

Abstract

RUDOLPH, JANE VIGNOVIC. Testing the Influence of Team Ability on the Relationship between a Team Member's Self-Efficacy and Effort. (Under the direction of Lori Foster Thompson).

A greater understanding of the influence of teams on team members will allow organizations to select and develop teams in a way that maximizes the motivation of employees. The current study seeks to explain self-efficacy's inconsistent effects on effort, by examining the top down influence team characteristics may have on this relationship, thus enhancing what is known about self-efficacy's motivational benefits and limitations. This applied field study investigated 928 individuals grouped into 61 action teams. Hierarchical linear modeling was used to test the influence of team characteristics, specifically the team levels of teamwork and task-related abilities, on the relationship between self-efficacy and the amount of effort individuals dedicate towards a team task. Results indicate there is not significant variability in the relationship between self-efficacy and effort for individuals on different teams, and there is no significant influence of the team-level abilities on this relationship. However, this study demonstrated that there are differences in the level of effort an individual is willing to dedicate to a task, and these varying levels of effort can be attributed to both characteristics of individuals and the team. Self-efficacy was an individual difference that explained some of the variance in levels of effort among individuals, and task-based ability was a characteristic of the team that explained variation in levels of effort.

Testing the Influence of Team Ability on the Relationship between a Team Member's
Self-Efficacy and Effort

by

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Biography

Jane Vignovic Rudolph was born in Pittsburgh, Pennsylvania. She spent most of her childhood in Brecksville, Ohio and graduated from Brecksville-Broadview Heights High School. She received her Bachelor of Science in Animal and Poultry Sciences from Virginia Tech. After several years of living and working in a variety of environments, Jane pursued her Ph.D. in Industrial/Organizational Psychology at North Carolina State University. She currently lives in Raleigh, NC with her husband, Heath, and daughter, Natalie.

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Introduction

Teams are integral to how people pursue goals (Cannon-Bowers & Bowers, 2011). In today's global workplace, organizations have found they increasingly need to rely on teams to accomplish their objectives (Cannon-Bowers & Bowers, 2011). The importance of teams to organizations is reflected in the increased amount of research on organizational teams (Hollenbeck, Beersma, & Schouten, 2012). One area of organizational team research that has received concerted research attention is understanding motivation in team contexts (Chen, Kanfer, DeShon, Mathieu, & Kozlowski, 2009; Kozlowski & Bell, 2003; Kozlowski & Ilgen, 2006; Mathieu, Maynard, Rapp, & Gilson, 2008); however, much of the research on teams does not address the multilevel perspective inherent to the nature of teams (Kanfer, Chen, & Pritchard, 2008). Organizations are multilevel systems which are hierarchically nested (e.g., individuals within teams, teams within departments, etc.), and it is essential this systems' structure is accounted for when theories are conceptualized and research is designed to ensure accurate and complete representations of organizational behavior (Klein & Kozlowski, 2000). In a dynamic team environment, it is important to examine how characteristics of teams and characteristics of individuals interact to influence an individual's motivation. A 2006 theoretical model of motivation proposed by Chen and Kanfer recognized the multilevel relationships between team and individual motivation processes, as well as possible precursors and outcomes of these processes. This model provides a strong foundation for understanding the dynamic and complex nature of motivation within a team work context and postulates the influence that teams may have on an individual's motivational processes.

One motivational process which has benefited from extensive research is the relationship between individuals' self-efficacy and the amount of effort they are willing to exert towards a goal; however, this stream of research has yielded inconsistent results regarding this relationship. The current study seeks to explain self-efficacy's inconsistent effects in the literature, by examining the top down influence team characteristics may have on this relationship, thus enhancing what is known about self-efficacy's motivational benefits and limitations. In doing so, this study answers calls to consider the multilevel nature of individuals and teams when examining the motivation of individuals within teams (Chen & Kanfer, 2006), as well as a need to ultimately better understand how teams influence the relationship between self-efficacy and performance (Chen et al., 2009).

Action Teams

While there are many different types of teams, one type being utilized by organizations is action teams. Action teams are often used when there is a need for a group of highly skilled individuals to complete difficult tasks in short periods of time (Wildman et al., 2012). Action teams are comprised of interdependent specialists with different skillsets, who work together for brief periods of time and often need to adapt to unpredictable situations (Sundstrom, De Meuse, & Futrell, 1990). In the past, action teams were typically associated with very specialized jobs, such as military combat units, emergency management teams, trauma medical teams and aviation crews. However, more and more organizations are relying upon action teams. For example, many organizations are relying on temporary workforces, such as contractors, as a means to be more flexible and better able to respond to challenges (Wildman et al., 2012). Such temporary workforces are then used on short-term

action teams designed to meet organizational objectives. Action teams are unique when compared to other types of teams in that they do not have long periods of time to develop some of the characteristics associated with high functioning teams, such as trust and refined processes and procedures. Because they have unique characteristics, it is important to gain an understanding of how they function and influence team members.

Understanding the behaviors of individuals within an action team is quite complex. The use of teams to accomplish work introduces new goals, processes, and social interactions which may influence how individuals behave within teams compared to how they would perform on their own. One of the key influencers of team effectiveness is motivation (Kanfer & Kerry, 2012). As with other types of teams, much of the success of action teams depends upon the willingness of individuals to dedicate ample effort to help their team reach its goals. Because of the nature of work that action teams conduct, there are significant consequences when members of these teams fail to exert sufficient effort. For example, military combat units and emergency response teams must perform tasks where human lives are at stake. Within the corporate environment, the failure of an action team formed to manage a merger could be costly. Recognizing the importance of action teams, there is a need to clarify some of the complex interactions between teams and individuals and better understand how the amount of effort individuals are willing to dedicate to a task may be influenced by characteristics of the action team.

Motivation in a Team Context

In response to a need for a well-developed theory of motivation which incorporates variables relevant to teams and individuals, Chen and Kanfer (2006) proposed a multilevel

model of motivation and behavior in teams. Their *Integrative Theoretical Model of Individual and Team Motivation* was developed using three guiding principles. First, the model incorporated similar constructs for both teams and individuals based upon the notion that similar constructs likely operate on both the team and individuals. This also allows for a comparison of how individual- and team-level constructs influence outcomes. Second, the model reflected the potential for cross-level influences on individual and team motivation. For example, characteristics of a team may influence the behavior of individuals, and the behavior of individuals may influence team processes. Third, this theory recognized antecedents of motivation, as well as potential outcomes for both teams and individuals. One of the propositions in this theoretical model is that, “Ambient inputs positively affect individual motivational processes both directly and through their effects on team motivational processes” (p. 255). In other words, inputs which influence all team members because they are characteristics of the team itself will affect the motivational processes of each team member either directly or through the motivational processes of the team itself. This model presents a strong foundation for examining how team characteristics can influence individual motivation. In addition, there is value in extending this model beyond proposing a positive effect of ambient inputs on individual motivational processes to better understand *how* ambient inputs influence individual motivational processes.

Ambient stimuli, in the context of teams, are team-related stimuli which influence everyone on the team, not just certain individuals (Hackman, 1992). Ambient stimuli can influence a person’s knowledge, beliefs, emotions, and behavior (Hackman, 1992). These team-related stimuli likely have some top-down influence on individuals in the team and

affect individual motivational processes (Chen & Kanfer, 2006). In Chen and Kanfer's (2006) model, individual motivational processes are comprised of individual motivational states, individual goal generation, and individual goal striving (e.g., how individuals self-regulate their emotions, thoughts, behaviors, and environment in order to reach a goal). Self-efficacy is an individual motivational state which has previously been shown to affect the amount of task-related effort an individual will invest in a task and how long he or she will persist despite adversity (Bandura, 1986). In Chen and Kanfer's (2006) *Integrative Theoretical Model of Individual and Team Motivation*, effort is a part of what they call individual goal striving. In all likelihood, contextual variables influence the relationship between individuals' motivational states (i.e., self-efficacy) and their individual goal striving. Indeed, past research designed to extend and empirically test this model of motivation has prompted calls for more research to better understand contextual moderators of the relationship between individual self-efficacy and performance (Chen et al., 2009).

A first step in understanding the relationship between self-efficacy and performance is to better understand how team characteristics influence the motivational processes in individuals. In particular, how do team characteristics moderate the influence that motivational states have on goal striving? Consistent with the well-supported view that behavior is a function of the person and the environment, the current study builds upon Chen and Kanfer's (2006) *Integrative Theoretical Model of Individual and Team Motivation*. Specifically, to better understand factors that influence the relationship between self-efficacy and effort, situational factors which may enhance or impede self-efficacy's motivational effect on team members' effort need to be considered.

Self-Regulation and Self-Efficacy

Existing theories of motivation provide insight into the situational factors which may influence action team member motivation. Motivation encompasses people's decisions about what goals to pursue, the amount of effort they put towards those goals, and how long they are willing to invest in pursuing their goals (Diefendorff & Chandler, 2010). Over the years, researchers have addressed the question of motivation from many different perspectives, which has led to the development of comprehensive theories of motivation. Theories of self-regulation fall within the realm of these more comprehensive theories and center around how individuals pursue goals (Vancouver, 2000). Self-regulation includes goal establishment, the planning process for goal pursuit, striving toward or maintaining a goal, and revising goals (Austin & Vancouver, 1996).

Bandura's Social Cognitive Theory (Bandura, 1986) models mechanisms operating within individuals which influence their self-regulation of motivation. One of these mechanisms is self-efficacy, which is a person's assessment of his or her capability to perform in a certain domain (Bandura, 1997). Levels of self-efficacy influence the goals individuals choose to pursue, as well as the effort and persistence they will exert when faced with challenges (Wood & Bandura, 1989). Self-efficacy is a means to not just understand, but potentially influence people's motivation (Gist & Mitchell, 1992; Vancouver & Day, 2005). Unfortunately, there is still not a consistent understanding of how self-efficacy is related to motivation (Vancouver, More, & Yoder, 2008).

While much of the research conducted on the relationship between self-efficacy and motivation has demonstrated a positive relationship, enough research has shown inverse and

nonmonotonic relationships (Diefendorff & Chandler, 2010; Vancouver et al., 2008) to warrant further research investigation. Bandura and Locke (2003) argue that there is long-standing meta-analytic support for the notion that self-efficacy positively contributes to an individual's level of effort and performance. Yet, several research studies (see Vancouver et al., 2008) have shown negative relationships with self-efficacy and effort. For example, Vancouver and Kendall (2006) found a negative relationship between self-efficacy and resource allocation during a study task. This variability in research outcomes supports the idea that self-efficacy may be a precondition for motivating desires into actions, but it may not be sufficient to motivate behavior (van Knippenberg, van Knippenberg, DeCremer, & Hogg, 2004). Given the complexity of human motivation, there is great opportunity to build upon these previous studies and further examine variables which may help explain these inconsistent results.

