
<tr>
<th>Task Type</th>
<th>Team Composition</th>
<th>Assigned Goal</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Easy</td>
<td>Difficult</td>
<td>Easy</td>
<td>Difficult</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Quantitative</td>
<td>Verbal</td>
<td>Quantitative</td>
<td>Verbal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>All Male</td>
<td>All Male</td>
<td>26.67</td>
<td>15.65</td>
<td>26.54</td>
<td>12.41</td>
<td>35.01</td>
</tr>
<tr>
<td>All Female</td>
<td>All Female</td>
<td>26.15</td>
<td>10.54</td>
<td>24.64</td>
<td>11.31</td>
<td>31.72</td>
</tr>
<tr>
<td>Mixed</td>
<td>Mixed</td>
<td>24.20</td>
<td>10.31</td>
<td>26.41</td>
<td>11.06</td>
<td>30.75</td>
</tr>
</tbody>
</table>
### Table 4

*Mean and standard deviations for individual performance across study conditions*

<table>
<thead>
<tr>
<th>Team Composition</th>
<th>Easy</th>
<th></th>
<th>Difficult</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantitative</td>
<td>Verbal</td>
<td>Quantitative</td>
<td>Verbal</td>
</tr>
<tr>
<td>Assigned Goal</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Easy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantitative</td>
<td>32.86</td>
<td>13.50</td>
<td>57.58</td>
<td>22.95</td>
</tr>
<tr>
<td>Verbal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficult</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantitative</td>
<td>33.08</td>
<td>10.78</td>
<td>64.08</td>
<td>27.38</td>
</tr>
<tr>
<td>Verbal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>31.92</td>
<td>11.89</td>
<td>66.98</td>
<td>27.01</td>
</tr>
</tbody>
</table>
Table 5

*Means, Standard Deviations and Intercorrelations between continuous Study Variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>CSE</th>
<th>TSSE</th>
<th>CA</th>
<th>SSG</th>
<th>Perf</th>
<th>IS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core self-evaluations (CSE)</td>
<td>3.64</td>
<td>.52</td>
<td>(.81)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task-Specific Self-efficacy (TSSE)</td>
<td>4.57</td>
<td>.88</td>
<td>.14**</td>
<td>(.86)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Ability (CA)</td>
<td>20.46</td>
<td>5.35</td>
<td>.04</td>
<td>.13**</td>
<td>(--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-set Goal (SSG)</td>
<td>31.78</td>
<td>18.48</td>
<td>.09*</td>
<td>.20**</td>
<td>.06</td>
<td>(--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance (Perf)</td>
<td>49.10</td>
<td>26.91</td>
<td>.01</td>
<td>.15**</td>
<td>.06</td>
<td>.20**</td>
<td>(--</td>
<td></td>
</tr>
<tr>
<td>Individual Satisfaction (IS)</td>
<td>3.95</td>
<td>1.06</td>
<td>.18**</td>
<td>.29**</td>
<td>.00</td>
<td>.10**</td>
<td>.05</td>
<td>(.70)</td>
</tr>
</tbody>
</table>

*Note. N = 836. *p < .05. **p < .01. (Internal consistency reliabilities are shown in parentheses.)*
Further, to assess whether there were any differences between the data collected during fall and winter quarter in terms of individual self-set goals, practice performance and individual performance on the given task, I conducted a one way ANOVA. Results indicated that there was no significant effect for quarter (i.e., fall or winter) on self-set goals $F(1, 835) = 0.007, p = .93$; practice performance, $F(1, 835) = 0.26, p = .61$; individual performance $F(1, 835) = 3.74, p = .07$ and individual satisfaction $F(1, 835) = 3.35, p = .07$. Further, there was no significant effect for gender of the experimenter on participants’ self-set goals $F(1, 835) = 1.27, p = .26$; practice performance, $F(1, 835) = 0.16, p = .69$; individual performance, $F(1, 835) = 1.04, p = .31$; or individual satisfaction $F(1, 835) = 0.035, p = .85$.

I expected cognitive ability, core self-evaluations and initial task specific self-efficacy to be evenly distributed across conditions because participants were randomly assigned to study conditions, i.e., task type, assigned goal, and team composition. The data was collected over two quarters (i.e., fall and winter), and there were both male and female experimenters. To assess whether cognitive ability differed in any of these conditions, I conducted a 2-way or 3-way ANOVA’s (based on an alpha level of .05), entering task type, assigned team goal, team composition, quarter, and experimenter gender as predictors of cognitive ability, core self-evaluations, and task specific self-efficacy.

Results revealed that cognitive ability differed depending on team composition (i.e., all males, all females, mixed) $F(2, 834) = 8.24, p = .001$. To determine which conditions significantly differed in cognitive ability, I conducted a post hoc test of all differences between means, using the Tukey HSD method to adjust for multiple
comparisons. Results revealed that the cognitive ability mean for the all male teams condition ($M = 21.43$, $SD = 5.49$) was significantly higher than the means for the all female teams condition ($M = 19.51$, $SD = 4.94$). Also, mixed team condition ($M = 20.64$, $SD = 5.49$) was significantly higher than the means for the all female teams condition ($M = 19.51$, $SD = 4.94$), but there was no difference between all male teams and mixed teams in terms of cognitive ability. However, cognitive ability was evenly distributed across task types, $F(1, 835) = 0.14, p = .71$; assigned goal, $F(1, 835) = .10, p = .75$ conditions, across and fall and winter quarter $F(1, 835) = 3.79, p = .05$ and across male and female experimenters, $F(1, 835) = .33, p = .56$.

Individual core self-evaluations were evenly distributed across task types, $F(1, 835) = 0.20, p = .65$; assigned goal, $F(1, 835) = 1.23, p = .27$ conditions, and across and male and female experimenters $F(1, 835) = 2.76, p = .10$. There was a significant difference in participant core self-evaluations across fall and winter quarters $F(1, 835) = 5.54, p = .02$ with individuals in the fall quarter having lower levels of core self-evaluations ($N = 536, M = 3.61, SD = .51$) than those in winter quarter ($N = 300, M = 3.70, SD = .53$). Further, results revealed that core self-evaluations differed depending on team composition condition (i.e., all males, all females, mixed), $F(2, 835) = 5.26, p = .005$. I conducted a post hoc test of all differences between means, using the Tukey HSD method to adjust for multiple comparisons. Results revealed that the core self-evaluations mean for the all male teams condition ($M = 3.72$, $SD = .52$) was significantly higher than the means for the all female teams condition ($M = 3.59$, $SD = .51$) and mean for the mixed team condition ($M = 3.61$, $SD = .52$). There was no significant difference between all female teams and mixed teams in terms of individual core self-evaluations.
This difference in individual core self evaluation across quarters is likely to add some variance to the error term but should not have any effect on the analysis of the hypotheses because individuals are approximately evenly distributed across treatment conditions for both quarters.

Individual task specific self-efficacy was evenly distributed across assigned goal conditions, $F(1, 835) = 0.01, p = .94$; fall and winter quarters, $F(1, 835) = .27, p = .60$, and across and male and female experimenters $F(1, 835) = 1.31, p = .29$. However, there was a significant difference in participant task specific self-efficacy across quantitative and verbal task types, $F(1, 835) = 23.18, p = .001$ with individuals in the quantitative task condition having lower levels of task specific self-efficacy ($M = 4.24$, $SD = .93$) than those in the verbal task condition ($M = 4.71$, $SD = .80$). Further, results revealed that task specific self-efficacy also differed depending on team composition condition (i.e., all males, all females, mixed), $F(2, 836) = 5.35, p = .005$. I conducted a post hoc test of all differences between means, using the Tukey HSD method to adjust for multiple comparisons. Results revealed that the task specific self-efficacy mean for the all male teams condition ($M = 4.68$, $SD = .88$) was significantly higher than the means for the all female teams condition ($M = 4.44$, $SD = .88$). There was no significant difference between task specific self-efficacy for all male teams and mean for the mixed team condition ($M = 4.58$, $SD = .87$). Further, there was no significant difference between all female teams and mixed teams in terms of individual task specific self-efficacy. The implications of this effect will be addressed in the discussion section.
Manipulation Checks

I assessed the effectiveness of assigned goal and task type manipulations by examining perceptions of assigned team goal difficulty and task perceptions. Difficult assigned team goals should be perceived as difficult in relation to easy assigned team goals. Similarly, the quantitative task should be perceived as more masculine and the verbal task as more feminine in nature. No check for team composition was conducted because it reflects the categorization of individuals in different team compositions.

I conducted a univariate ANOVA (entering assigned team goal as a predictor of perception of assigned team goal difficulty). Results indicated that there was a significant difference in perceptions of difficulty of assigned team goal, $F (1, 835) = 6.65, p = .01$, indicating that the difficult assigned team goal was perceived as difficult ($M = 3.90, SD = .91$) compared to the easy assigned team goal ($M = 3.75, SD = .86$). Further, as expected, I observed no significant difference, $F (1, 835) = 1.58, p = .21$, for goal commitment in both assigned difficult team goal ($M = 3.72, SD = .62$) and assigned easy team goal ($M = 3.77, SD = .63$). This indicated that regardless of whether the assigned team goal was easy or difficult, team members were equally committed to that goal.

To assess whether the quantitative task was perceived as masculine and verbal task as feminine by participants, I conducted a univariate ANOVA (entering task type as predictor of task perceptions). Results indicated that there was a significant difference in perceptions of the two task types (quantitative and verbal), $F (1, 835) = 3.44, p = .001$. Further, as proposed, quantitative task type was perceived as masculine in nature ($M = 1.94, SD = .29$) and verbal task was perceived as feminine ($M = 2.12, SD = .23$).
Tests of Hypotheses

Data was analyzed using HLM 6.04 (Raudenbush & Bryk, 2002). I centered the level-one predictor scores on their grand means. Further, for the research question, I dummy coded team composition and used the all-male teams as the referent group.

Self-Set Goals

Step 1: Testing for Intercept Variability: Self-set Goals

The first step was to determine whether there was significant variability in the intercepts across teams by estimating an intercept-only model. If the between group variation in the intercept was not significant, then there is little reason to use multilevel random coefficient (MRC) modeling because team membership did not affect individual team member performance.