Understanding situational influences that change the relationship between self-efficacy and motivation could provide better insight into why team members demonstrate varying levels of effort. Effort is one aspect of motivation that is often apparent to outside observers, and is especially important for team members relying upon one another to achieve a shared goal. Understanding what variables modify the relationship between self-efficacy and effort will not only provide more robust models of motivation, it will allow organizations to develop tools to maximize the motivation of their employees. In an action team setting, the variables modifying the relationship between self-efficacy and effort may be characteristics of the team itself.

Team Quality

Motivation is dynamic and can be influenced by both individual and situational factors (Diefendorff & Chandler, 2010). One situational factor which may affect motivation is social influence. The field of social psychology was built around the premise that individuals often behave differently because of the presence of others. Indeed, the notion that the presence or the mere suggestion of the presence of others can influence individuals' behavior has been studied since the late 1800's (Zajonc, 1965). Teams are an aspect of an individual's environment which can affect individuals' attitudes, beliefs, and behaviors and may be one of the strongest direct influences on behavior for those working in a team-based work environment (Hackman, 1992). In Diefendorff and Chandler's (2010) comprehensive model of motivation, teams are considered a proximal, external influence on an individual's pursuit of a goal, both directly and through proximal, internal influences, such as expectancy. Several theories within psychology explain the ways in which groups influence the behavior of individuals, in particular, how the presence of others can influence the amount of effort an individual puts towards the successful completion of a task (e.g., Karau & Williams, 2001; Köhler, 1927; Zajonc, 1965).

Research throughout the years has demonstrated that teams can both motivate and demotivate individuals. For example, the Köhler motivation gain effect demonstrates how the presence of another individual or group of individuals can increase the amount of effort someone puts forth compared to that which he or she would exert on his or her own (Köhler, 1927). Contemporary researchers have generally attributed this change in performance to two factors. The first reason why individuals may increase their effort when working within

a group is that they revise their personal performance goals based upon social comparison processes such that individuals use those in the group either as a benchmark for the performance necessary for positive evaluation or as a cue to indicate competition (Kerr & Hertel, 2011). The second proposed reason for increased effort is the individual's assessment that he or she is indispensable to the team's success (Kerr & Hertel, 2011). These reasons provide insight into the different ways the presence of others can influence motivation.

One of the underlying psychological mechanisms used to explain motivation gains and losses, such as the Köhler motivation gain, stems from classic motivation models, but can largely be explained by Vroom's (1964) conceptualization of Expectancy Theory. Expectancy Theory asserts that motivational force is a function of expectancy, instrumentality, and valence. The amount of effort one exerts can be explained by perceptions of the likelihood that effort will lead to performance (i.e., expectancy) and performance will lead to a desired outcome (i.e., instrumentality), as well as how desirable the outcome is to the individual (i.e., valence). Expectancy is of particular interest when studying motivation in teams, because it represents the belief that one's effort will result in the accomplishment of desired performance goals and attainment of desired outcomes. Expectancy can be influenced by personal factors, such as self-efficacy, and situational factors, such as the performance of others (Hollenbeck & Klein, 1987). Teams introduce some of these additional situational factors. Thus, in order for expectancy to be high, self-efficacy alone is not sufficient. Individuals on teams must see those around them dedicating effort to achieving goals.

In action teams, team members are highly dependent upon one another to accomplish performance goals. Performance goals cannot be accomplished through the sole effort of one individual. This dependence upon others influences the amount of control any one team member has on performance outcomes. The team collectively controls the performance outcomes of the team. It is expected that when individuals believe they are a part of a strong team, one that displays strong task-based ability and demonstrates collective-oriented behaviors, they will believe the team has a good chance of success and will ultimately demonstrate effort; however, if they are members of a low quality team, they will withhold effort. If individuals are on a team which they believe has a limited chance to succeed and/or their effort will not help contribute to team success, they may hesitate to “waste their time” exerting effort. They may demonstrate low effort, because they believe their effort will not change the outcome of the situation (Snyder, Smoller, Strenta, & Frankel, 1981).

Psychologically, this pattern of behavior is often called learned helplessness. Learned helplessness theory (e.g., Seligman, 1975) posits that when individuals (or animals) believe they have limited ability to control the outcomes of a situation, any effort or behavior on their part will be ineffective, so they choose to no longer act on the situation. Individuals' perceptions of how influential their effort will be to team outcomes will likely influence the amount of effort they choose to exert on a task. These expectancy perceptions of team members may be influenced by indicators of how likely the team is to succeed. There is reason to believe that the quality of a team affects the degree to which team members' self-efficacy translates into motivated effort, because team quality likely influences perceptions that effort will lead to desired performance. Characteristics which indicate the

quality of a team are likely salient to each member of a team. Stimuli that are present for all members of a team or group are considered ambient stimuli (Hackman, 1992). As stated earlier, Chen and Kanfer's (2006) *Integrative Theoretical Model of Individual and Team Motivation* proposed that ambient inputs are positively related to motivational processes in the individual. Team quality is a key ambient input that may influence an individual's willingness to strive for a goal. High quality teams possess the knowledge, skills, abilities, and other characteristics (KSAOs) necessary for task performance, cooperation, and coordination necessary to achieve team performance goals. When people belong to high quality teams, they are presumably faced with less stress, task obstacles, and failures than those who are in lower quality groups. By understanding team quality, clarity can be gained as to why past research has demonstrated variation in the strength and direction of the relationship between self-efficacy and motivation.

Team members are likely to consider different aspects of team performance and processes when they judge the quality of their team. Similar to job performance, performance on a team is comprised of two facets, a task element and a teamwork element. Morgan, Salas, and Glickman's (2001) proposed model of team development describes and confirms through factor analysis two types of "activity tracks" for teams. The first activity track is task-based and includes the technical aspects of the job. The second activity track is team-related and includes interactions among teammates, cooperation, and coordination (i.e., activities often associated with the term "teamwork"). Team members perceive task- and team-related activities and distinguish between them when considering team performance processes (Morgan et al., 2001). Task-based ability encompasses the technical aspects of a

team's work such as processes, procedures, task-based knowledge, interactions with equipment, and generation of solutions for problems (Morgan et al., 2001). This task-based ability involves activities that are task-specific, such as the physical ability necessary to successfully accomplish a task requiring physical strength and endurance. It is likely that both aspects of team quality influence individuals' perceptions of the likelihood of their teams reaching performance goals, which will ultimately influence each team member's self-regulation of effort. Distinguishing between the task-based and teamwork-based ability of a team helps to clarify how team quality influences the translation of self-efficacy into motivated effort.

While task-based ability is important for teams, cooperation and coordination among teammates are also essential for team performance. For success on highly interdependent tasks, team members must effectively collaborate to reach their goals (Wageman, 1995). Driskell, Salas, and Hughes (2010) described the tendency to work collectively in a team setting as collective orientation. According to Driskell et al., an individual with a collective orientation, "... works well with others, seeks others' input, contributes to the team outcome, and enjoys team membership" (p. 317). Individuals who display collective-oriented behaviors have a positive influence on group effectiveness, particularly for teams working on challenging tasks which require a high level of interdependence for success (Driskell & Salas, 1992). One of the benefits of teams comprised of individuals who display teamwork behaviors is the opportunity to pool resources and information (Driskell & Salas, 1992). Having a substantial pool of resources and information will increase team members' perceptions that they have the resources they need to be successful.

Team Quality, Self-Efficacy and Interaction Processes

In sum, a significant amount of research has demonstrated that people high in self-efficacy will establish and commit to more difficult goals, and in the face of challenges will exert additional effort and even take on new challenges when compared to individuals with low self-efficacy (Vancouver & Day, 2005). However, while individual self-efficacy may predispose an action team member to dedicate effort to a task, there are environmental variables which could influence the strength of this relationship in an applied setting. If a team is lacking either the task-based ability or the teamwork-based ability needed to accomplish a task, team members are likely to realize that their team's deficiencies will hamper their own individual effort from having a positive influence. Individuals may initially dedicate effort to a task but decrease their effort when it does not produce results. As individuals begin to work with a team, they will gain more insight into the team's ability which will influence the level of expectancy an individual experiences, as well as provide insight into their perceptions of how much control they have over team outcomes. Individuals who believe they lack control over team outcomes may decide to reduce the amount of effort they dedicate towards the team's goal.

From the standpoint of self-regulation and expectancy theories, one would expect individuals to self-regulate the amount of effort they put forth when characteristics of the team influence their expectancy (i.e., perceptions that their effort will lead to team performance). While a team which is less skilled at the task-based aspects of a challenge may be able to compensate with different strategies or different levels of cooperation among team members, the task-based ability of a team would likely be salient to each member and

could influence individuals' perceptions of the likelihood of team success and ultimately influence the level of effort they are willing to exert. Therefore, we propose that the task-based ability of a team will affect the relationship between team members' self-efficacy and the level of effort they dedicate to a task.

Hypothesis 1. The strength of the relationship between team members' self-efficacy and the amount of effort they exert will vary by the average task-based ability of the team such that team members' self-efficacy and the amount of effort they exert will be more strongly related when the task-based ability of the team is higher and more weakly related when the task-based ability of the team is lower.

Similarly, when individuals are members of a team comprised of individuals demonstrating high levels of teamwork ability through collective-oriented behaviors, they may experience less uncertainty and have a better conceptualization of the task they need to accomplish. This experience is likely to increase perceptions that the team will successfully complete the task. Therefore, it is expected that individuals' perceptions of the level of teamwork behavior demonstrated by members of their team is a salient environmental variable which will influence the degree to which their self-efficacy translates into motivated effort.

Hypothesis 2. The strength of the relationship between team members' self-efficacy and the amount of effort they exert will vary by the average teamwork ability of the team such that team members' self-efficacy and the amount of effort they exert will be more strongly related when the level of teamwork ability on the team is higher and more weakly related when the overall teamwork ability of the team is lower.

Method

Participants

This study was conducted using 61 action teams comprised of 13-16 men working on a physically demanding, complex task in a high stress environment. Participants ($N = 928$) were U. S. military soldiers enrolled in a three week assessment center designed to identify individuals with the potential to attend and succeed in subsequent specialized training. The age of participants ranged from 18 to 47 years ($M = 25.79$, $SD = 4.23$).

Data were collected during five administrations of the assessment center. Only teams in which there were data for thirteen or more individuals were included in this study to reduce teams experiencing unique circumstances, such as extreme attrition. Therefore, one team of five individuals was removed from the dataset which resulted in the 61 teams studied.

Design and Procedure

Participants completed both individual and team tasks during the three week assessment center. The tasks were designed to provide opportunities to evaluate participants' relevant knowledge, skills, and other attributes. Individuals were observed at all times by trained assessors. At the start of the assessment center, the participants completed a series of self-assessments in a computer lab, including a survey designed to measure attributes relevant to working in teams, such as self-efficacy for succeeding in the team tasks they were required to complete during the assessment center. Throughout the assessment center, they participated in challenging physical ability assessments, including the Army Physical Fitness Test (APFT). Given the significant physical challenges that participants encountered

throughout the assessment center, many individuals who were not prepared or not physically capable of the demands of the program quit during the first week of assessments. As the assessment center progressed, the individuals who remained participated in highly demanding team tasks. These tasks required teammates to work together in a high stress environment on physically demanding, complex assignments that required high levels of cooperation and problem-solving for success – for example, moving large, awkward equipment for long distances. Subject matter experts assigned individuals to teams based upon multiple variables (e.g., rank, occupation in the military, etc.) to ensure a comparable distribution of leadership and military experience on each team. After teams successfully completed or abandoned their assigned task, individuals assessed themselves and their teammates on a variety of constructs, including those examined in this study.