The first model (i.e., null model) essentially assessed the amount of variability in the intercept. In the two-stage hierarchical linear modeling (HLM) notation, the model is denoted as:

\[ SS_{Goal_{ij}} = \beta_{oj} + r_{ij} \]

(1a)

\[ \beta_{oj} = \gamma_{00} + u_{oj} \]

(1b)

Where \( \beta_{oj} \) is the average SSGoal for team \( j \); \( r_{ij} \) is the error associated with team member \( i \)’s self-set goal using the team mean for self-set goals of all team members; \( \gamma_{00} \) represents the overall mean of self-set goals for the complete sample; \( u_{oj} \) is team \( j \)’s deviation from the overall mean. The variance of \( u_{oj} \) is denoted by \( \tau_{00} \) and represents between team variance (i.e., team effect variance). An estimate of the amount of total variance in self-set goals that can be accounted for by team level variance is determined using the ICC formula:
\[ ICC = \frac{\tau_{00}}{\tau_{00} + \sigma^2} \]  

(2)

where \( \sigma^2 \) is the variance associated with \( r_{ij} \).

The ICC was .12, indicating that 12% of variance in self-set goals (total) was between team variance. This indicated that MRC modeling should be used and further hypothesis can be tested.

\textit{Step 2: Predicting Intercept Variance}

In the second step, the baseline model, I added core self-evaluations (CSE), cognitive ability (CA), and task specific self-efficacy (SEff), as Level 1 predictors and assigned team goal as level 2 predictor of individual self-set goals, to test Hypotheses 1-4.

\[ (SS\text{Goal}_{ij}) = \beta_{0j} + \beta_{1j} (CSE_{ij}) + \beta_{2j} (CA_{ij}) + \beta_{3j} (SEff_{ij}) + r_{ij} \]  

(3)

\[ \beta_{0j} = \gamma_{00} + \gamma_{01} \text{(assigned team goal)} + u_{oj} \]  

(3a)

\[ \beta_{1j} = \gamma_{10} \]  

(3b)

\[ \beta_{2j} = \gamma_{20} \]  

(3c)

\[ \beta_{3j} = \gamma_{30} \]  

(3d)

The first row indicates that individual self-set goal is a function of 1) team intercept, 2) the linear effect of individual core self-evaluations, 3) the linear effect of individual ability and 4) a linear effect of individuals’ task specific self-efficacy plus random error. In other words, individual team members’ self-set goals are predicted by a linear combination of individuals’ core self evaluation, ability, and self-efficacy. The second line indicates that each team’s intercept is a function of some common intercept (\( \gamma_{00} \)) plus a component that reflects the linear effect of assigned team goal plus some random between group error. Thus, intercept differences in self-set goals among teams
(which are equivalent to mean differences in self-set goals) are being predicted by the level of assigned team goal. The third line indicates that the slope between individual core self evaluation and individual self-set goal is fixed; it is not allowed to randomly vary across teams. Similarly, the fourth and fifth lines indicate that the slopes between individual ability and self-set goal and the slope between individual self-efficacy and self-set goal are fixed and are not allowed to vary randomly across teams.

Further, to test Hypotheses 5 through 7, I added assigned team goal as a potential predictor of slope variance for each individual level predictor (i.e., core self-evaluations, cognitive ability, and task specific self-efficacy) – self-set goals relationship. To analyze hypotheses 8-10, I conducted the same set of analyses and substituted individual self-set goal with individual performance.

Individual team member core self-evaluations ($\gamma = .85, p = .49$) and cognitive ability ($\gamma = 13, p = .25$), were not significant predictors of self-set goals. Thus, Hypotheses 1 and 2 were not supported. Task specific self-efficacy ($\gamma = 3.88, p < .01$) predicted self-set goals, providing support for Hypothesis 3. Further, assigned team goal ($\gamma = 12.25, p < .01$) was significantly related to the intercept, providing support for Hypothesis 4. However, after controlling for all the variance accounted for by the predictors in self-set goal, the residual variance was not significant ($\chi^2 (207) = 215.10, p = .34$) indicating that there was no residual variance left in self-set goals.

**Step 3. Testing for and Explaining Slope Variance**

To identify slopes that should be allowed to vary; I compared the deviance of the random slope models with the deviance of the baseline model containing only fixed slopes and a random intercept. In a random slope model, I allowed the slope of the
predictor -- outcome relationship to vary across teams by adding a level 2 error term in that equation. The purpose of this was to ascertain whether there is systematic slope variance that may be explained by a level 2 variable. Based on the recommendations of LaHuis and Feguson (2007) where in they “strongly recommended against using significant slope variance as a prerequisite for testing hypothesized cross-level interactions,” I tested my hypotheses regardless of whether there was significant slope variance associated with a specific predictor. Further, they indicated that one-tailed likelihood ratio test should be used to test the significance of the variance component test as that seems to strike a balance between Type I errors and power. Thus, I have halved the probability values provided by the HLM outputs and have reported those as significance tests for the variance components. Results for specific predictors follow.

Core self-evaluations. I allowed the slope associated with core self-evaluations to vary by adding an error term to the equation. The relationship between individual team member core self-evaluations and self-set goals did not vary across teams ($\chi^2 (2) = .08, p = .25$). However, to test hypothesis 5, I assessed whether assigned team goal accounted for any variance in this relationship. There was no significant difference in the relationship between team member core self-evaluations and self-set goal (total) for individuals in a difficult assigned team goal condition compared to individuals in an easy assigned goal condition ($\gamma_{21} = .34, t(207) = .15, p = .88$). Thus, Hypothesis 5 was not supported.

Cognitive ability. Next, to test Hypothesis 6, I allowed the slopes associated with cognitive ability to vary by adding an error term to the equation. The relationship between cognitive ability and self-set goals (total) did vary across teams ($\chi^2 (2) = 4.76, p$
Further, to assess the hypothesized relationship I added assigned team goal as a moderator of the relationship between individual team member cognitive ability and self-set goal (total). The relationship between team member cognitive ability and self-set goal (total) did not vary by assigned team goals ($\gamma_{31} = -.38, t(207) = -1.61, p = .11$). Thus, hypothesis 6 was not supported.

*Task specific self-efficacy.* The relationship between individual team member task specific self-efficacy and self-set goals (total) did not vary across teams ($\chi^2 (2) = 1.46, p = .25$). However, to test hypothesis 7, I assessed whether assigned team goal accounted for any variance in this relationship. Results indicated that assigned team goal did not account for any significant variance in the relationship between team member task specific self-efficacy and self-set goals ($\gamma_{11} = .95, t(207) = .69, p = .49$).

*Individual Performance*

**Step 1: Testing for Intercept Variability:** *Individual Performance*

The next set of hypotheses were assessing the aforementioned relationships with individual performance as the outcome. Again, the first step was to determine whether there was significant variability in the intercepts across teams by estimating an intercept-only model. Thus, in the first step, I generated a null model to calculate the ICC associated with individual performance as an outcome using the aforementioned equations. The ICC was .45, indicating that 45% of variance in individual performance was between team variance. This indicated that MRC modeling should be used and further hypothesis can be tested.

**Step 2: Predicting Intercept Variance**
Next, to test Hypotheses 8-10, I added the three individual difference factors (core self-evaluations, cognitive ability, and task specific self-efficacy) and team level condition [i.e., assigned team goal] as predictors of intercept variance. Individual team member core self-evaluations ($\gamma = -2.46, p = .12$) and cognitive ability ($\gamma = 18, p = .14$), were not significant predictors of individual performance. Thus, Hypotheses 9 and 10 were not supported. Task specific self-efficacy ($\gamma = 3.01, p < .01$) predicted individual performance providing support for Hypothesis 11. Further, assigned team goal ($\gamma = 2.38, p = .39$) was not significantly related to the intercept. The residual variance associated with individual performance was significant ($\chi^2 (207) = 851.52, p < .01$) indicating that there may be other team level factors accounting for variance in individual performance after controlling for the variance accounted for the predictors used in the current study.
Table 6

*Model effects for Self-set Goals*

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3c - CSE</th>
<th>Step 3c - TSSE</th>
<th>Step 3c - CA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>γ</td>
<td>SE</td>
<td>γ</td>
<td>SE</td>
<td>γ</td>
</tr>
<tr>
<td><strong>Team Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned Team Goal (ATG)</td>
<td>12.25</td>
<td><strong>2.</strong></td>
<td>12.30</td>
<td>1.20</td>
<td>12.31</td>
</tr>
<tr>
<td><strong>Team Member Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>31.77</td>
<td>.74</td>
<td>25.77</td>
<td>.83</td>
<td>25.77</td>
</tr>
<tr>
<td>Core self-evaluations (CSE)</td>
<td>.88</td>
<td>1.24</td>
<td>.71</td>
<td>1.68</td>
<td>.81</td>
</tr>
<tr>
<td>Task Specific Self-efficacy (TSSE)</td>
<td>3.82</td>
<td><strong>2.</strong></td>
<td>3.80</td>
<td>.74</td>
<td>.94</td>
</tr>
<tr>
<td>Cognitive Ability (CA)</td>
<td>.12</td>
<td>.11</td>
<td>.12</td>
<td>.11</td>
<td>.12</td>
</tr>
<tr>
<td><strong>Cross-level Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSE by ATG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSSE by ATG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.34</td>
</tr>
<tr>
<td>CA by ATG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Variance Components</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\sigma^2$</td>
<td>299.65</td>
<td></td>
<td>288.67</td>
<td>287.02</td>
<td>282.23</td>
</tr>
<tr>
<td>Intercept</td>
<td>42.34</td>
<td></td>
<td>3.08</td>
<td>3.75</td>
<td>6.68</td>
</tr>
<tr>
<td>Core self-evaluations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Specific Self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Ability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Step 3c is the final cross-level model.*

** $p < .01$. * $p < .05$. **
Research Questions

Research Question 1: Individual Performance

I proposed Research Question 1 to analyze the effect of assigned team goal on the relationship between individual difference factors (i.e., core self-evaluations, cognitive ability, and task specific self-efficacy) and individual performance. Again, to identify slopes that should be allowed to vary, I compared the deviance of the random slope models with the deviance of the baseline model containing only fixed slopes and a random intercept. Results for specific predictors follow.