This study included one predictor, two moderators, and one criterion variable. The means and correlations for the measures used in this study are reported in Table 1. Data from different sources were used in this study to avoid bias due to common-method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). As described next, self-reports were used to assess individuals' self-efficacy and effort. An objective physical fitness test was used to determine physical ability. Peer ratings were used to measure teamwork ability, because compared with external evaluators, teammates often have more opportunities to observe each other's interpersonal behaviors (Murphy & Cleveland, 1995). In some cases, single-item measures were used. Although longer measures are preferred from a psychometric standpoint, the mentally and physically demanding schedule of this assessment center

mandated the use of single item measures for some scales to reduce the negative effects of rater fatigue.

Measures: Individual-Level Variables

Self-Efficacy. Vignovic and Thompson's (2008) nine-item Self-Efficacy scale ($\alpha = .86$) was used to assess each participant's level of self-efficacy for succeeding during the assessment center as a whole, as well as the high stress team tasks that were part of the assessment center. Participants were asked to use a Likert-type scale with response options ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Sample items include, "I know I am going to make it through [the Assessment Center]" and "I think I will do well during team events." This scale was administered in a proctored computer lab at the start of the assessment center.

Effort. Immediately following the conclusion of the team's assigned task, individuals conducted a computerized assessment on each of their teammates, as well as rated their own performance. A single self-report item was used to assess the level of effort each individual put forth during the team task. Response options were provided on a Likert-type scale from 1 (*Poor*) to 5 (*Outstanding*) with behavioral-based anchors. For example, a rating of Outstanding was anchored by the statement, "He went way beyond what was expected and picked up the slack of other team members."

Measures: Team-Level Variables

In addition to characteristics of individuals, characteristics of teams were also included in this study. The individual-level physical ability and teamwork ability scores were aggregated to the team level. These team-level variables reflect the actual aggregate

level of physical and teamwork abilities for each team. Because the variance among individuals' level of ability for these two variables is not of theoretical concern for the hypothesized relationships in this study, these variables were operationalized by averaging the individual team member scores for each team (Chan, 1998).

Physical Ability. All individuals took the Army Physical Fitness Test (APFT) to determine their levels of physical ability. This assessment required participants to demonstrate the maximum number of push-ups and sit-ups of which they were capable and also complete a two-mile run as fast as they were able. Individuals' raw data for each of these measures were transformed into a score ranging from 0 to 100, based on predetermined Army APFT performance scales. The scores for each portion of this assessment were then summed to result in a total score ranging from 0 to 300, with 300 being the maximum possible score. For this study, teammates' total APFT scores were averaged to attain a team-level measure of physical ability.

Teamwork Ability. At the completion of the team tasks, individuals conducted a computerized assessment on each of their teammates. One of the attributes measured during this assessment was the ability to work collectively in a team setting. Peers can provide important insight into performance, because of the frequency of interaction, the close working relationship, and the opportunity to observe task and relationship behaviors (Murphy & Cleveland, 1995). Teamwork ability was measured by a single item with a Likert-type scale with response options 1 (*Poor*) to 5 (*Outstanding*). The item was, "How well has each teammate shown he is able to: work on a team for a greater purpose than himself; be dependable and loyal; work selflessly with a sense of duty; respect others and recognize

diversity?” The ratings each individual on a team received from all other team members were averaged to provide each individual with a rating of teamwork ability. Teammates’ teamwork ability scores were then averaged to attain a team-level measure of teamwork ability.

Data Analysis

The models examined in this study incorporate variables from both the team level (i.e., team physical ability and teamwork ability) and the individual level (i.e., self-efficacy and effort). To examine how variability in the relationship between self-efficacy and effort may be accounted for by the task-based ability and teamwork ability of teams, hierarchical linear modeling (HLM) with intercepts- and slopes-as-outcomes model was used (Raudenbush & Bryk, 2002). In order to increase the interpretability of results and ensure a clear understanding of the interactive influence of the team-level variables on the relationship between self-efficacy and effort, self-efficacy was centered around the group mean (Enders & Tofighi, 2007). For the Level 2 predictors, task-based ability and teamwork ability were grand mean centered (Hofmann & Gavin, 1998).

Results

A preliminary analysis, a fully unconditional model (Model 1), was used to ensure there was sufficient variability at Level 1 and Level 2 to warrant further analyses (e.g., Nezlek, 2001; Raudenbush & Bryk, 2002). The fully unconditional model has no term, other than the intercept, included at any level (Nezlek, 2001). Results from this analysis indicated that teams do differ in their average effort scores, and there is also variation in the effort

ratings of individuals within teams. More specifically, 45.74% of the variability in participant effort was between teams ($\tau_{00} = 00.28, z = 5.06, p < .000$) and 54.26% was within teams ($\sigma^2 = .33, z = 19.73, p < .001$). Based on the variability in the fully unconditional model, further analyses were justified. Three additional models were analyzed to best understand the influence of team task-based and teamwork abilities on the relationship between self-efficacy and effort. A summary of the results is provided in Table 2.

A series of two-level HLM models with individual-level effort as the outcome of interest were analyzed to test the proposed hypotheses. Model 2 established that there is a significant, positive relationship between an individual's level of self-efficacy and the effort they put forth on a task ($\gamma_{10} = .32, t = 5.21, p < .001$), and that the strength of this relationship does not significantly differ across teams ($\tau_{11} = .04, t = .92, p = .179$). While there was not a significant difference in the relationship between self-efficacy and effort from team to team, to test whether or not team task-based and teamwork abilities influence the relationship between self-efficacy and effort, as proposed by Hypotheses 1 and 2, two models (see Table 2, Models 3 and 4) were specified which included the interactions between the Level 1 and Level 2 predictors. Model 3 allowed the relationship between self-efficacy and effort to vary across teams. Because results from the analysis of Model 2 indicated that the relationship between self-efficacy and effort did not vary across teams, it was appropriate to analyze a simpler, non-randomly varying slopes model in which the intercepts vary between teams, but the slopes between self-efficacy and effort are held constant across teams (Model 4) (Singer, 1998). Because both Model 3 and Model 4 shared fixed effects and only differed on the random effects, the AIC (Akaike's Information Criterion) value was used to compare

the two models. The AIC values are presented in Table 2. While typically the model with the lower AIC is preferred, comparison of the -2 log likelihood statistics for these models indicated they were not significantly different from each other ($\chi^2(2, N=937)=2.4, p=.301$). Therefore, the results of Model 3, in which slopes were not constrained, were used to test the hypotheses.

Hypothesis 1 predicted that the task-based ability of a team, operationalized in this study as physical ability, would influence the relationship between individuals' self-efficacy and effort such that the higher the level of task-based ability on a team, the stronger the positive relationship between self-efficacy and effort would be. Results indicated a direct relationship between self-efficacy and effort, such that for teams of average task-based ability and teamwork ability, individuals with high self-efficacy scores tended to report significantly higher levels of effort ($\gamma_{10} = .32, t = 4.89, p < .001$). While there were task-based ability differences in the effort ratings between teams ($\gamma_{01} = .02, t = 2.75, p = .01$), there was not a significant self-efficacy and task-based ability interaction ($\gamma_{11} = .01, t = 0.60, p = .55$), indicating that the relationship between self-efficacy and individual effort did not significantly vary as a function of the team's aggregate physical ability (see Figure 1). Because the hypothesized relationship was not significant, Hypothesis 1 was not supported; however, the hypothesized direction of the relationship between these variables was demonstrated.

Hypothesis 2 predicted that the teamwork ability of a team would influence the relationship between individuals' self-efficacy and effort such that the higher the level of teamwork ability on a team, the stronger the positive relationship between self-efficacy and

effort. Results indicated there were no significant teamwork ability differences in the average effort ratings between teams ($\gamma_{02} = -.15, t = -.42, p = .67$), and there was not a significant self-efficacy and teamwork ability interaction ($\gamma_{12} = .09, t = .26, p = .80$) (see Figure 2). Therefore, Hypothesis 2 was not supported. Model 3 accounted for 16.00% of the between-team variability and 11.21% of the within-team variability in effort.

A review of the random effects in this model provides some additional insight into the relationship among these variables. The intercept variance component indicated that there is significant, additional variation in the mean level of effort between teams that is not explained by team task-based ability and team teamwork ability ($\tau_{00} = 0.23, z = 4.52, p < .01$). There is also significant variability of effort within teams not explained by this model ($\sigma^2 = .29, z = 17.20, p < .01$). Furthermore, as with Model 2, the variance component for the relationship between individuals' levels of self-efficacy and effort indicates that the slopes do not vary across teams after accounting for team task-based and teamwork abilities ($\tau_{11} = 0.05, z = 1.03, p = .15$). While the hypotheses for this study were not supported, these results provide insight into how action teams influence the level of effort individuals dedicate to a team task and provide direction for future research.

Discussion

Teams are a vital and common tool utilized by organizations to achieve their objectives (Cannon-Bowers & Bowers, 2011). Understanding how the working environment created by teams impacts the motivation of individuals is essential for creating high performing work environments. Action teams are a special type of team in which team

member motivation is especially important, because the nature of their tasks is often difficult and short-term (Wildman et al., 2012). Action teams need to be performing at their best from the start without having the benefit of established trust and refined processes. While teams of all types have a number of benefits, the reality is their interactive nature introduces complexity into the work environment. Examining and breaking down this complexity to better understand how individual behavior is influenced by a team's working environment will help us understand how to best maximize both the performance of individuals and teams as a whole. Building upon Chen and Kanfer's (2006) model of motivation, the current study examined how characteristics of teams can influence the relationship between individuals' level of self-efficacy and the amount of effort they dedicate to a team task.

Previous research by Chen and Kanfer (2006) examined and proposed a model of the interaction between team variables and individual behaviors; however, this study is the first to examine how a team's task-based and teamwork abilities can influence motivational processes in an individual. This study demonstrated that there are differences in the level of effort an individual is willing to dedicate to a task, and these varying levels of effort can be attributed to both characteristics of individuals and the team. Self-efficacy was an individual difference that explained some of the variance in levels of effort among individuals. While much of the research on self-efficacy and effort has demonstrated a positive relationship between these two variables (see Bandura & Locke, 2003), some studies have demonstrated conflicting results (Diefendorff & Chandler, 2010; Vancouver et. al., 2008). Consistent with much previous research, there was a positive relationship between self-efficacy and effort in this sample of individuals. The strength and direction of the relationship between

self-efficacy and effort was not significantly different for individuals on different teams; therefore, contrary to expectations, the top down influence of the team characteristics of interest (e.g., team task-based and teamwork abilities) proposed by the hypotheses in this study were not supported.