Step 3: Testing for and Explaining Slope Variance

Core self-evaluations. I allowed the slope associated with core self-evaluations to vary by adding an error term to the equation. The relationship between individual team member core self-evaluations and self-set goals (total) did not vary across teams ($\chi^2 (2) = .07, p = .25$). However, I assessed whether assigned team goal accounted for any variance in this relationship. There was no significant difference in the relationship between team member core self-evaluations and individual performance for individuals in a difficult assigned team goal condition compared to individuals in an easy assigned goal condition ($\gamma_{21} = -.97, t(207) = -.33, p = .74$).
Table 7

*Model effects for Individual Performance*

<table>
<thead>
<tr>
<th></th>
<th>Individual Performance</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td>Step 3c - CSE</td>
<td>Step 3c - TSSE</td>
<td>Step 3c - CA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\gamma$</td>
<td>SE</td>
<td>$\gamma$</td>
<td>SE</td>
<td>$\gamma$</td>
<td>SE</td>
<td>$\gamma$</td>
</tr>
<tr>
<td><strong>Team Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned Team Goal (ATG)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.38</td>
<td>2.81</td>
<td>2.40</td>
<td>2.80</td>
<td>2.45</td>
<td>2.80</td>
<td>2.24</td>
</tr>
<tr>
<td><strong>Team Member Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>49.10</td>
<td>1.42</td>
<td>47.93</td>
<td>1.97</td>
<td>47.91</td>
<td>1.96</td>
<td>47.79</td>
</tr>
<tr>
<td>Core self-evaluations (CSE)</td>
<td>-2.46</td>
<td>1.60</td>
<td>-1.97</td>
<td>2.14</td>
<td>-2.57</td>
<td>1.60</td>
<td>-2.51</td>
</tr>
<tr>
<td>Task Specific Self-efficacy (TSSE)</td>
<td>3.01**</td>
<td>.99</td>
<td>3.02</td>
<td>.98</td>
<td>3.82</td>
<td>1.36</td>
<td>3.19</td>
</tr>
<tr>
<td><strong>Cross-level Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSE by ATG</td>
<td></td>
<td></td>
<td>-.97</td>
<td>2.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSSE by ATG</td>
<td></td>
<td></td>
<td>-1.35</td>
<td>1.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA by ATG</td>
<td></td>
<td></td>
<td></td>
<td>.27</td>
<td>.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Variance Components</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\sigma^2$</td>
<td>401.06</td>
<td></td>
<td>399.46</td>
<td></td>
<td>399.48</td>
<td></td>
<td>393.58</td>
</tr>
<tr>
<td>Intercept</td>
<td>324.23</td>
<td></td>
<td>311.41</td>
<td></td>
<td>310.84</td>
<td></td>
<td>308.99</td>
</tr>
<tr>
<td>Core self-evaluations</td>
<td></td>
<td></td>
<td></td>
<td>3.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Specific Self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td>9.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Ability</td>
<td></td>
<td></td>
<td></td>
<td>1.34</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Step 3c is the final cross-level model.*

** $p < .01$.  * $p < .05$.  

132
Cognitive ability. Next, I allowed the slopes associated with cognitive ability to vary by adding an error term to the equation. The relationship between cognitive ability and individual performance did vary across teams ($\chi^2 (2) = 8.73$, $p = .01$). Further, I added assigned team goal as a moderator of the relationship between individual team member cognitive ability and individual performance. The relationship between team member cognitive ability and individual performance did not vary by assigned team goals ($\gamma_{31} = .27$, $t(207) = .81$, $p = .42$).

Task specific self-efficacy. Finally, the relationship between individual team member task specific self-efficacy and individual performance did not vary across teams ($\chi^2 (2) = 1.94$, $p = .25$). Next, I assessed whether assigned team goal accounted for any variance in this relationship. Results indicated that assigned team goal did not account for any significant variance in the relationship between team member task specific self-efficacy and individual performance ($\gamma_{11} = -1.35$, $t(207) = -.74$, $p = .46$).

Research Question 3: Individual Satisfaction

Step 1: Testing for Intercept Variability

In the first step, I generated a null model to calculate the ICC associated with individual satisfaction as an outcome using the aforementioned equations. The ICC was .48, indicating that 48% of variance in individual satisfaction was between team variance.

Step 2: Predicting Intercept Variance

Next, I added the three individual difference factors (core self-evaluations, cognitive ability, and task specific self-efficacy) and assigned team goal as the team level condition as predictors of intercept variance. Individual team member core self-
evaluations ($\gamma = .14, p = .06$) and cognitive ability ($\gamma = -.01, p = .33$), were not significant predictors of individual satisfaction. Of the three individual difference variables only task specific self-efficacy ($\gamma = .31, p < .01$) predicted individual satisfaction. Further, assigned team goal ($\gamma = .03, p = .67$) was not significantly related to the intercept. The residual variance associated with individual satisfaction was significant ($\chi^2 (207) = 269.85, p < .01$) indicating that there may be other team level factors accounting for variance in individual satisfaction after controlling for the variance accounted for the predictors used in the current study.

**Step 3. Testing for and Explaining Slope Variance**

Further to assess the relationships proposed in research question 3, I compared the deviance of the random slope models with the deviance of the baseline model containing only fixed slopes and a random intercept. And then regardless of whether there was significant slope variance associated with a specific predictor I assessed whether assigned team goal may account for any variance in a relationship. Results for specific predictors follow.

*Core self-evaluations.* I allowed the slope associated with Core self-evaluations to vary by adding an error term to the equation. The relationship between individual team member core self-evaluations and individuals satisfaction did not vary across teams ($\chi^2 (2) = 3.98, p = .07$). Next, I assessed whether assigned team goal accounted for any variance in this relationship. There was no significant difference in the relationship between team member core self-evaluations and individual satisfaction for individuals in a difficult assigned team goal condition compared to individuals in an easy assigned goal condition ($\gamma_{21} = .24, t(207) = 1.70, p = .09$).
Cognitive ability. I allowed the slopes associated with cognitive ability to vary by adding an error term to the equation. The relationship between cognitive ability and individual satisfaction did not vary across teams ($\chi^2 (2) = .77, p = .25$). Further, I added assigned team goal as a moderator of the relationship between individual team member cognitive ability and individual satisfaction. The relationship between team member cognitive ability and individual satisfaction did not vary by assigned team goals ($\gamma_{31} = .02, t(207) = 1.77, p = .07$).

Task specific self-efficacy. The relationship between individual team member task specific self-efficacy and individual satisfaction did vary across teams ($\chi^2 (2) = 7038, p = .01$). Next, I assessed whether assigned team goal accounted for any variance in this relationship. Results indicated that assigned team goal did not account for any significant variance in the relationship between team member task specific self-efficacy and individual satisfaction ($\gamma_{11} = .04, t(207) = .52, p = .60$).

Research Question 2: Gender, Task Type, and Team Composition

This research question focused on the moderating effects of team composition and task type on the relationship between self-set goals and team member gender. I used all males teams as the referent group. Since the outcome was self-set goals, I knew from previous analysis that the ICC associated with self-set goals is 12% which allows for further analysis of linear effects and cross level interactions.

Next I added gender as individual level (level 1) predictor and task type, all females, and mixed teams as team level (level 2) predictors of self-set goals. Results indicated that task type ($\gamma = 5.35, p < .01$) was a significant predictor of individual self-
set goals. However, individual team member gender ($\gamma = -2.51, p = .18$), all female teams ($\gamma = 1.37, p = .58$), and mix teams ($\gamma = -0.75, p = .68$) were not significant predictors of self-set goals (total).

Next, the relationship between team member gender and self-set goals did not vary across teams ($\chi^2 (2) = .27, p = .25$). Nonetheless, I added task type, team composition (all females and mix teams) as moderators of this relationship. Results indicated that task type ($\gamma_{11} = 1.26, t(205) = .45, p = .65$), all female teams compared to all male teams ($\gamma_{12} = 5.79, t(205) = .44, p = .66$), and mixed teams compared to all male teams ($\gamma_{13} = -3.26, t(205) = -.40, p = .69$) did not account for any significant variance in the relationship between team member gender and their initial self-set goal.
Table 8

Model effects for Individual Satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Individual Satisfaction</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3c - CSE</th>
<th>Step 3c - TSSE</th>
<th>Step 3c - CA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>γ</td>
<td>SE</td>
<td>γ</td>
<td>SE</td>
<td>γ</td>
</tr>
<tr>
<td>Team Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned Team Goal (ATG)</td>
<td></td>
<td>.03</td>
<td>.08</td>
<td>.03</td>
<td>.05</td>
<td>.03</td>
</tr>
<tr>
<td>Team Member Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td>3.95</td>
<td>.04</td>
<td>3.93</td>
<td>.05</td>
<td>3.94</td>
</tr>
<tr>
<td>Task Specific Self-efficacy (TSSE)</td>
<td></td>
<td>.31</td>
<td>.04</td>
<td>.31</td>
<td>.04</td>
<td>.30</td>
</tr>
<tr>
<td>Cognitive Ability (CA)</td>
<td></td>
<td>-.01</td>
<td>.01</td>
<td>-.05</td>
<td>.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Cross-level Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSE by ATG</td>
<td></td>
<td></td>
<td></td>
<td>.25</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td>TSSE by ATG</td>
<td></td>
<td></td>
<td></td>
<td>3.40</td>
<td>1.03</td>
<td></td>
</tr>
<tr>
<td>CA by ATG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.02</td>
</tr>
<tr>
<td>Variance Components</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>σ²</td>
<td></td>
<td>1.02</td>
<td>.95</td>
<td>.91</td>
<td>.92</td>
<td>.94</td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td>0.09</td>
<td>.07</td>
<td>.07</td>
<td>.08</td>
<td>.07</td>
</tr>
<tr>
<td>Core self-evaluations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Specific Self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Ability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Step 3c is the final cross-level model.

** p < .01. * p < .05.
IV. DISCUSSION

The primary purpose of this study was to examine the role of assigned team goals in the relationship between individual difference factors (i.e., core self-evaluations, cognitive ability, and task specific self-efficacy) and self-set goals in an ad-hoc team environment. Specifically, I designed the study to assess whether an assigned team goal affects the relationship between individual difference factors and pre-team functioning motivation (i.e., individual self-set goals) before individuals start working in a team. The study contributed to current theory and literature by focusing on an inherent multilevel issue (i.e., individuals nested within teams). Further, the study focused specifically on individuals when they are in the preparatory phase, i.e., they have not started working together as a team but have the knowledge that they are going to be working in a given ad-hoc team with an assigned team goal. To my knowledge there is no research that has assessed antecedents of individual motivation for individuals’ participation in a future team. The results of this study provided initial evidence of the importance of accounting for variance at both the individual and team levels in self-set goals.