Task-based ability was a characteristic of the team that explained variation in levels of effort among individuals. Specifically, the mean level of task-based ability on a team had a significant and positive direct relationship on the level of effort team members dedicated to the task. This is consistent with the understanding that ambient, team-related stimuli can impact an individual's behavior (Hackman, 1992). While the positive relationship between self-efficacy and effort seems to be quite stable, despite the influence of the ambient stimuli provided by the context of teams, the level of effort an individual is willing to put forth is influenced by the task-based ability of the team of which they are a member. Unlike task-based ability, the average teamwork ability of a team was not significantly related to team members' effort.

Practical and Theoretical Implications

The current study sought to answer a call to test Chen and Kanfer's *Integrative Theoretical Model of Individual and Team Motivation* to better understand the contextual moderators of motivational processes in teams (Chen et al., 2009). While the positive relationship between self-efficacy and team member effort did not seem to be influenced by contextual factors differing between teams, support was found for the influence of team contextual factors on individual team member effort. This supports the theoretical proposition made by Chen and Kanfer (2006) that ambient inputs positively and directly

impact motivational processes, in particular, individual goal striving. Further investigation is needed to understand if there are variables which mediate the relationship between team task-based ability and individual goal striving, as well as what other team ambient inputs have a similar impact on team member motivation.

While some past research has shown inverse and nonmonotonic relationships between self-efficacy and motivation (Diefendorff & Chandler, 2010; Vancouver et al., 2008), Bandura and Locke (2003) maintain there is significant support for a positive relationship between these two variables. The current study provides additional backing for a positive relationship between self-efficacy and motivation in individuals. The strong contextual influence of teams showed limited impact on the strength and direction of this positive relationship.

This research provides theoretical contributions to the field of motivation, but it also has several practical implications that can be applied to the workplace. The results of this study indicate organizations need to consider the impact of team characteristics and abilities on its team members. The average level of task-related ability on a team can impact how much effort individuals will put towards accomplishing objectives. This knowledge can potentially help with both the selection and the development of teams. If there are individuals in an organization who seem to be lacking motivation working on their own or in a current team, putting them on a highly qualified team may provide them with the environment needed to encourage them to put forth more effort and ultimately better contribute to an organization. Conversely, if an individual seems less motivated than expected when working on a new team, it is important to review the whole situation, not just

the individual, and consider the impact the team may be having on his or her motivation. While additional research needs to be conducted to better understand team member motivation, this study supports the importance of considering the impact a team has on the effort individuals are dedicating to their work.

Limitations and Future Research

This study had several limitations which need to be noted and provide direction for future research. The sample was comprised of male members of the military who had already successfully completed the majority of a highly specialized assessment center. While this sample provided the opportunity to understand the behaviors of individuals on teams, the degree to which these findings generalize to a more diverse population of individuals is unknown. Furthermore, restriction of range may have been an issue. Individuals with higher levels of self-efficacy, physical ability, teamwork, and effort may have been overrepresented in this sample, because of a high rate of assessment center attrition of those individuals who possessed lower levels of self-efficacy, physical ability, teamwork, and motivation. Future research with a more diverse sample could potentially reveal significant relationships that shed light on individual motivation in a team setting.

Beyond the sample composition, there were also limitations with the measures used for this study. This study included real-world data from teams operating in a high-stakes environment. However, the use of contextually rich field data necessitated some concessions. Single item measures for teamwork and effort were relied upon to reduce the risk of rater fatigue. More robust and comprehensive measures of these variables would more accurately capture individuals' levels of teamwork and effort. Furthermore, while

team-level variables were conceptualized as aggregate measures of team members' performance, there would be value in exploring more direct levels of team performance, such as an assessment of the team as a whole, rather than an aggregation of team member performance. Additional avenues of research related to the composition of team member performance, as well as team member perceptions of team performance would also be valuable and may provide additional insight into the influence of team performance on team member behavior and motivation. Examples of composition variables which may impact team performance include how much variability there is in the abilities of team members, as well as what the highest or lowest levels of ability on the team.

Another limitation related to this study's focus on applied teams in a field setting has to do with internal validity. Because this study was not experimental in nature, causal relationships cannot be conclusively determined. Future research could examine the influence of team characteristics on team member motivation in a more controlled setting, to test the directionality of the relationships uncovered here.

In addition to future research that could be conducted to strengthen the findings of the current study, there are several other opportunities for exploration. Given the level of variance in the mean levels of individual effort that can be attributed to a difference in teams, there is value in exploring other team variables which may be influencing the motivational processes in individuals. In addition to examining team composition, as mentioned earlier, there is value in studying the influence of team leaders and how they influence the motivation of team members. The present study found a significant, positive relationship between a team's average task-based ability and the level of effort team members put forth

on the task. Future research could explore whether there are any team or individual characteristics that moderate this relationship. A deeper understanding of the relationship between these variables would allow organizations to mitigate the detrimental motivational impact of team members being a part of a lower ability team. In conclusion, while there were some limitations to the current study, the results, both the discovery of significant and non-significant relationships, provide direction for future exploration of teams and motivation.

This study contributed to the understanding of motivation within teams by recognizing the complexity of the multilevel nature of teams and examining the influence of team characteristics on the motivation and behavior of individuals. Overall, the level of effort individuals put forth does differ depending on team membership, and one of the team characteristics which influences team member effort is the average task-based ability of a team. However, future research will be needed to uncover just how team task-based ability and other team characteristics impact motivation. With the reliance on teams to achieve organizational objectives within the workplace, it is essential to recognize the impact teams have on each team member. This will allow organizations to take steps to increase the likelihood of maximizing the number of motivated, high performing individuals pursuing organizational goals.

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Table 1

Descriptive Statistics and Intercorrelations among Study Variables

Measured Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Self-Efficacy	4.52	0.38	–			
2. Effort	4.34	0.78	0.16**	–		
3. Physical Ability	263.81	25.99	0.15**	0.19**	–	
4. Teamwork Ability	3.77	0.55	0.09**	0.04	0.22**	–

Notes. $N = 928$.

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

Table 2
Unstandardized Coefficients of Hierarchical Linear Modeling Analyses of the Moderating Effect of Task-Based and Teamwork Abilities on the Relationship between Self-Efficacy and Effort

<i>Fixed Effects</i>	<i>Model 1 (null)</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Intercept, γ_{00}	4.35** (.07)	4.36** (.07)	4.36** (.07)	4.36** (.07)
Team Physical Ability, γ_{01}		0.02** (.01)	0.02** (.01)	0.02** (.01)
Team Teamwork Ability, γ_{02}		-0.12 (.34)	-0.15 (.35)	-0.15 (.35)
Self-Efficacy, γ_{10}		0.32** (.06)	0.32** (.06)	0.30** (.06)
Team Physical Ability, γ_{11}			0.01 (.01)	0.01 (.01)
Team Teamwork Ability, γ_{12}			0.09 (.35)	0.08 (.32)
<i>Random Effects</i>				
Between-Team Mean Effort Variability, τ_{00}	0.28** (.05)	0.23** (.05)	0.23** (.05)	0.23** (.05)
Within-Team Effort Variability, σ^2	0.33** (.02)	0.29** (.02)	0.29** (.02)	0.30** (.02)
Self-Efficacy Slope, τ_{11}		0.04 (.04)	0.05 (.04)	
<i>Fit Statistics</i>				
AIC	1609.4	1313.6	1321.1	1319.5
BIC	1613.6	1322.1	1329.5	1323.7

Notes. $N(\text{participants}) = 928$. $N(\text{teams}) = 61$. Standard errors in parentheses.

** $p < .01$



Figure 1. *Test of Interaction of Self-Efficacy and Team Task-Based Ability on Effort*

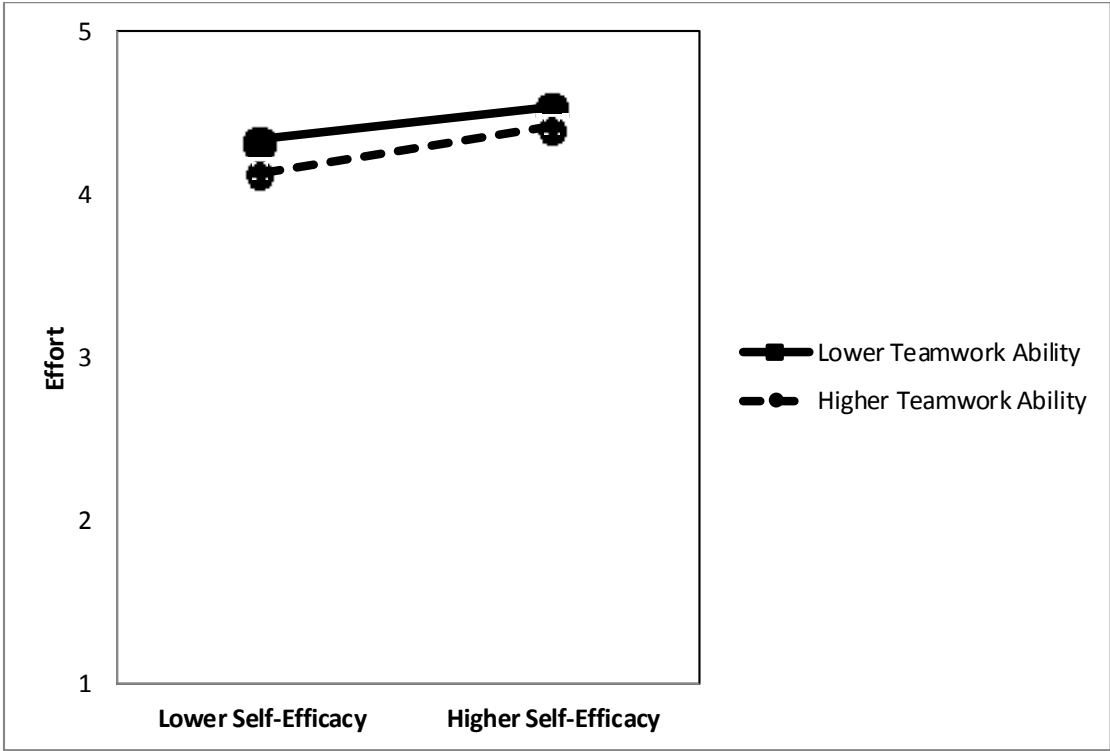


Figure 2. *Test of Interaction of Self-Efficacy and Team Teamwork Ability on Effort*

Appendices

Appendix A. Self-Efficacy for [Assessment Center] & High Stress Team Events Scale

Self-Efficacy for [Assessment Center] & High Stress Team Events Scale
(Vignovic & Thompson, 2008)

Directions: Based on your own thoughts and behaviors, please answer how much you agree or disagree with each of these statements. Please answer as honestly as you can.

Response options:

- Strongly Disagree
- Disagree
- Neither Agree/Disagree
- Agree
- Strongly Agree

Items:

1. I am strong enough for [assessment center].
2. I will be able to contribute to my team's success.
3. I have the skills I need to make it through [assessment center].
4. I think I will do well during team events.
5. I am physically capable of what I will be asked to do during [assessment center].
6. I know I am going to make it through [assessment center].
7. I am smart enough to make it through [assessment center].
8. I think my team will like me.
9. Even if my team doesn't like me, I think they will realize how much I will help them.

Appendix B. Effort Scale

Effort Scale

Response Options:

- Outstanding-His personal effort stood out above all others and was the driving force of the team
- Above Average-Actively participated throughout the event
- Average-Participated
- Below Average-Partially participated
- Poor-Did not participate

Appendix C. Teamwork Ability Scale

Teamwork Ability Scale

Response options:

- Poor –Didn't work well on a team; Couldn't be depended upon; Selfish; Disrespectful and unsupportive of others
- Below Average
- Average – Usually worked well on a team; Could usually be depended upon; Generally thoughtful of others; Respectful and supportive of most teammates
- Above Average
- Outstanding – Worked exceptionally well on a team; Could always be depended upon; Put others ahead of himself; Always respectful and went out of his way to support others

Item:

Team Player: How well has each teammate shown he is able to: work on a team for a greater purpose than himself; be dependable and loyal; work selflessly with a sense of duty; respect others and recognize diversity?

Appendix D. Supplemental Analysis

Supplemental Analysis – Variance of Task-Based and Teamwork Abilities on Teams as a Predictor of the Relationship between Self-Efficacy and Effort

Table 3

Unstandardized Coefficients of Hierarchical Linear Modeling Analyses of the Moderating Effect of Task-Based and Teamwork Abilities Team Variance on the Relationship between Self-Efficacy and Effort

<i>Fixed Effects</i>	<i>Model 1 (null)</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Intercept, γ_{00}	4.35** (.07)	4.36** (.07)	4.36** (.07)	4.36** (.07)
Physical Ability Variance, γ_{01}		-0.00 (.00)	-0.00 (.00)	-0.00 (.00)
Teamwork Ability Variance, γ_{02}		0.49 (.34)	0.54 (.35)	0.54 (.35)
SelfEfficacy, γ_{10}		0.32** (.06)	0.32** (.06)	0.31** (.06)
Physical Ability Variance, γ_{11}			-0.00 (.00)	-0.00 (.00)
Teamwork Ability Variance, γ_{12}			-0.29 (.34)	-0.24 (.31)
<i>Random Effects</i>				
Between-Team Mean Effort Variability, τ_{00}	0.28** (.05)	0.24** (.05)	0.24** (.05)	0.24** (.05)
Within-Team Effort Variability, σ^2	0.33** (.02)	0.29** (.02)	0.29** (.02)	0.30** (.02)
SelfEfficacy Slope, τ_{11}		0.04 (.04)	0.04 (.02)	
<i>Fit Statistics</i>				
AIC	1609.4	1323.9	1338.0	1336.0
BIC	1613.6	1332.3	1346.4	1340.2

Notes. $N(\text{participants}) = 928$. $N(\text{teams}) = 61$. Standard errors in parentheses.

** $p < .01$

I expected the variability of task-based and teamwork abilities to directly influence the amount of effort and individual would put forth on a task, as well as impact the relationship between an individual's self-efficacy and effort. As was seen on the analysis of the mean level of these variables as predictors in the previous analyses, Model 2 established that there is a significant, positive relationship between an individual's level of self-efficacy and the effort they put forth on a task ($\gamma_{10} = .32$, $t = 5.22$, $p < .001$), and that the strength of this relationship does not differ across teams ($\tau_{11} = .04$, $t = .88$, $p = .189$). Neither the

composition of task-based abilities nor teamwork abilities on a team, as measured by variance, was related to the level of effort individuals put forth during this exercise. Because the relationship between self-efficacy and effort did not significantly vary between teams, the expected result that task-based and teamwork ability variance on teams did not influence this relationship. While there was not a significant difference in the relationship between self-efficacy and effort from team to team, to test whether or not the team variance in team task-based and teamwork abilities influences the relationship between self-efficacy and effort, two models (see Table 3, Models 3 and 4) were specified which included the interactions between the level 1 and level 2 predictors. Model 3 allowed the relationship between self-efficacy and effort to vary across teams. Because results from the analyses of Models 2 and 3 indicated that the relationship between self-efficacy and effort did not vary across teams, it was appropriate to analyze a simpler non-randomly varying slopes model in which the intercepts vary between teams, but the slopes between self-efficacy and effort are held constant across teams (Model 4) (Singer, 1998). Because both Model 3 and Model 4 shared fixed effects and only differed on the random effects, the AIC (Akaike's Information Criterion) value was used to compare the two models. The AIC values are presented in Table 2. While typically the model with the lower AIC is preferred, comparison of the -2 log likelihood statistics for these models indicated they were not significantly different from each other ($\chi^2(2, N = 937) = 2.0, p = .368$). Therefore, the results of Model 3, in which slopes were not constrained, were used to draw conclusions. The team variances on task-based and teamwork abilities did not influence team members' effort of the relationship between self-

efficacy and effort. Furthermore, there were no interactions between the team composition on these variables and self-efficacy.

A review of the random effects in this model provides similar results to those found when analyzing the influence of the average task-based and teamwork abilities on individuals' motivation. The intercept variance component indicates that there is significant, additional variation in the mean level of effort between teams that is not explained by the levels of team member self-efficacy, team task-based ability variance, and team teamwork ability variance ($\tau_{00} = 0.24$, $z = 4.46$, $p < .01$). There is also significant variability of effort within teams not explained by this model ($\sigma^2 = .29$, $z = 17.15$, $p < .01$). Furthermore, as with Model 2, the variance component for the relationship between individuals' levels of self-efficacy and effort indicates that the slopes do not vary across teams after accounting for team task-based and teamwork abilities ($\tau_{11} = 0.04$, $z = 0.96$, $p = .17$).

Appendix E. Dissertation Proposal Document

Dissertation Proposal Document

The Influence of Team Ability on the Relationship between a Team Member's Self-Efficacy
and Effort

by

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A dissertation submitted to the Graduate Faculty of
North Carolina State University
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Biography

Jane Vignovic Rudolph was born on July 5, 1979 in Pittsburgh, Pennsylvania. She spent most of her childhood in Brecksville, Ohio and graduated from Brecksville-Broadview Heights High School. She received her Bachelor of Science in Animal and Poultry Sciences from Virginia Tech. After several years of living and working in a variety of environments, Jane pursued her Ph.D. in Industrial/Organizational Psychology at North Carolina State University.

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Teams are integral to how people pursue goals (Cannon-Bowers & Bowers, 2011). In today's global workplace, organizations have found they increasingly need to rely on teams to accomplish their objectives (Cannon-Bowers & Bowers, 2011). The importance of teams to organizations is reflected in the increased amount of research on organizational teams (Hollenbeck, Beersma, & Schouten, 2012). One area of organizational team research that has received concerted research attention is understanding motivation in team contexts (Chen, Kanfer, DeShon, Mathieu, & Kozlowski, 2009; Kozlowski & Bell, 2003; Kozlowski & Ilgen, 2006; Mathieu, Maynard, Rapp, & Gilson, 2008); however, much of the research on teams does not address the multilevel perspective inherent to the nature of teams (Kanfer, Chen, & Pritchard, 2008). Organizations are multilevel systems which are hierarchically nested (e.g., individuals within teams, teams within departments, etc.), and it is essential this systems' structure is accounted for when theories are conceptualized and research is designed to ensure accurate and complete representations of organizational behavior (Klein & Kozlowski, 2000). In a dynamic team environment, it is important to examine how characteristics of teams and characteristics of individuals interact to influence an individual's motivation. A 2006 theoretical model of motivation proposed by Chen and Kanfer recognized the multilevel relationships between team and individual motivation processes, as well as possible precursors and outcomes of these processes. This model provides a strong foundation for understanding the dynamic and complex nature of motivation within a team work context and postulates the influence that teams may have on an individual's motivational processes.

One motivational process which has benefited from extensive research is the relationship between individuals' self-efficacy and the amount of effort they are willing to exert towards a goal; however, this stream of research has yielded inconsistent results regarding this relationship. The current study seeks to explain self-efficacy's inconsistent effects in the literature, by examining the top down influence team characteristics may have on this relationship, thus enhancing what is known about self-efficacy's motivational benefits and limitations. In doing so, this study answers calls to consider the multilevel nature of individuals and teams when examining the motivation of individuals within teams (Chen & Kanfer, 2006), as well as a need to ultimately better understand how teams influence the relationship between self-efficacy and performance (Chen et al., 2009).

Action Teams

For some types of teams, maximal effort by all team members is especially important. While there are many different types of teams, one type being utilized by organizations is action teams. Action teams are often used when there is a need for a group of highly skilled individuals to complete difficult tasks in short periods of time (Wildman, Shuffler, Lazzara, Fiore, Burke, Salas, & Garven, 2012). Action teams are comprised of highly interdependent specialists with different skillsets, who work together for brief periods of time and often need to adapt to unpredictable situations (Sundstrom, De Meuse, & Futrell, 1990). In the past, action teams were typically associated with highly specialized jobs, such as military combat units, emergency management teams, trauma medical teams and aviation crews. However, more and more organizations are relying upon action teams. For example, many organizations are relying on temporary workforces, such as contractors, as a means to be

more flexible and better able to respond to challenges (Wildman et al., 2012). Such temporary workforces are then used on short-term action teams designed to meet organizational objectives. Action teams are unique when compared to other types of teams in that they do not have long periods of time to develop some of the characteristics associated with high functioning teams, such as trust and refined processes and procedures. Because they have unique characteristics, it is important to gain an understanding of how they function and influence team members.

Understanding the behaviors of individuals within an action team is quite complex. Teams introduce new goals, processes, and social interactions which may influence how individuals behave within teams compared to how they would perform on their own. One of the key influencers of team effectiveness is motivation (Kanfer & Kerry, 2012). As with other types of teams, much of the success of action teams depends upon the willingness of individuals to dedicate maximal effort to help their team reach its goals. Because of the nature of work that action teams conduct, there are significant consequences when members of these teams fail to exert sufficient effort. For example, military combat units and emergency response teams must perform tasks where human lives are at stake. Within the corporate environment, the failure of an action team formed to manage a merger could be costly. Recognizing the importance of action teams, there is a need to clarify some of the complex interactions between teams and individuals and better understand how the amount of effort individuals are willing to dedicate to a task may be influenced by characteristics of the action team.