Interpretation of Results, Theoretical Implications, and Future Research Directions

Individual Level Predictors

Results indicated that controlling for the effects of all other predictors, task specific self-efficacy accounted for significant individual level variance in self-set goals, individual performance, and individual satisfaction. A key aspect of an individual is her
self-efficacy expectations with respect to the behavior(s) under examination (Bandura, 1991). Self-efficacy is “a judgment of one’s ability to execute a particular behavior pattern” (Bandura, 1978, p. 240). Self-efficacy can affect people’s performance through various mechanisms, influencing their aspirations, their choices, their effort expended, the amount of perseverance in the presence of difficulties and setbacks, whether their thought patterns are self aiding or self-hindering, the valuation of activities, the amount of stress experienced, and vulnerability to depression (Bandura, 1991). The positive relationship between self-efficacy and different motivational and behavioral outcomes has been demonstrated in the past two decades in various situations including clinical, educational, and organizational settings (Stajkovic & Luthans, 1998). The evidence supports self-efficacy as a strong predictor of work-related performance (i.e., if a person has strong beliefs in his or her ability to do a specific action, then he or she will be more effective in doing the activity). Present findings further support the importance of self-efficacy of a potential team member in the context of pre-team work motivation.

Extensive literature has indicated that cognitive ability is an antecedent of self-set goals (Thomas & Mathieu, 1994) and is one of the best predictors of individual job performance (Hunter & Hunter, 1984, Schmidt & Hunter, 1998). However, in the present study I did not find any effects of individual cognitive ability on individual self-set goals, individual performance, or individual satisfaction. One possible explanation is that prior research has been predominantly reflective of individual cognitive ability – performance relationships in individual contexts (e.g., employee selection, training) rather than pre-team contexts. In contrast, the current study examined the role of cognitive ability in a pre-team context. Indeed, 45% of the variance in individual performance resided at the
team level, clearly indicating the importance of team context in individual performance. However, the existence of an ability-performance relationship within a pre-team context has not been well explored. This relationship could be positive, negative, non-existent, or variable from situation to situation. Given the lack of significant effects of cognitive ability obtained in the current study, it may be beneficial for researchers to explore other predictors of individual performance within a team context.

Similarly, core self-evaluations did not account for any significant variance in individual self-set goals, individual performance, and individual satisfaction. Core self-evaluations is a relatively new and untested construct consisting of “fundamental bottom line evaluations” that represent one’s appraisal of peoples, events, and things in relation to oneself (Judge, Locke, & Durham, 1997). Judge and colleagues (1997) argued that individuals’ core beliefs about themselves and their ability to function in the world affect their responses to the specific situations they encounter. Furthermore, they suggested that four self-evaluative, fundamental, and broad traits are indicative of individuals’ core self-evaluations. These traits are self-esteem, generalized self-efficacy, locus of control, and neuroticism (reverse scored). Some prior research has indicated that core self-evaluations predict individual motivation and performance (e.g., Erez & Judge, 2001). However, more research is needed before these findings can be generalized. Further, core self-evaluations have not been used as a predictor of individual motivation, performance, and satisfaction in the context of a team environment. And thus, this is the first study to assess the functioning of this personality variable in such a context. It may be that variables related to interpersonal factors may be more important than variables related to individual factors (e.g., core self-evaluations) when individuals function in a pre-team context.
context. Thus, dispositions such as interpersonal trust or trait competitiveness might be more relevant individual difference factors to explain behavior in a pre-team context. However, more research is needed in terms of core self-evaluations both to establish the validity and role of this construct in various contexts, including teams.

*Team Level Predictor*

Assigned team goal had a linear effect on individual self-set goals but did not account for significant variance in the relationships between individual difference factors and individual self-set goals, individual performance, or individual satisfaction. There is prior research (e.g., Locke & Latham, 1990) that has indicated that assigned goals affect individual task performance, in part, by influencing self-set goals. The results from the present study support this finding, indicating an effect for an assigned team goal on individual self-set goals in a pre-team context. Further, after controlling for the assigned team goal and the individual level predictors, results indicated that the remaining team level variance was not significant. Thus, no significant variance remained in self-set goals after controlling for the assigned team goal. Unfortunately, the assigned team goal did not affect the relationship between individual difference factors and individual self-set goal even though there was some team level variance in self-set goals (ICC = .12%).

There could be various reasons for the failure to observe any cross-level interactions. It could be that the assigned team goal manipulation was not strong enough to generate any effects or perhaps assigned team goals would have interacted with other predictors than we tested. (e.g., intrinsic motivation). A variety of avenues for future research are possible because so little research exists examining cross-level interactions affecting motivation in team contexts.
Examining cross-level interactions in pre-team and team contexts is important if we are to understand team functioning. Moreover, there is a long tradition of examining cross-level interactions in other research areas, e.g., education. Research topics in the social sciences are often hierarchical in nature, where individual observations can be grouped into larger units. A classic example of this point comes from the education literature, where individual students are nested within their classrooms, which are nested within schools, which are nested within districts (Raudenbush, 1988; Burnstein, 1980). Many of the topics of interest in Industrial/Organizational (I/O) psychology are also hierarchical in nature, where employees are nested within workgroups, which are nested within organizations, which are nested within specific industrial fields. Traditional methods of analysis in I/O psychology do not account for the hierarchical nature of such observations. Rather, they tend to focus on a given level and, as a result, may actually distort the analysis and interpretation of research findings in our field (Kenny & LaVoie, 1985; Glick & Roberts, 1984). Despite the obvious hierarchical nature of research in organizational psychology, cross-level effects have not been addressed until recently. Mossholder and Bedeian (1983) reviewed selected studies in organizational psychology to demonstrate how most studies in the area were either micro (individual level) or macro (group or organizational level) in approach. Rarely have organizational researchers addressed the reciprocity of influence linking different hierarchical levels of organizations. Cross-level theories are emerging in the organizational behavior literature providing many interesting debates. Whereas hierarchical linear modeling has been prevalent in the education literature, it has only just begun to be applied to the organizational psychology literature.
Researchers studying individuals in organized work environments have recently started to explore the effects of nesting of individuals in teams, work groups, or departments (e.g., Vancouver, Millsap, & Peters, 1994). These new methods are making it possible to explore multilevel issues that have not been addressed in the past. The present study is an attempt to contribute to this growing literature. That is, prior research at the individual or the team level independently has highlighted the role of assigned goals on outcomes at either the individual (e.g., Locke & Latham, 1990) or the team level (e.g., O’Leary, Martocchio, & Frink, 1994). However, these streams of research have not examined cross-level interactions in the context of motivation. The current study extends prior research by examining these cross-level interactions although my results failed to reveal evidence of any. Regardless, when studying multi-level phenomenon, researchers need to take the combined effects of these levels into consideration rather than examining relationships only within micro or macro levels.

**Goals as Conscious or Unconscious**

This study was based on the premise that self-set goals are conscious and available to awareness. Researchers however have proposed that goals can be entirely activated and pursued outside of an individual’s awareness and intent (e.g., Bargh, 1990). Research has indicated that the presence of a person (actual or implied, such as potential team participation) can be a situational trigger of nonconscious goal pursuit. In the present, study it may be that the self-set goals guiding behaviour of the individual are unconscious in nature and the individual is not aware of them. Thus individuals may have reported self-set goals but have other personal goals that shape their performance. However, this lack of awareness of goals can certainly complicate the issue of their \[ \text{goals as conscious or unconscious} \]
assessment. Even though in the present study individual participants were asked to report their self-set goals, it may be possible that this reported goal was not really guiding their behaviour and performance on the given task. Again, this is a potential research direction for future studies.

Gender Effects

Further, when I analyzed the role of task type and team composition in the relationship between team member gender and self-set goal, I only found a significant linear effect of task type on individual self-set goals. The genesis of this question was to explore whether matching team member gender, team composition, and task stereotypes would affect individual self-set goals. Gender is an important part of our identity. Prior research has indicated that individuals quickly use characteristics such as gender to assign themselves and others to social classifications involving recognized patterns of thoughts, attitudes, and behaviors (Fiske, 2000). Further, research has found that gender may affect self-efficacy on certain tasks. Women may have a weaker sense of efficacy that they can master the requirements of some traditionally male pursuits (Bussey & Bandura, 1999), including mathematics (Pajares & Miller, 1994). Given that I did not find any effects of gender and team composition on individual self-set goal, this provides initial evidence that surface level attributes such as gender and gender based stereotypes might no longer be as important as they used to be especially in relation to individual motivation in team contexts. However, I am making this statement with caution, and future research should examine this further. Surface level characteristics such as gender may not represent an initial barrier to individual team member motivation and performance. However, it could be that these factors become more salient once the individual member is actually
physically working with team members, and thus this could be an interesting direction for future research.

**Pre-Team Context, Personality, and Other Research Implications**

Other than the various theoretical implications of this study indicated in preceding sections, an additional key theoretical implication of this study is the extension of the construct of team and its effects from just the actual team environment to the pre-team context when individuals have the knowledge that they will be working in a team environment. Much existing theory (e.g., Ilgen, Hollenbeck, Johnson, & Jundt, 2005) on teams has assessed team inputs, mediators, outputs in actual team environments, but there is a paucity of research assessing whether individuals are affected by the same factors (e.g., assigned team goal) that can affect their potential functioning in a team in the future. For example, in this study I have focused on individual self-set goals as an indicator of potential team member motivation. The results indicate that team member self-set goals are an important manifestation of individual motivation in a pre-team context, and thus future research should examine this variable in other team situations such as virtual team environments, assigned team leader environment, and cross-cultural teams.

Further, in this study, theoretically, I have attempted to bridge the gap between personality and motivation research. That is, I empirically assessed the relationship between a personality variable (core self-evaluations) and a motivation variable (self-set goals) as well as the joint effects of personality (CSE) and motivation (self efficacy) and on motivation (self-set goals). Moreover, I extended literature assessing these relationships in a pre-team context. Most researchers agree that there are individual
differences in motivation, yet there is no clear understanding of the link between
individual differences in personality and work motivation, the extent to which motivation
reflects personality, or the tools to reliably and accurately predict individual differences
in motivation (Klein & Fein, 2005).