Motivation in a Team Context

In response to a need for a well-developed theory of motivation which incorporated variables relevant to teams and individuals, Chen and Kanfer (2006) proposed a “theoretical multilevel model of motivated behavior in teams.” Their *Integrative Theoretical Model of Individual and Team Motivation* was developed using three guiding principles. First the model incorporated similar constructs for both teams and individuals based upon the notion that similar constructs likely operate on both the team and individuals. This also allows for a comparison of how individual- and team-level constructs influence outcomes. Second, the model reflected the potential for cross-level influences on individual and team motivation. For example, characteristics of a team may influence the behavior of individuals, and the behavior of individuals may influence team processes. Third, this theory recognized antecedents of motivation, as well as potential outcomes for both teams and individuals. One of the propositions in this theoretical model is that, “Ambient inputs positively affect individual motivational processes both directly and through their effects on team motivational processes.” In other words, inputs which influence all team members because they are characteristics of the team itself will affect the motivational processes of each team member either directly or through the motivational processes of the team itself. This model presents a strong foundation for examining how team characteristics can influence individual motivation. In addition, there is value in extending this model beyond proposing a positive effect of ambient inputs on individual motivational processes to better understand *how* ambient inputs influence individual motivational processes.

Ambient stimuli, in the context of teams, are team-related stimuli which influence everyone on the team, not just certain individuals (Hackman, 1992). Ambient stimuli can influence a person's knowledge, beliefs, emotions, and behavior (Hackman, 1992). These team-related stimuli likely have some top-down influence on individuals in the team and affect individual motivational processes (Chen & Kanfer, 2006). In Chen and Kanfer's (2006) model, individual motivational processes are comprised of individual motivational states, individual goal generation, and individual goal striving (e.g., how individuals self-regulate their emotions, thoughts, behaviors, and environment in order to reach a goal). Self-efficacy is an individual motivational state which has previously been shown to affect the amount of task-related effort an individual will invest in a task and how long he or she will persist despite adversity (Bandura, 1986). In Chen and Kanfer's (1996) *Integrative Theoretical Model of Individual and Team Motivation*, effort is a part of what they call individual goal striving. In all likelihood, contextual variables influence the relationship between individuals' motivational states (i.e., self-efficacy) and their individual goal striving. Indeed, research designed to extend and empirically test the *Integrative Theoretical Model of Individual and Team Motivation* has prompted calls for more research to better understand contextual moderators of the relationship between individual self-efficacy and performance (Chen et al., 2009).

A first step in understanding the relationship between self-efficacy and performance is to better understand how team characteristics influence the motivational processes in individuals. In particular, how do team characteristics moderate the influence that motivational states have on goal striving? Consistent with the well-supported view that

behavior is a function of the person and the environment, the current study builds upon Chen and Kanfer's (2006) *Integrative Theoretical Model of Individual and Team Motivation*.

Specifically, in order to better understand factors that influence the relationship between self-efficacy and effort, situational factors which may enhance or impede self-efficacy's motivational effect on team members' effort need to be considered.

Self-Regulation and Self-Efficacy

Existing theories of motivation can provide insight into the situational factors which may influence action team member motivation. Motivation encompasses people's decisions about what goals to pursue, the amount of effort they put towards those goals, and how long they are willing to invest in pursuing their goals (Diefendorff & Chandler, 2010). Over the years, researchers have addressed the question of motivation from many different perspectives which has led to the development of comprehensive theories of motivation. Theories of self-regulation fall within the realm of these more comprehensive theories and center around how individuals pursue goals (Vancouver, 2000). Self-regulation includes goal establishment, the planning process for goal pursuit, striving toward or maintaining a goal, and revising goals (Austin & Vancouver, 1996).

Bandura's Social Cognitive Theory (Bandura, 1986) models mechanisms operating within individuals which influence their self-regulation of motivation. One of these mechanisms is self-efficacy, which is a person's assessment of his or her capability to perform in a certain domain (Bandura, 1997). Levels of self-efficacy have been demonstrated to influence the goals individuals choose to pursue, as well as the effort and persistence they will exert when faced with challenges (Wood & Bandura, 1989). Self-

efficacy is a means to not just understand, but potentially influence people's motivation (Gist & Mitchell, 1992; Vancouver & Day, 2005). Unfortunately, there is still not a consistent understanding of how self-efficacy is related to motivation (Vancouver, More, & Yoder, 2008).

While much of the research conducted on the relationship between self-efficacy and motivation has demonstrated a positive relationship, enough research has shown inverse and nonmonotonic relationships (Diefendorff & Chandler, 2010; Vancouver et al., 2008) to warrant further research investigation. Bandura and Locke (2003) argue that there is long-standing meta-analytic support for the notion that self-efficacy positively contributes to an individual's level of effort and performance. Yet, several research studies (see Vancouver et al., 2008) have shown negative relationships with self-efficacy and performance outcomes. For example, Vancouver and Kendall (2006) found a negative relationship between self-efficacy and resource allocation during a study task. This variety in research outcomes supports the idea that self-efficacy may be a precondition for motivating desires into actions, but it may not be sufficient to motivate behavior (van Knippenberg, van Knippenberg, DeCremer, & Hogg, 2004). Given the complexity of human motivation, there is great opportunity to build upon these previous studies and further examine variables which may help explain these inconsistent results.

Understanding situational influences that change the relationship between self-efficacy and motivation could provide better insight into why team members demonstrate varying levels of effort. Effort is one aspect of motivation that is often apparent to outside observers, and is especially important for team members relying upon one another to achieve

a shared goal. Understanding what variables modify the relationship between self-efficacy and effort will not only provide more robust models of motivation, it will allow organizations to develop tools to maximize the motivation of their employees. In an action team setting, one of the variables modifying the relationship between self-efficacy and effort may be characteristics of the team itself.

Team Quality

Motivation is dynamic and can be influenced by both individual and situational factors (Diefendorff & Chandler, 2010). One situational factor which may affect motivation is social influence. The field of social psychology was built around the premise that individuals often behave differently because of the presence of others. Indeed, the notion that the presence or the mere suggestion of the presence of others can influence individuals' behavior has been studied since the late 1800's (Zajonc, 1965). Teams are an aspect of an individual's environment which can affect individuals' attitudes, beliefs, and behaviors and may be one of the strongest direct influences on behavior for those working in a team-based work environment (Hackman, 1992). In Diefendorff and Chandler's (2010) comprehensive model of motivation, teams are considered a proximal, external influence on an individual's pursuit of a goal, both directly and through proximal, internal influences, such as expectancy. Several theories within psychology explain the ways in which groups influence the behavior of individuals, in particular, how the presence of others can influence the amount of effort an individual puts towards the successful completion of a task (e.g., Karau & Williams, 2001; Köhler, 1927; Zajonc, 1965). Research throughout the years has demonstrated that teams can both motivate and demotivate individuals. For example, the Köhler motivation gain effect

demonstrates how the presence of another individual or group of individuals can increase the amount of effort someone puts forth compared to that which he or she would exert on his or her own (Köhler, 1927). Contemporary researchers have generally attributed this change in performance to two factors. The first reason why individuals may increase their effort when working within a group is that they revise their personal performance goals based upon social comparison processes such that individuals use those in the group either as a benchmark for the performance necessary for positive evaluation or as a cue to indicate competition (Kerr & Hertel, 2011). The second proposed reason for increased effort is the individual's assessment that he or she is indispensable to the team's success (Kerr & Hertel, 2011). These reasons provide insight into the different ways the presence of others can influence motivation.

One of the underlying psychological mechanisms used to explain motivation gains and losses, such as the Köhler motivation gain, stems from classic motivation models, but can largely be explained by Vroom's (1964) conceptualization of Expectancy Theory. Expectancy Theory asserts that motivational force is a function of expectancy, instrumentality, and valence. The amount of effort one exerts can be explained by perceptions of the likelihood that effort will lead to performance (i.e., expectancy) and performance will lead to a desired outcome (i.e., instrumentality), as well as how desirable the outcome is to the individual (i.e., valence). Expectancy is of particular interest when studying motivation in teams, because it represents the beliefs that one's effort will result in the accomplishment of desired performance goals and attainment of desired outcomes. Expectancy can be influenced by personal factors, such as self-efficacy, and situational factors, such as the performance of others (Hollenbeck & Klein, 1987). Teams introduce

some of these additional situational factors. Thus, in order for expectancy to be high, self-efficacy alone is not sufficient. Individuals on teams must see those around them dedicating effort to achieving goals.

In action teams, team members are highly dependent upon one another to accomplish performance goals. Performance goals cannot be accomplished through the sole effort of one individual. This dependence upon others influences the amount of control any one team member has on performance outcomes. The team collectively controls the performance outcomes of the team. It is expected that when individuals believe they are a part of a strong team, one that displays strong task-based ability and demonstrates collective-oriented behaviors, they will believe the team has a good chance of success and will ultimately demonstrate effort; however, if they are members of a low quality team, they will withhold effort. If individuals are on a team which they believe has a limited chance to succeed and/or their effort will not help contribute to team success, they may hesitate to “waste their time” exerting effort. They may demonstrate low effort, because they believe their effort will not change the outcome of the situation (Snyder, Smoller, Strenta, & Frankel, 1981).

Psychologically, this pattern of behavior is often called learned helplessness. Learned helplessness theory (e.g., Seligman, 1975) posits that when individuals (or animals) believe they have limited ability to control the outcomes of a situation, any effort or behavior on their part will be ineffective, so they choose to no longer act on the situation. Individuals’ perceptions of how influential their effort will be to team outcomes will likely influence the amount of effort they choose to exert on a task. These expectancy perceptions of team members may be influenced by indicators of how likely the team is to succeed. There is

reason to believe that the quality of a team affects the degree to which team members' self-efficacy translates into motivated effort, because team quality likely influences perceptions that effort will lead to desired performance. Characteristics which indicate the quality of a team are likely salient to each member of a team. Stimuli that are present for all members of a team or group are considered ambient stimuli (Hackman, 1992). As stated earlier, Chen and Kanfer's (2006) *Integrative Theoretical Model of Individual and Team Motivation* proposed that ambient inputs are positively related to motivational processes in the individual. Team quality is a key ambient input that may influence an individual's willingness to strive for a goal. High quality teams possess the knowledge, skills, abilities, and other characteristics (KSAOs) necessary for task performance, cooperation, and coordination necessary to achieve team performance goals. When people belong to high quality teams, they are presumably faced with less stress, task obstacles, and failures than those who are in lower quality groups. By understanding team quality, clarity can be gained as to why past research has demonstrated variation in the strength and direction of the relationship between self-efficacy and motivation.

Team members are likely to consider different aspects of team performance and processes when they judge the quality of their team. Similar to job performance, performance on a team is comprised of two facets, a task element and a teamwork element. Morgan, Salas, and Glickman's (2001) proposed model of team development describes and confirms through factor analysis two types of "activity tracks" for teams. The first activity track is task-based and includes the technical aspects of the job. The second activity track is team-related and includes interactions among teammates, cooperation, and coordination (i.e.,

activities often associated with the term “teamwork”). Team members perceive task- and team-related activities and distinguish between them when considering team performance processes (Morgan et al., 2001). Task-based ability encompasses the technical aspects of a team’s work such as processes, procedures, task-based knowledge, interactions with equipment, and generation of solutions for problems (Morgan et al., 2001). This task-based ability involves activities that are task-specific, such as the physical ability necessary to accomplish a task requiring physical strength and endurance to successfully complete the task. It is likely that both aspects of team quality influence individuals’ perceptions of the likelihood of their teams reaching performance goals, which will ultimately influence each team member’s self-regulation of effort. Distinguishing between the task-based and teamwork-based ability of a team helps to clarify how team quality influences the translation of self-efficacy into motivated effort.