In addition to the future research directions addressed above, researchers should
examine these relationships with other team level variables (e.g., team size, team
structure) as potential moderators of the relationships. Different combinations of goal
setting at the individual and the team level should be used to disentangle these effects and
understand the benefits of goal setting as a motivational technique for individuals as well
teams. It would be beneficial to have teams, even though they are ad hoc in nature, to
work together for longer duration than 3 hours. This allows for the team to develop
patterns of interactions, understand the task and other team member competencies, and
develop some strategy to complete the given task. Another interesting research direction
would be to explore these relationships in a virtual team environment with varying levels
of task interdependence. The role of leader emergence and assigned leader should be
explored in future research, especially in ad-hoc team environments. I operationalized
team diversity using surface level characteristics (i.e., gender). However, future research
could focus on the using deeper level diversity characteristics (e.g., knowledge) of team
participants to assess similar relationships. Further, this area is open for research because
team member motivation is a construct that has not been explored in the multilevel
context of team and individual team members.

Practical Implications
One practical implication of this study is that it provides initial evidence that individual and situational factors may affect overall team functioning and effectiveness even before individuals are together and working in a team. Team members are not part of a team in isolation. Teams are usually part of an organized environment and individuals who are part of a team also interact with others individuals in their work environments. Some potentially important influences on an individuals’ behavior include activities of fellow team members, practices of team leaders, and organizational practices and support systems, organizational culture and climate. All of these can affect the ability and/or willingness of an individual team member to function well. It is important to understand that individuals can be affected by some team variables, e.g., team goal, even before they will be potentially working in a team.

Another practical implication is that results from this study indicate no gender differences in quantitative task, and this is consistent with recent research that has shown that girls now are largely keeping pace with boys, with the highest level of math taken by 12th grade boys and girls being almost identical. In 1999, girls were actually slightly more ambitious than boys at the geometry and two-year algebra level (Perie et al., 2005). It is very easy to assume that girls are bad at math and boys are bad at language (Barnett & Rivers, 2004). Most teachers would never consciously treat boys and girls differently; however, assumptions about gender roles and myths about learning mathematics can lead to differential treatment of boys and girls without parents and teachers even realizing it. Thus, parents, teachers, and the education system should try to avoid reinforcing older stereotypes that prevent girls from mastering fields like mathematics.

Limitations
The task used in this study was developed for the purposes of the current project and thus was untested and new. However, the task was moderately complex and interdependent in nature. Indeed to develop the final test, team members were required to interact, i.e., exhibit reciprocal interdependence (Bell & Kozlowski, 2002), with each other and keep track of certain rules. Moreover, other than testing and fine tuning this task, other types of tasks with varying levels of interdependencies should be examined in future research.

Further, we focused only on ad hoc or short term project teams, and thus these results may not generalize to long term teams. Of course, due to the nature of the task and time constraints, participants likely did not develop a feeling of identity with their team. However, we attempted to make the task as real for the sample of students as possible. They were asked to generate a high school level test based on their knowledge and prior experience. As evidence of their involvement in the task, we note that participants reported that time “flew by” for them. Additionally, the use of student teams working in an ad hoc team on a short term project raises questions about the external validity of my findings. On the one hand, team members were not role-playing; rather, team members were functioning within “task forces” according to McGrath’s (1984) typology of teams. Also, team members were familiar with the task content. On the other hand, participation in the study was for extra course credit, and the individuals were in this context for only three hours. Questions remain regarding how well these results will generalize to project teams composed of paid employees in real or “system” time outside an educational setting.
Another limitation is that the data are cross-sectional rather than longitudinal. Teams, even those that are ad-hoc in nature may experience different development processes. Wellins, Byham, and Wilson (1991) argued that self-leading teams take substantial time to develop and mature. Given the constraint of the situation it is possible that these teams and team members did not have the opportunity to fully develop processes that may affect individual motivation, performance, satisfaction and overall team effectiveness. Nevertheless, the teams in this study had a concrete task, an assigned team goal with a finite time duration to complete the task in there by certainly fulfilling some basic requirements of an ad-hoc team membership. But at the same time it certainly difficult to indicate that these findings generalize to newly formed ad-hoc work teams without further research.

Conclusion

This study was an initial effort to understand the joint effects of dispositional and situational factors at the individual and team level on individual motivation and performance in a pre ad hoc team context. My results provided initial evidence that team effects on individuals can begin prior to their interaction within the team. Further, results highlight the importance of simultaneously examining individual and team level factors. More multilevel research is needed to explore other team level factors such as task type, team goal, team competitiveness, and team task strategy as well as individual level factors such as individual cognitive styles. Most importantly, additional research is needed simultaneously examining individual and team level factors is required if we are to increase our understanding of the functioning of individuals in teams. In conclusion, other than examining individual and team level factors when individuals are working in a
team, researchers should also examine the effects of team factors (e.g., assigned team goal) on individuals prior to team interaction. This has implications for team member readiness and may affect ultimate team effectiveness in the end.
REFERENCES


Salas (Eds.), Team effectiveness and decision making in organizations (pp. 333-380). San Francisco: Jossey Bass.


Rentsch, J. & Woehr, D. J. (2004). Quantifying congruence in cognition: Social relations modeling and team member schema similarity. In E. Salas and S. M.


Swezey & E. Salas (Eds.), *Teams: Their training and performance* (pp. 219-245). Norwood, NJ: Ablex.


Organizational Studies, 2, 419 – 427.


APPENDIX A

Pilot Study

I conducted a pilot study to develop and obtain baseline data on the task that I used in the main study. I needed to develop a task that met three criteria. First, I needed a task that would have both an individual team member component and then a team component in which each team member’s performance could be recorded. Second, the task should be familiar to the team member so that he/she could perform the task and set goals for themselves with minimal training. Third, I needed a task that had a finite start and end such that the product would be complete by the end of the time duration for which the team members were interacting, this would mimic an ad-hoc team environment. Finally, I had to conduct a pilot study to obtain baseline performance data from the population so that I could use this information to generate different levels of assigned team goals.

Method

Participants

Participants were 253 students (124 males, 129 females) enrolled in an introductory psychology class at a Midwestern university. Participants were nested in 72 teams consisting of 4, 3, or 2 members. They were randomly assigned to all-male, all-female or mixed teams. There were only four two-person dyads, so two-person dyads were excluded from the analyses. The mean age of the participants was 20.26 years, with
a range of 17 to 56 years. The majority of participants (i.e., 69%) were freshmen. They received course credit for their participation in the study.

Experimental Task

The task involved a team generating a high school level general knowledge test. Teams used items from a predetermined test bank consisting of quantitative and verbal items that were selected and solved by either individual’s during a preparatory work session or by team members during their team interaction. The rationale for using these two types of items was that participants were college students and thus had some basic knowledge and familiarity with these content areas. Due to this prior familiarity with the task material, participants should be able to set goals for themselves. The task involved both individual and team level performance. The task was designed to be moderately complex and interdependent in nature. Thus, to develop the final test, team members were required to interact with each other and keep track of certain rules (see Appendix B).

The first part of the task involved individual performance. During this part, individual team members were provided with a test bank consisting of both quantitative and verbal items. These test banks had multiple choice questions taken from various standardized SAT/ACT practice books (see Appendix C-1 & C-2 for sample items). Individual team members solved items and categorized each item into one of three difficulty levels (i.e., easy, moderate, or difficult). The rationale for this was to have participants think as an instructor and make the test so that test items are in the easy, moderate and difficult categories.
The second part of the task involved teamwork. During this phase, all team members worked together to assemble the final test. Each individual team member contributed to the team the items s/he has solved and categorized. The team worked together to select items from the ones that individuals had selected, solved and categorized, and the team also solved new items during the team interaction to include on the final test. The team followed certain rules to assemble the final test (See Appendix C).

Procedure

Potential team members were ushered in a room and seated around a table in the center of the room. Then they were asked to introduce themselves to each other. These teams of individuals were either all males, or all females, or both (i.e., males and females). After the introduction, participants were given task instructions and seated on desks facing the walls in the same room. This was done to prevent interaction among potential team members and facilitate individual performance. The task had two parts, i.e., an individual and a team work session. Because there was no training on the task, there was a 10 minute practice session on the task before the individual performance session to familiarize individuals with the kind of items they would have access to and to provide individuals with sufficient information to set goals. This practice was modeled after the individual and team performance. After the practice session, individuals were given instructions regarding the individual performance session. During this time participants were asked to set a goal for themselves based on their performance in the practice trial for the number of questions they expected to select, solve, and categorize in the next 45 minutes of individual task performance. As I did not have normative data for
the performance of the given population on the task, participants were asked to do their best in the next 45 minutes. These items were to be their potential contribution to the team test. This was done to allow individual team members to prepare to interact with the team by identifying items they wanted to contribute to the final team test. The individual work session was designed to reduce participants’ potential performance anxiety during team interaction because they already had prepared their contributions for the final team test.

After participants had set a goal for themselves, they were given test banks of items that they used to select, solve, and categorize items for possible inclusion in the final test. These test banks had 600 multiple choice questions taken from various standardized SAT/ACT practice books and had both verbal and quantitative items. Individual team members selected, solved, and categorized each solved item into one of three difficulty levels (i.e., easy, moderate, or difficult) as they had done in the practice test. Participants were also provided with a calculator, a formula sheet, and some scrap paper. This was done to reduce team members’ anxiety and potential stress associated with performing the task. Further, research has indicated that human sex differences in mathematics are an artifact of stereotypes associated with gender differences in mathematics performance (Steele, 1997). Thus, I attempted to control the effect of stereotypes by having all males and all female teams.

After a 5 minute break, participants gathered around a table to form a face-to-face, collocated, ad-hoc team. The first 10 minutes of the team work session were spent on an ice breaker in which the team members were asked to develop a strategy that they might use to make the team test following all the rules and meeting the team goal. This
was also an attempt to get some initial interaction started between team members, draw their attention to the task, and reduce their awkwardness with each other. The team task was to generate a final test using items that individual team members selected, solved, and categorized from the predetermined test bank as well as items selected, solved and categorized by team members during the team interaction phase following certain rules that made the task interdependent and moderately complex (see Appendix B). Again, because this was the pilot for task development, teams were instructed to generate a final test based on a “do-your-best” goal in 30 minutes.