While task-based ability is important for teams, cooperation and coordination among teammates are also essential for team performance. For success on highly interdependent tasks, team members must effectively collaborate to reach their goals (Wageman, 1995). Driskell, Salas and Hughes (2010) described the tendency to work collectively in a team setting as collective orientation. According to Driskell et al. (2010), an individual with a collective orientation, “... works well with others, seeks others’ input, contributes to the team outcome, and enjoys team membership” (p. 317). Individuals who display collective-oriented behaviors have a positive influence on group effectiveness, particularly for teams working on challenging tasks which require a high level of interdependence for success (Driskell & Salas, 1992). One of the benefits of teams comprised of individuals who display

teamwork behaviors is the opportunity to pool resources and information (Driskell & Salas, 1992). Having a substantial pool of resources and information will increase team member perceptions that they have the resources they need to be successful.

Team Quality, Self-Efficacy and Interaction Processes

In sum, a significant amount of research has demonstrated that people high in self-efficacy will establish and commit to more difficult goals, and in the face of challenges will exert additional effort and even take on new challenges when compared to individuals with low self-efficacy (Vancouver & Day, 2005). However, while individual self-efficacy may predispose an action team member to dedicate effort to a task, there are environmental variables which could influence the strength of this relationship in an applied setting. If a team is lacking either the task-based ability or the teamwork-ability needed to accomplish a task, team members are likely to realize that their team's deficiencies will hamper their own individual effort from having a positive influence. Individuals may initially dedicate effort to a task but decrease their effort when it does not produce results. As individuals begin to work with a team, they will gain more insight into the team's ability which will influence the level of expectancy an individual experiences, as well as provide insight into their perceptions of how much control they have over team outcomes. Individuals who believe they lack control over team outcomes may decide to reduce the amount of effort they dedicate towards the team's goal.

From the standpoint of self-regulation and expectancy theories, one would expect individuals to self-regulate the amount of effort they put forth when characteristics of the team influence their expectancy (i.e., perceptions that their effort will lead to team

performance). While a team which is less skilled at the task-based aspects of a challenge may be able to compensate with different strategies or different levels of cooperation among team members, the task-based ability of a team would likely be salient to each member and could influence individuals' perceptions of the likelihood of team success and ultimately influence the level of effort they are willing to exert. Therefore, we propose that the task-based ability of team will affect the relationship between team members' self-efficacy and the level effort they dedicate to a task.

Hypothesis 1. The strength of the relationship between team members' self-efficacy and the amount of effort they exert will vary by the average task-based ability of the team such that team members' self-efficacy and the amount of effort they exert will be more strongly related when the task-based ability of the team is higher and more weakly related when the task-based ability of the team is lower.

Similarly, when individuals are members of a team comprised of individuals demonstrating high levels of teamwork ability through collective-oriented behaviors, they may experience less uncertainty and have a better conceptualization of the task they need to accomplish. This experience is likely to increase perceptions that the team will successfully complete the task. Therefore, it is expected that individuals' perceptions of the level of teamwork behavior demonstrated by members of their team is a salient environmental variable which will influence the degree to which their self-efficacy is translated into motivated effort.

Hypothesis 2. The strength of the relationship between team members' self-efficacy and the amount of effort they exert will vary by the average teamwork ability of the

team such that team members' self-efficacy and the amount of effort they exert will be more strongly related when the level of teamwork ability on the team is higher and more weakly related when the overall teamwork ability of the team is lower.

Method

Participants

This study was conducted using 62 action teams comprised of 13-16 men working on a physically demanding, complex task in a high stress environment. Participants ($N = 837$) were U. S. military soldiers enrolled in a three week assessment center designed to identify individuals with the potential to attend and succeed in subsequent specialized training. The age of participants ranged from 18 to 47 years ($M = xx.xx$, $SD = x.xx$).

Data were collected during five administrations of the assessment center. Only teams in which there were data for thirteen or more individuals were included in this study to reduce teams experiencing unique circumstances, such as extreme attrition. Therefore, one team of four participants was removed from the dataset which resulted in the 62 teams studied.

Design and Procedure

Participants completed both individual and team tasks during the three week assessment center. The tasks were designed to provide opportunities to evaluate participants' relevant knowledge, skills, and other attributes. Individuals were observed at all times by trained assessors. At the start of the assessment center, the participants completed a series of self-assessments in a computer lab, including a survey designed to measure attributes relevant to working in teams, such as self-efficacy for succeeding in the team tasks they were

required to complete during the assessment center. Throughout the assessment center, they participated in challenging physical ability assessments, including the Army Physical Fitness Test (APFT). Given the significant physical challenges that participants encountered throughout the assessment center, many individuals who were not prepared or not physically capable of the demands of the program quit during the first week of assessments. As the assessment center progressed, the individuals who remained participated in highly demanding team tasks. These tasks required teammates to work together in a high stress environment on physically demanding, complex assignments that required high levels of cooperation and problem-solving for success – for example, moving large, awkward equipment for long distances. Subject matter experts assigned individuals to teams based upon multiple variables (e.g., rank, occupation in military, etc.) to ensure a comparable distribution of leadership and military experience on each team. After teams successfully completed or abandoned their assigned task, individuals assessed themselves and their teammates on a variety of constructs, including those examined in this study. Also, after the conclusion of the assigned team task, trained assessors rated individuals on pre-determined attributes which were expected to be demonstrated during the team task.

This study included one predictor, two moderators, and one criterion. The correlations and reliabilities for the measures used in this study are reported in Table 1. Data from several different sources were used in this study to avoid bias due to common-method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). As described next, self-reports were used to assess individuals' self-efficacy. An objective physical fitness test was used to determine physical ability. Peer ratings were used to measure teamwork ability, because

compared with external evaluators, teammates often have more opportunities to observe each other's interpersonal behaviors (Murphy & Cleveland, 1995). The level of effort each individual exerted on his or her team's assigned task was rated by subject matter experts at the conclusion of the team task. In some cases, single-item measures were used. Although longer measures are preferred from a psychometric standpoint, the mentally and physically demanding schedule of this assessment center mandated the use of single item measures for some scales to reduce the negative effects of rater fatigue.

Measures: Individual-Level Variables

Self-Efficacy. Vignovic and Thompson's (2008) nine-item Self-Efficacy scale (alpha = .XX) was used to assess each participant's level of self-efficacy for succeeding during the assessment center as a whole, as well as the high stress team tasks that were part of the assessment center. Participants were asked to use a Likert-type scale with response options ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Sample items include, "I know I am going to make it through [Assessment Center]" and "I think I will do well during team events." This scale was administered in a proctored computer lab at the start of the assessment center.

Effort. Immediately following the conclusion of the team's assigned task, a single item was used by trained observers to assess the level of effort each individual put forth during the team task. Response options were provided on a Likert-type scale from 1 (*Poor*) to 5 (*Outstanding*) with behavioral-based anchors. For example, a rating of Outstanding was anchored by the statement, "He went way beyond what was expected and picked up the slack

of other team members.” Raters were trained before the start of the assessment center to ensure they understood the measures and had a consistent understanding of the anchors.

Measures: Team-Level Variables

In addition to characteristics of individuals, characteristics of teams were also included in this study. The individual-level physical ability and teamwork ability scores were aggregated to the team level and considered shared team constructs. To ensure that it was appropriate to aggregate individual-level measures of these constructs, within-group inter-rater agreement (r_{wg}) was calculated. Within-group inter-rater agreement compares the within-team variance to an expected variance to determine whether the within-team variance is less than what would occur by chance (Klein & Kozlowski, 2000). For each team-level variable, within-group inter-rater agreement (r_{wg}) was calculated for each team and those values were then averaged to get a mean r_{wg} value for the sample of teams used in this study. The mean within-group inter-rater agreement (r_{wg}) was above .70, which according to Klein and Kozlowski (2000) is the cut-off commonly used for determining the appropriateness of aggregating individual-level data.

Physical Ability. All individuals took the Army Physical Fitness Test (APFT) to determine their levels of physical ability. This assessment required participants to demonstrate the maximum number of push-ups and sit-ups of which they were capable and also complete a two-mile run as fast as they were able. Individuals’ raw data for each of these measures were transformed into a score ranging from 0 to 100, based on predetermined Army APFT performance scales. The scores for each portion of this assessment were then summed to result in a total score ranging from 0 to 300, with 300 being the maximum

possible score. For this study, teammates' total APFT scores were averaged to attain a team-level measure of physical ability. The mean inter-rater agreement supported aggregating the individual scores to the team-level. ($r_{wg}=0.XX$).

Teamwork Ability. At the completion of the team tasks, individuals conducted a computerized assessment on each of their teammates. One of the attributes measured during this assessment was the ability to work collectively in a team setting. Peers can provide important insight into performance, because of the frequency of interaction, the close working relationship, and the opportunity to observe task and relationship behaviors (Murphy & Cleveland, 1995). Teamwork ability was measured by a single item with a Likert-type scale with response options 1 (*Poor*) to 5 (*Outstanding*). The item was, "How well has each teammate shown he is able to: work on a team for a greater purpose than himself; be dependable and loyal; work selflessly with a sense of duty; respect others and recognize diversity?" The ratings each individual on a team received from all other team members were averaged to provide each individual with a rating of teamwork ability. Teammates' teamwork ability scores were then averaged to attain a team-level measure of teamwork ability. The mean inter-rater agreement supported aggregating the individual scores to the team-level. ($r_{wg}=0.XX$).

Data Analysis

The model being examined in this study incorporates variables from both the team level (i.e., team physical ability and teamwork ability) and the individual level (i.e., self-efficacy and effort). To examine how variability in the relationship between self-efficacy and effort may be accounted for by the task-based ability and teamwork ability of teams,

hierarchical linear modeling (HLM) with intercepts- and slopes-as-outcomes model was used (Raudenbush & Bryk, 2002). In order to increase the interpretability of results and reduce multicollinearity with the Level 1 predictor, self-efficacy was centered around the group mean. For the Level 2 predictors, task-based ability and teamwork ability were grand mean centered (Hofmann & Gavin, 1998).

Results

A preliminary analysis, a fully unconditional model, was used to ensure that there was sufficient variability at Level 1 and Level 2 to warrant further analyses (e.g., Nezlek, 2001; Raudenbush & Bryk, 2002). The fully unconditional model has no term, other than the intercept, included at any level (Nezlek, 2001). Results from this analysis indicated that $x\%$ of the variability in participant effort was between teams ($\tau_{00} = x, z = x, p < x$) and $x\%$ was within people ($\sigma^2 = x, z = x, p < x$). Based on the variability in the fully unconditional model, further analyses were justified.