Analysis

I analyzed this data using SPSS 15.0. I calculated the frequency distributions for total number of items attempted by each team after deleting duplicate items and categorized these distributions by team size. I used the information for teams consisting of 4 individuals to decide on the assigned easy and difficult team goals for the final study. The criteria for difficult and easy assigned goals were set at 20% and 80% of the performance of the team. That is, based on the performance of all teams that participated in the pilot, I primarily used the number of items that teams attempted to put on the final test as normative data. There were 38 4-person teams and 30 teams consisting of 3 team members in the present sample. As can be seen from the frequency distribution in Table 9, in the 4-person teams approximately 80% of the teams contributed 17 quantitative items and 17 verbal items. Similarly, in 3-person teams approximately 80% of the teams contributed 18 quantitative and 18 verbal items to the team test. A difficult goal was operationalized as the number of items attempted by 20% of the teams. For 4-person teams approximately 20% contributed 42 quantitative items and 37 verbal items. In 3-
person teams approximately 20% contributed 46 quantitative items and 42 verbal items. These distributions and cumulative frequencies are depicted in Table 9.

Discussion

This study was conducted to develop a task and to generate data to develop assigned team goals for the final project. As can be observed from the frequency distributions in Table 9, both 4-person and 3-person teams performed similarly across quantitative and verbal sections of the test. Thus, to establish goals for the final study, I took the total number of items (quantitative and verbal) contributed to the team test by 4-person teams, added them and rounded them off to the nearest multiple of 10. This resulted in an easy assigned team goal of 40 items and a difficult assigned team goal of 80 items.

Another change that I initiated in the final study was to separate quantitative and verbal portions as two different task types. I observed the team in the pilot study and found that subjects reacted differently to quantitative and verbal tasks. Further, I observed that these differences were colored by participants’ sex such that women reacted more negatively to quantitative sections of the task. However, research has indicated even though there are no performance differences between men and women in terms of mathematics and language abilities, there is an associated stereotype that generates these differences in attitudes and leads to poor performance of women in mathematics and men in language areas (Ding, Song, & Richardson, 2007). By separating task type as another team level variable such that teams either generated tests of quantitative ability or verbal ability, I had the opportunity to disentangle these perceptions in the final study.
Table 9

Frequency distributions for team performance for 4 person and 3 person teams

<table>
<thead>
<tr>
<th>Items attempted</th>
<th>Quantitative</th>
<th>Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Cumulative</td>
</tr>
<tr>
<td>4 Person Teams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>15</td>
<td>4</td>
<td>13.2</td>
</tr>
<tr>
<td>16</td>
<td>2</td>
<td>18.4</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>21.1</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>23.7</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>26.3</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>28.9</td>
</tr>
<tr>
<td>22</td>
<td>1</td>
<td>31.6</td>
</tr>
<tr>
<td>23</td>
<td>1</td>
<td>34.2</td>
</tr>
<tr>
<td>24</td>
<td>2</td>
<td>39.5</td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>44.7</td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>47.4</td>
</tr>
<tr>
<td>29</td>
<td>2</td>
<td>52.6</td>
</tr>
<tr>
<td>30</td>
<td>4</td>
<td>63.2</td>
</tr>
<tr>
<td>31</td>
<td>1</td>
<td>65.8</td>
</tr>
<tr>
<td>34</td>
<td>1</td>
<td>68.4</td>
</tr>
<tr>
<td>36</td>
<td>1</td>
<td>71.1</td>
</tr>
<tr>
<td>37</td>
<td>1</td>
<td>73.7</td>
</tr>
<tr>
<td>40</td>
<td>1</td>
<td>76.3</td>
</tr>
<tr>
<td>41</td>
<td>1</td>
<td>78.9</td>
</tr>
<tr>
<td>42</td>
<td>1</td>
<td>81.6</td>
</tr>
<tr>
<td>43</td>
<td>1</td>
<td>84.2</td>
</tr>
<tr>
<td>46</td>
<td>1</td>
<td>86.8</td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>92.1</td>
</tr>
<tr>
<td>60</td>
<td>1</td>
<td>94.7</td>
</tr>
<tr>
<td>67</td>
<td>1</td>
<td>97.4</td>
</tr>
<tr>
<td>68</td>
<td>1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items attempted</th>
<th>Quantitative</th>
<th>Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Cumulative</td>
</tr>
<tr>
<td>3 Person Teams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>13.3</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>16.7</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>20.0</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>26.7</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>33.3</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>36.7</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>43.3</td>
</tr>
<tr>
<td>23</td>
<td>1</td>
<td>46.7</td>
</tr>
<tr>
<td>24</td>
<td>1</td>
<td>50.0</td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>56.7</td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>63.3</td>
</tr>
<tr>
<td>30</td>
<td>4</td>
<td>70.0</td>
</tr>
<tr>
<td>31</td>
<td>1</td>
<td>73.3</td>
</tr>
<tr>
<td>34</td>
<td>1</td>
<td>63.2</td>
</tr>
<tr>
<td>36</td>
<td>1</td>
<td>81.6</td>
</tr>
<tr>
<td>37</td>
<td>1</td>
<td>84.2</td>
</tr>
<tr>
<td>40</td>
<td>1</td>
<td>90.0</td>
</tr>
<tr>
<td>41</td>
<td>1</td>
<td>93.3</td>
</tr>
<tr>
<td>42</td>
<td>1</td>
<td>96.7</td>
</tr>
<tr>
<td>43</td>
<td>1</td>
<td>100.0</td>
</tr>
<tr>
<td>46</td>
<td>1</td>
<td>100.0</td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>100.0</td>
</tr>
</tbody>
</table>
APPENDIX B
Rules for Final Test Development

Please keep the following rules in mind while developing the final test. Remember that if you violate any of these rules, you will miss the opportunity to participate in the $100 team reward for the team that meets the team goal and has maximum number of accurate items on the team test.

- The team test cannot include any unsolved or unanswered questions.
- Each member of your team individually (‘I’ question) and the team overall (‘ALL’ question) needs to contribute at least one question for each difficulty level. Of course beyond this minimum there is no limit to the number of questions anyone can contribute in the sections or difficulty levels.
- You cannot change any team members rated difficulty level for any question.
- You cannot use any question twice on the test.
  - If more than one team member wants to contribute the same test question, the team decides who will get credit for contributing that test question.
  - Each test question on your final test must be unique.
- If your team needs additional test questions you can solve additional test questions during this time and remember to classify the difficulty of these questions.
Although little-known today in the United States, Clark Saunders (1859-1941) cast a large shadow in the first several decades of the twentieth century, writing many widely read books on Native American, Spanish, and Anglo folklore. He also wrote extensively on the different cultures of California, the Sierras, and the Southwest. He was a major and influential contributor to Sunset Magazine in its early years. In his day, Saunders was important for introducing much of the American public to a person-sized understanding of the "Old West."

1. The passage presents Saunders as a(n)
   (A) influential contemporary western writer.
   (B) important historian of the West.
   (C) a specialist of Native American studies.
   (D) widely read author in his own day.
   (E) the first editor of Sunset Magazine.

2. The bill became bogged down in a(n) _____ of contentious issues in a Senate subcommittee.
   (A) marsh
   (B) sequence
   (C) iota
   (D) conundrum
   (E) quagmire

3. The outcome of the race seemed _____ before the leader's misstep on the final leg gave her competitors a(n) _____ of winning the title.
   (A) dubious .. prospect
   (B) inevitable .. hope
   (C) indubitable .. air
   (D) assured .. expectation
   (E) partial .. endeavor

5. OBVIOUSLY
   (A) apparently
   (B) allegedly
   (C) momentously
   (D) substantially
   (E) inconspicuously

6. ADDITION
   (A) inclusion
   (B) origin
   (C) antecedent
   (D) inception
   (E) conduct

7. Airplane is to hanger as:
   (A) music is to orchestra
   (B) money is to vault
   (C) finger is to hand
   (D) tree is to farm
   (E) insect is to ecosystem

8. Lucid is to obscurity as:
   (A) ambiguous is to doubt
   (B) provident is to planning
   (C) furtive is to legality
   (D) economical is to extravagance
   (E) secure is to violence

9. Even though the architect’s designs were ______ to the surrounding buildings, she had to ______ them because of the impending deadline.
   (A) disproportionate…submit
   (B) comparable…repeat
   (C) excessive…affirm
   (D) consistent…present
1. If $4x + 2y = 13$ and $4y - x = 8$, what is the value of $x + 2y$?

(A) 7  
(B) 3  
(C) -5  
(D) -7

2. If the area of the rectangle in the figure below is equal to the area of the triangle, what is the perimeter of the triangle?

![Rectangle and Triangle](image)

(A) 17  
(B) $8 + \sqrt{15}$  
(C) 42  
(D) 40

4. If $2^3 = \sqrt{N}$, what is $N$?

(A) 8  
(B) 16  
(C) 32  
(D) 64

5. Four boys own a total of 150 baseball cards. If the first boy owns 28% of the cards, the second owns 24% of the cards, and the third owns three times as many cards as the fourth, what is the greatest number of cards owned by any one boy?

(A) 28  
(B) 36  
(C) 54  
(D) 64

6. If $(x - 2)(x + k) = r + mx - 10$, then $mk$=?

(A) -20  
(B) -15  
(C) 12  
(D) 15

7. The ratio of the arithmetic mean of two numbers to one of the numbers is 3:5. What is the ratio of the lesser number to the greater?

(A) 1:5  
(B) 1:4  
(C) 1:3  
(D) 2:5

8. The cost of producing a certain machine is directly proportional to the number of assembly line workers required and inversely proportional to the square of the number of hours of assembly line downtime during production. If the cost was $1,500 when there were 12 workers and only 2 hours of downtime, how many hours of downtime was there when 9 workers were producing machines at the cost of $2,000 per machine?

(A) 1 hour  
(B) 1.5 hours  
(C) 2 hours  
(D) 2.5 hours

9. Which of the following is one root of the equation $x^2 - 4x + 13 = 0$?

(A) -1  
(B) 5  
(C) 2 - 6i  
(D) 2 + 3i
APPENDIX D-1

Assigned Team Goal Difficulty Survey

Directions for Survey

The following questions ask you about your feelings regarding the assigned team goal that your team has to achieve. Please read each statement carefully, and then choose your response on the number scale. Write the appropriate response option on the answer sheet.

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

1. The assigned team is an unattainable goal.
2. The assigned team goal is an easy goal for the team.
3. I can achieve the requirements of this assigned team goal on my own.
4. This assigned team goal is a challenging goal for the team.
5. The team can exceed the requirements of this assigned team goal.
APPENDIX D-2

Team Goal Commitment Survey

Directions for Survey

Based on your assigned team goal, please read each statement carefully, and then choose your response on the number scale. Write the appropriate response option on the answer sheet.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td></td>
<td></td>
<td>Strongly Disagree</td>
<td></td>
</tr>
</tbody>
</table>

1. I am strongly committed to pursuing the assigned team goal.
2. It’s hard to take this assigned team goal seriously. *
3. It’s unrealistic for me to expect the team to reach this assigned team goal.*
4. I think this assigned team goal is a good goal to shoot for.
5. It wouldn’t take much to make me abandon this assigned team goal.*
6. It is quite likely that this assigned team goal may need to be revised, depending on how things go. *
7. Quite frankly, I don’t care if we achieve this assigned team goal or not.*

*= reverse scored items (2, 3, 5, 6, 7)

Items are slightly revised => type of goal is specified as “assigned team goal” instead of just “goal” in the original measure
APPENDIX D-3

Task Perception Survey

Directions for Survey

The following questions ask you about your feelings regarding the content of the task you just performed. Please read and answer each of the following questions by placing the appropriate number on the answer sheet.

1. Would you describe the content of the task as more:
   1.) male oriented  2.) female oriented  3.) gender neutral

2. Which sex do you believe would do better on this task given the nature of its content, on average?
   1.) males  2.) females  3.) both equally

3. Which sex do you believe would enjoy the contents of this task more?
   1.) males  2.) females  3.) both equally

4. Using the following scale, indicate the extent to which you feel the content of this task was appropriate for males or females.

<table>
<thead>
<tr>
<th>Mostly for males</th>
<th>Neutral</th>
<th>Mostly for females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  2  3  4  5  6  7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Using the following scale, how would you characterize the content of this task in terms of masculinity/femininity?

<table>
<thead>
<tr>
<th>Masculine</th>
<th>Neutral</th>
<th>Feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Individual Goal Commitment Survey

Directions for Survey

Based on your assigned team goal, please read each statement carefully, and then choose your response on the number scale. Write the appropriate response option on the answer sheet.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I am strongly committed to pursuing my self-set goal.
2. It’s hard to take my self-set goal seriously.
3. It’s unrealistic for me to expect to reach my self-set goal.
4. I think my self-set goal is a good goal to shoot for.
5. It wouldn’t take much to make me abandon my self-set goal.
6. It is quite likely that my self-set goal may need to be revised, depending on how things go.
7. Quite frankly, I don’t care if I achieve my self-set goal or not.

* = reverse scored items (2, 3, 5, 6, 7)
APPENDIX D-5

Core Self-Evaluations Survey

Directions for Survey

Below are several statements about you with which you may agree or disagree. Using the response scale below, indicate your agreement or disagreement with each item by placing the appropriate number on the answer sheet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

1. I am confident I get the success I deserve in life.
2. Sometimes I feel depressed. *
3. When I try, I generally succeed.
4. Sometimes when I fail I feel worthless. *
5. I complete tasks successfully.
6. Sometimes I do not feel in control of my work.*
7. Overall, I am satisfied with myself.
8. I am filled with doubts about my competence.*
9. I determine what will happen in my life.
10. I do not feel in control of my success in my career.*
11. I am capable of coping with most of my problems.
12. There are times when things look pretty bleak and hopeless to me.*

* = reverse-scored items.
APPENDIX D-6

Task Specific Self-Efficacy Survey

Directions for Survey

Think about your ability to do the activities required by this task. When addressing the following statements, answer in reference to your own personal skills and abilities to perform this task.

Please read each of the following statements. Rate the extent to which you agree or disagree with each statement using the scale provided. Even if you are unsure of an item, please answer it anyway. Write the appropriate response option on the answer sheet in front of the relevant statement number.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

1. I have confidence in my ability to do this task.

2. There are some activities required by this task that I cannot do well.*

3. When my performance is poor, it is due to my lack of ability.*

4. I doubt my ability to do this task.*

5. I have all the skills needed to perform this task very well.

6. Most students can do this task better than I can.*

7. I am an expert at this task.

8. My future success in this task is limited due to my lack of skills.*

9. I am very proud of my skills and abilities on this task.

10. I feel threatened when others watch me work.*

*= Reverse scored items (2, 3, 4, 6, 8, 10)
Based on the team goal, the practice session, and your understanding of the task, please set a goal for the number of questions that you can solve and rate the difficulty of during the next 30 minutes. Please write each of these goals in the corresponding space on your answer sheet. Do not write anything on this page.

1. I can solve and categorize a total of _____________ questions from the test bank in the next 30 minutes.

Of the questions from the test bank,

2. I will solve and categorize _____________ questions in the easy category.

3. I will solve and categorize _____________ questions in the moderate category.

4. I will solve and categorize _____________ questions in the difficult category.
APPENDIX D-8

Intrinsic Satisfaction Survey

Directions for Survey

Please read and answer each of the following questions by selecting a number from the scale that best represents your attitudes towards the task you have just finished. Even if you are unsure of an item, please answer it anyway. Please respond on the answer sheet by putting your response in front of the appropriate item number.

Use the following scale to answer the questions:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all agree</td>
<td>Very much agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. This task was interesting and challenging.
2. This task did not give me a feeling of accomplishment. *
3. On balance, I was satisfied with doing this task.
4. Considering all things that are important to me, I really liked this task.
5. This task was fun to do.
APPENDIX D-9

Demographics Survey

Please read and answer each of the following questions by placing the appropriate number on the answer sheet. Even if you are unsure of an item, please answer it anyway.

1. Sex
   1.) Female  2.) Male

2. Race
   1.) Caucasian  2.) African American  3.) Hispanic  4.) Asian  5.) Other

3. Age

4. College Ranking
   1.) Freshman  2.) Sophomore  3.) Junior  4.) Senior

5. College Major
   1.) Business  2.) Communications  3.) Computers  4.) Education
   5.) Engineering  6.) Mathematics  7.) Psychology  8.) Sociology
   9.) Other

6. Overall College GPA (If you do not have a College GPA yet, Mark No GPA)
   1.) 0.0-0.5  2.) 0.6-1.0  3.) 1.1-1.5  4.) 1.6-2.0  5.) 2.1-2.5
   6.) 2.6-3.0  7.) 3.1-3.5  8.) 3.6-4.0  9.) No GPA

7. What are your plans after graduation?
   1.) Graduate school  2.) Work  3.) Have not decided yet  4.) Other

8. Do you know any of the other participants in this study today outside of the experiment?
   1.) No  2.) Yes, if so, what are their names?

   __________________________  __________________________
   __________________________  __________________________
   __________________________  __________________________
APPENDIX D-10

Self Esteem - Rosenberg Survey

Directions for Survey

Below is a list of statements dealing with your general feelings about yourself. Please choose the option that best describes you general feelings about yourself and write the appropriate response option on the answer sheet.

Response options:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

1. On the whole, I am satisfied with myself.

2. At times, I think I am no good at all.

3. I feel that I have a number of good qualities. *

4. I am able to do things as well as most other people.

5. I feel I do not have much to be proud of. *

6. I certainly feel useless at times

7. I feel that I’m a person of worth, at least on an equal plane with others.

8. I wish I could have more respect for myself. *

9. All in all, I am inclined to feel that I am a failure. *

10. I take a positive attitude toward myself. *

*= reverse scored items (3, 5, 8, 9, 10).
APPENDIX D-11

New General Self-Efficacy Survey

Directions for Survey

Please read each of the following statements. Rate the statement according to how well the statement describes you by writing the appropriate response option in the answer sheet. Even if you are unsure of an item, please answer it anyway.

Response options:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neither agree nor disagree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.
APPENDIX D-12

Locus Of Control (I) - Levenson Survey

Directions for Survey

Following are a series of attitude statements. Each represents a commonly held opinion. There are no right or wrong answers. You will probably agree with some items and disagree with others. We are interested in the extent to which you agree or disagree with such matters of opinion.

Read each statement carefully. The indicate the extent to which you agree or disagree by selecting a number that represents you choice and writing it on the answer sheet in front of the appropriate statement number. First impressions are usually best. If you find that the numbers to be used in answering do not adequately reflect your opinion, use the one that is closest to the way you feel.

1. Whether or not I get to be a leader depends mostly on my ability.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Disagree  Somewhat Disagree  Agree  Somewhat Agree
   -3 ---------- -2 ---------- -1 ---------- 0 ------- --- 1 ---------- 2 ---------- 3

2. Whether or not I get into a car accident depends mostl y on how good a driver I am.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Disagree  Somewhat Disagree  Agree  Somewhat Agree
   -3 ---------- -2 ---------- -1 ---------- 0 ------- --- 1 ---------- 2 ---------- 3

3. When I make plans, I am almost certain to make them work.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Disagree  Somewhat Disagree  Agree  Somewhat Agree
   -3 ---------- -2 ---------- -1 ---------- 0 ------- --- 1 ---------- 2 ---------- 3

4. How many friends I have depends on how nice a person I am.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Disagree  Somewhat Disagree  Agree  Somewhat Agree
   -3 ---------- -2 ---------- -1 ---------- 0 ------- --- 1 ---------- 2 ---------- 3

5. I can pretty much determine what will happen in my life.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Disagree  Somewhat Disagree  Agree  Somewhat Agree
   -3 ---------- -2 ---------- -1 ---------- 0 ------- --- 1 ---------- 2 ---------- 3
6. I am usually able to protect my personal interests.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Agree
   Disagree  Somewhat  Disagree  Agree  Somewhat  Agree
   -3 --------- -2 -------- -1 -------- 0 -------- 1 -------- 2 -------- 3

7. When I get what I want, it’s usually because I worked hard for it.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Agree
   Disagree  Somewhat  Disagree  Agree  Somewhat  Agree
   -3 --------- -2 -------- -1 -------- 0 -------- 1 -------- 2 -------- 3

8. My life is determined by my own actions.

   Strongly Disagree  Slightly Neutral  Slightly Agree  Strongly Agree
   Disagree  Somewhat  Disagree  Agree  Somewhat  Agree
   -3 --------- -2 -------- -1 -------- 0 -------- 1 -------- 2 -------- 3
APPENDIX D-13

Locus Of Control - Rotter Survey

Directions for Survey

Please read the following statements. Choose the statement that best applies to you - write relevant option ‘a’ or option ‘b’ in the answer sheet for each item. Even if you are unsure of an item, please answer it anyway.