A summary of the results of the multilevel analysis is provided in Table 2. Hypothesis 1 predicts that the task-based ability of a team, operationalized in this study as physical ability, will influence the relationship between individuals' self-efficacy and effort such that the higher the level of teamwork ability on a team, the stronger the positive relationship between self-efficacy and effort will be. Results indicated that for the direct relationship between self-efficacy and effort, individuals with high self-efficacy scores tended to report higher levels of effort ($\gamma_{10} = .xx, t = x.xx, p < .xx$). Although there were no size differences in the average effort ratings between teams ($\gamma_{01} = .xx, t = .xx, p = .xx$), there was a significant self-efficacy and task-based ability interaction ($\gamma_{11} = .xx, t = x.xx, p < .xx$),

such that it was the people with high self-efficacy in teams displaying the highest task-based ability who reported the highest levels of effort (see Figure 1). This model accounted for x% of the between-team variability and x% of the within-team variability in effort.

Hypothesis 2 predicts that the teamwork ability on a team will influence the relationship between individuals' self-efficacy and effort such that the higher the level of teamwork ability on a team, the stronger the positive relationship between self-efficacy and effort will be. Individuals with high self-efficacy scores tended to report higher levels of effort ($\gamma_{10} = .xx$, $t = x.xx$, $p < .xx$). Although there were no size differences in the average effort ratings between teams ($\gamma_{01} = .xx$, $t = .xx$, $p = .xx$), there was a significant self-efficacy and task-based ability interaction ($\gamma_{11} = .xx$, $t = x.xx$, $p < .xx$), such that it was the people with high self-efficacy in teams displaying the highest task-based ability who reported the highest levels of effort (see Figure 2). This model accounted for x% of the between-team variability and x% of the within-team variability in effort.

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Table 1

Descriptive Statistics and Intercorrelations among Study Variables

Measured Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Self-Efficacy	x.xx	.xx	–			
2. Effort	x.xx	.xx	.xx	–		
3. Physical Ability	x.xx	.xx	.xx	.xx	–	
4. Teamwork Ability	x.xx	.xx	.xx	.xx	.xx	–

Notes. *N* = xxx.

**p* < .05 (two-tailed).

***p* < .01 (two-tailed).

Table 2

Results of Hierarchical Linear Modeling Analyses of the Moderating Effect of Task-Based Ability and Teamwork Ability on the Relationship between Self-Efficacy and Effort

<i>Fixed Effects</i>	<i>Unstandardized Coefficients</i>	<i>Standard Error</i>	<i>t Ratio</i>
<i>Model for Team Means, β_0</i>			
Intercept, γ_{00}	x.xx	x.xx	x.xx
Physical Ability, γ_{01}	x.xx	x.xx	x.xx
Teamwork Ability, γ_{02}	x.xx	x.xx	x.xx
<i>Model for Self-Efficacy – Effort Slopes, β_0</i>			
Intercept, γ_{10}	x.xx	x.xx	x.xx
Physical Ability, γ_{11}	x.xx	x.xx	x.xx
Teamwork Ability, γ_{12}	x.xx	x.xx	x.xx
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	<i>χ^2</i>
Team Mean, μ_{0j}	x.xx	xxx	xxx.xx
Self-Efficacy-Effort slope, μ_{1j}	x.xx	xxx	xxx.xx
Level-1 effect, r_{ij}	x.xx	xxx	xxx.xx

Notes. $N = xxx$.

* $p < .05$

** $p < .01$

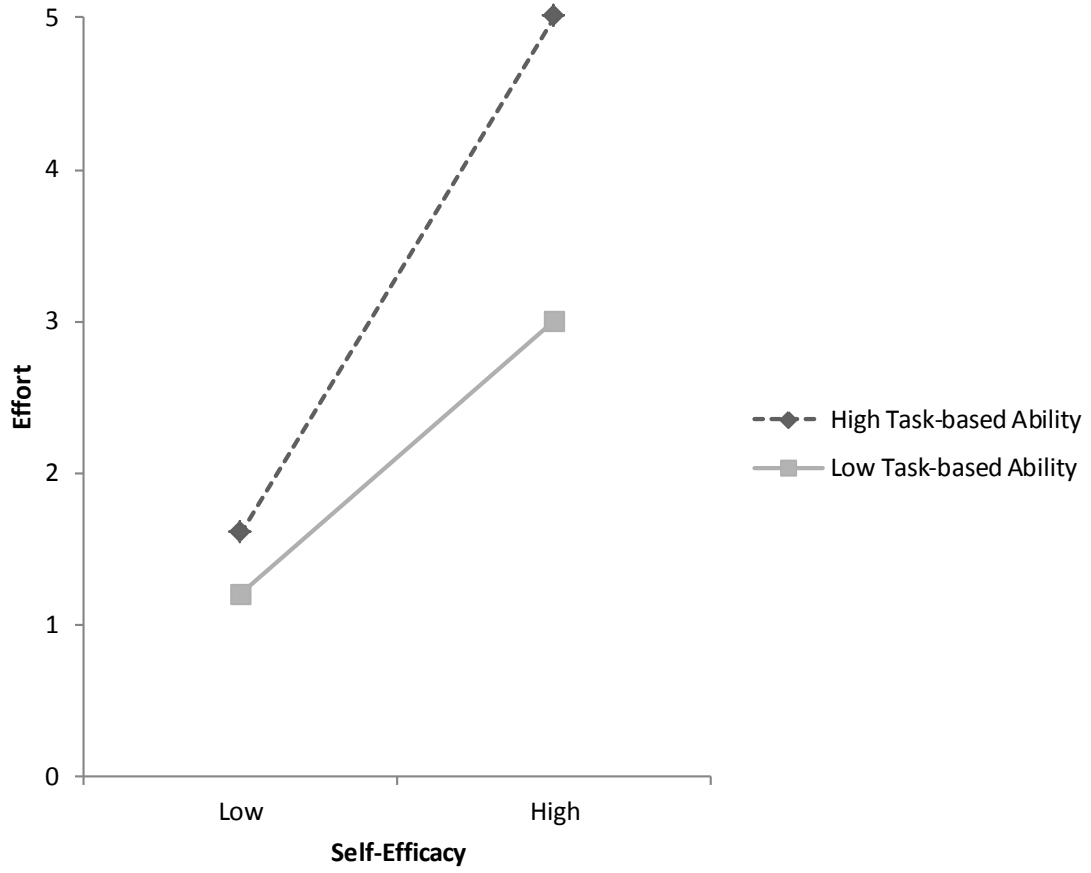


Figure 1. *Interaction of Self-Efficacy and Team Task-Based Ability on Effort*

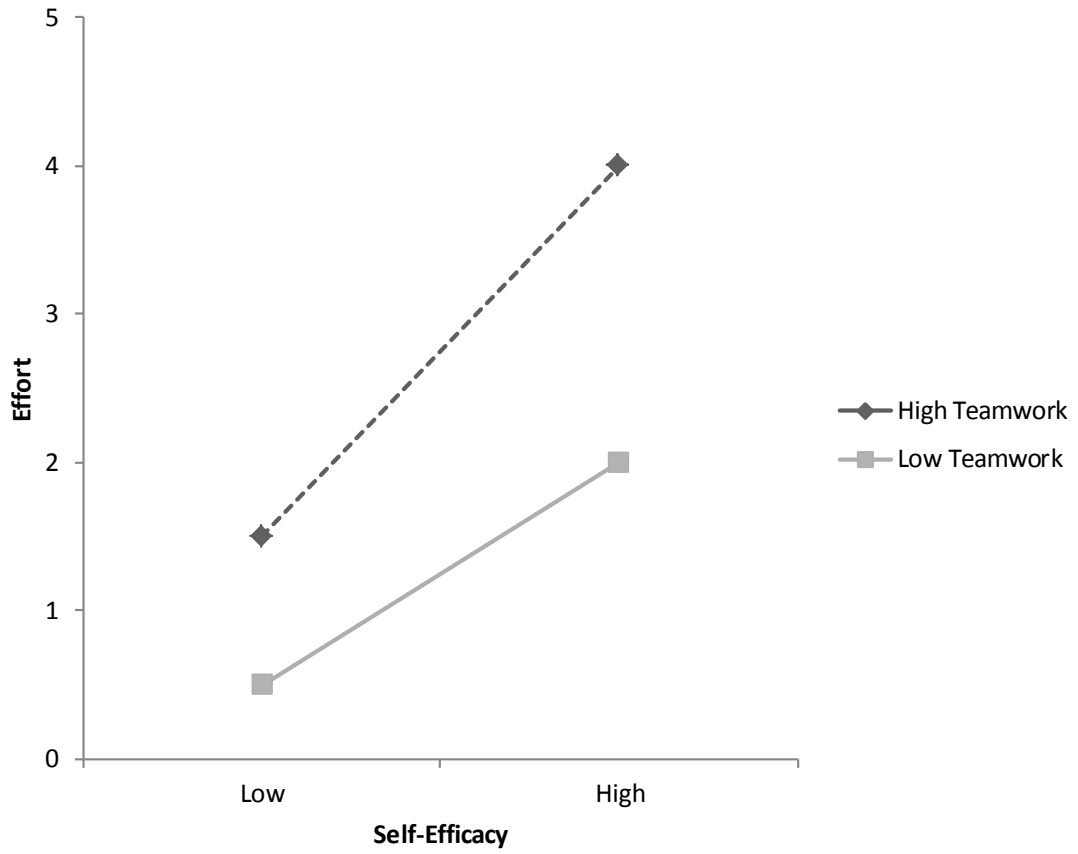


Figure 2. *Interaction of Self-Efficacy and Team Teamwork Ability on Effort*

Appendix

Appendix A

Self-Efficacy for [Assessment Center] & High Stress Team Events Scale

(Vignovic & Thompson, 2008)

Directions: Based on your own thoughts and behaviors, please answer how much you agree or disagree with each of these statements. Please answer as honestly as you can.

Response options:

- Strongly Disagree
- Disagree
- Neither Agree/Disagree
- Agree
- Strongly Agree

Items:

10. I am strong enough for [assessment center].
11. I will be able to contribute to my team's success.
12. I have the skills I need to make it through [assessment center].
13. I think I will do well during team events.
14. I am physically capable of what I will be asked to do during [assessment center].
15. I know I am going to make it through [assessment center].
16. I am smart enough to make it through [assessment center].
17. I think my team will like me.
18. Even if my team doesn't like me, I think they will realize how much I will help them.

Appendix B

Effort Scale

Response Options:

- Outstanding-His personal effort stood out above all others and was the driving force of the team
- Above Average-Actively participated throughout the event
- Average-Participated
- Below Average-Partially participated
- Poor-Did not participate

Appendix C

Teamwork Ability Scale

Response options:

- Poor –Didn't work well on a team; Couldn't be depended upon; Selfish; Disrespectful and unsupportive of others
- Below Average
- Average – Usually worked well on a team; Could usually be depended upon; Generally thoughtful of others; Respectful and supportive of most teammates
- Above Average
- Outstanding – Worked exceptionally well on a team; Could always be depended upon; Put others ahead of himself; Always respectful and went out of his way to support others

Item:

Team Player: How well has each teammate shown he is able to: work on a team for a greater purpose than himself; be dependable and loyal; work selflessly with a sense of duty; respect others and recognize diversity?