1. a. Children get into trouble because their parents punish them too much.  
b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.  
b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people do not take enough interest in politics.  
b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world  
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries

5. a. The idea that teachers are unfair to students is nonsense.  
b. Most students do not realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks, one cannot be an effective leader.  
b. Capable people who fail to become leaders hive not taken advantage of their opportunities.

7. a. No matter how hard you try, some people just do not like you.  
b. People who cannot get others to like them do not understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality  
b. It is one's experiences in life which determine what they are like.

9. a. I have often found that what is going to happen will happen.  
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well-prepared student there is rarely if ever such a thing as an unfair test.
b. Many times exam questions tend to be so unrelated to course work that studying in really useless.

11. a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.
b. There is some good in everybody.

15. a. In my case, getting what I want has little or nothing to do with luck.
b. Many times, we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
b. By taking an active part in political and social affairs, the people can control world events.

18. a. Most people do not realize the extent to which their lives are controlled by accidental happenings.
b. There really is no such thing as "luck."

19. a. One should always be willing to admit mistakes.
b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort, we can wipe out political corruption.
   b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I cannot understand how teachers arrive at the grades they give.
   b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
   b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times, I feel that I have little influence over the things that happen to me.
   b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they do not try to be friendly.
   b. There is not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.
   b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
   b. Sometimes I feel that I do not have enough control over the direction my life is taking.

29. a. Most of the time I cannot understand why politicians behave the way they do.
   b. In the long run, the people are responsible for bad government on a national as well as on a local level.
APPENDIX D-14

Emotional Stability Survey

Directions for Survey

On the following pages, there are phrases describing people’s behaviors. Please use the rating scale to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then choose your response on the number scale. Write the appropriate response option on the answer sheet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Neither Inaccurate nor Accurate</td>
<td>Moderately Accurate</td>
<td>Very Accurate</td>
</tr>
</tbody>
</table>

1. Am relaxed most of the time. +
2. Seldom feel blue. +
3. Am not easily bothered by things. +
4. Rarely get irritated. +
5. Seldom get mad. +
6. Get stressed out easily. -
7. Worry about things. -
8. Am easily disturbed. -
9. Get upset easily. -
10. Change my mood a lot. –
11. Have frequent mood swings. -
12. Get irritated easily. -
13. Often feel blue. -
14. Get angry easily. -
15. Panic easily. -
16. Feel threatened easily. -
17. Get overwhelmed by emotions. -
18. Take offense easily. -
19. Get caught up in my problems. -
20. Grumble about things. -

For + keyed items, the response "Very Inaccurate" is assigned a value of 1, and "Very Accurate" a value of 5. For - keyed items, the response "Very Inaccurate" is assigned a value of 5, and "Very Accurate" a value of 1.
APPENDIX D-15

Trait Competitiveness Survey

Directions for Survey

Following are some sentences describing people’s behaviors. Please use the rating scale to describe how accurately each statement describes you. Please read each statement carefully, and then choose your response on the number scale. Write the appropriate response option on the answer sheet.

<table>
<thead>
<tr>
<th></th>
<th>1 Very Inaccurate</th>
<th>2 Moderately Inaccurate</th>
<th>3 Neither Inaccurate nor Accurate</th>
<th>4 Moderately Accurate</th>
<th>5 Very Accurate</th>
</tr>
</thead>
</table>

1. I enjoy working in situations involving competition with others.
2. It is important to me to perform better than others on this task.
3. I feel that winning is important in both work and games.
4. I try harder when I am in competition with other people.
APPENDIX D-16
How I am in general

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to the appropriate item on the answer sheet to indicate the extent to which you agree or disagree with that statement.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disagree</td>
<td>2</td>
<td>Disagree</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Strongly</td>
<td></td>
<td>a little</td>
<td></td>
</tr>
</tbody>
</table>

I am someone who...
1. Is talkative
2. Tends to find fault with others
3. Does a thorough job
4. Is depressed, blue
5. Is original, comes up with new ideas
6. Is reserved
7. Is helpful and unselfish with others
8. Can be somewhat careless
10. Is curious about many different things
11. Is full of energy
12. Starts quarrels with others
13. Is a reliable worker
14. Can be tense
15. Is ingenious, a deep thinker
16. Generates a lot of enthusiasm
17. Has a forgiving nature
18. Tends to be disorganized
19. Worries a lot
20. Has an active imagination
21. Tends to be quiet
22. Is generally trusting
23. Tends to be lazy
24. Is emotionally stable, not easily upset
25. Is inventive
26. Has an assertive personality
27. Can be cold and aloof
28. Perseveres until the task is finished
29. Can be moody
30. Values artistic, aesthetic experiences
31. Is sometimes shy, inhibited
32. Is considerate and kind to almost everyone
33. Does things efficiently
34. Remains calm in tense situations
35. Prefers work that is routine
36. Is outgoing, sociable
37. Is sometimes rude to others
38. Makes plans and follows through with them
39. Gets nervous easily
40. Likes to reflect, play with ideas
41. Has few artistic interests
42. Likes to cooperate with others
43. Is easily distracted
44. Is sophisticated in art, music, or literature
APPENDIX D-17

Perceived Team Task Complexity Survey

Directions for Survey

The following questions ask you about your feelings regarding the task you have just performed, as well as previous experience with similar tasks. Please read each statement carefully, and then choose your response on the number scale. Write the appropriate response option on the answer sheet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very</td>
</tr>
</tbody>
</table>

6. How complex did you find this task?
7. How mentally demanding was this task?
8. To what extent did this task require a lot of thought and problem-solving?
9. How challenging did you find this task to be?
10. How difficult was this task to perform?
11. What is the midpoint of the scale provided for this survey?
12. How easy was this task to understand?
13. How simple did you find this task?
14. How difficult were the rules for performing this task?
15. To what extent could you work on this task and think of other problems at the same time?
16. To what extent did you understand all the rules for performing this task?
APPENDIX D-18

Perceived Team Task Interdependence Survey

Directions for Survey

The following questions ask you about your feelings regarding the team task you have just performed. Please read each statement carefully, and then choose your response on the number scale. Write the appropriate response option on the answer sheet.

1 2 3 4 5 6 7
Strongly Disagree  Strongly Agree

1. I had to obtain information and advice from my team members to contribute towards the team goal.
2. I depended on other team members for the attainment of team goal.
3. I did not need to work closely with others to attain the team goal.
4. To meet the assigned team goal, team members had to frequently coordinate their efforts with each other.
5. It would have been difficult to complete this task and meet the assigned goal without a team.
APPENDIX D-19

Group/Team Task Satisfaction Survey

Directions for Survey

Respond to the following statements based on what the level of agreement will be in your team as a whole. Rate the extent to which you agree or disagree with each statement using the scale provided. Even if you are unsure of an item, please answer it anyway. Write the appropriate response option on the answer sheet in front of the relevant statement number.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

1. Our team was satisfied with its performance.
2. Our team found real enjoyment in this task.
3. Some aspects of the working relationships in our team could have been better.*
4. Our team was happy that it stuck together and stayed united to achieve the team goal.
5. Our team climate was conducive to team goal attainment.
6. Our team was not cohesive at all.
7. Our team believed that it could attain the team goal effectively.
8. Our team was happy with the way we worked together as a group.
9. Our team found its work fulfilling.
10. Our team experienced frustrations while trying to work together.*
11. Our team felt that it learned something from its work.
12. Our team experienced dissatisfaction because of conflict among group members.*
13. Our team found its work stimulating.
APPENDIX D-20

Team Member Satisfaction Survey

Directions for Survey

Please read and rate each of the following statements by selecting a number from the scale that best represents your attitudes towards the task you have just finished in the team. Even if you are unsure of an item, please answer it anyway. Please respond on the answer sheet by putting your response in front of the appropriate item number.

Use the following scale to answer the questions:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all agree</td>
<td>Very much agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. This task was interesting and challenging in the team.
2. This task did not give me a feeling of accomplishment in the team. *
3. On balance, I was satisfied with doing this task in the team.
4. Considering all things that are important to me, I really liked this task in the team.
5. This task was fun to do in the team.
APPENDIX D-21

Math/English as a Gendered Domain
Directions for Survey

Below are several statements regarding school subjects with which you may agree or disagree. Please choose the option that best describes your general feelings about those subjects and write the appropriate response option on the answer sheet.

1. Disagree
   Strongly
2. Disagree
   a little
3. Neither agree nor disagree
4. Agree
   a little
5. Agree strongly

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Boys understand mathematics better than girls do.
2. Girls more than boys care about doing well in mathematics.
3. Men are mathematically more intelligent than women.
4. Girls and boys are equally likely to believe that mathematics is important for their careers.
5. The weakest mathematics students are more often boys than girls.
6. More boys than girls care about doing well in mathematics.
7. Students who say mathematics is their favorite subject are equally likely to be girls or boys.
8. Girls are more likely than boys to believe that they are good at mathematics.
9. Parents think that getting higher grades in mathematics is as important for their daughters as for their sons.
10. Boys understand the English language better than girls do.
11. Girls, more than boys, care about doing well in languages, especially English.
12. Men are better at English than women.
13. Girls and boys are equally likely to believe that good command of English language is important for their career.
14. The weakest English language students are more often boys than girls.

15. More boys than girls care about doing well in English.

16. Students who say English is their favorite subject are equally likely to be girls or boys.

17. Girls are more likely than boys to believe that they are good at English.

18. Parents think that getting higher grades in English is as important for their daughters as for their sons.
APPENDIX D-22

Self-Set Goal Survey – Post Task

Directions for Survey

Now, if you were asked to do the same task again, with the same team members, same
assigned team goal, and the same task, please set a goal for the number of questions that
you think you could solve and categorize during 30 minutes of individual time task.

Please write each of these goals in the corresponding space on your answer sheet. Do not
write anything on this page.

If I were asked to do the same task again,

1. I would solve and categorize a total of at least ______________questions from the test
   bank in the next 30 minutes.

   Of the questions from the test bank,

2. I would solve and categorize at least ____________ questions in the easy category.

3. I would solve and categorize at least ____________ questions in the moderate
category.

4. I would solve and categorize at least ____________ questions in the difficult category.