

CRITERION VALIDATION OF THE TEAMWORK SITUATIONAL  
JUDGEMENT TEST

by

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## ABSTRACT

The demand for agile and effective teams has grown considerably for the past few decades. New tools are necessary to help form and develop efficient and high performing teams. Choosing team members based on their assessed level of teamwork is one common approach for successful team staffing. This study was aimed at adding criterion validation to a previously developed and validated teamwork measure, the Teamwork Situational Judgement Test (Teamwork SJT). The Teamwork SJT, along with the Teamwork Knowledge, Skills, and Abilities test (Teamwork KSA) as a comparison measure, was given to participants ( $n = 143$ ) from Amazon's Mechanical Turk. The criterion was individual teamwork performance, measured by a behavioral rating scale and the Comprehensive Assessment of Team Member Effectiveness (CATME). Results show that the Teamwork SJT can predict individual levels of performance better than the comparison measure. Successful validation of the Teamwork SJT means that a practical selection and development tool would be available to both organizations and researchers who are interested in teamwork.

## TABLE OF CONTENTS

LIST OF TABLES .....	iv
CHAPTER 1: INTRODUCTION .....	1
Team Effectiveness .....	2
Individual Differences .....	4
Teamwork Models .....	6
Teamwork Tests .....	11
Current Study .....	13
Hypotheses and Research Questions .....	15
CHAPTER II: METHOD .....	18
Measures .....	18
Participants and Procedure .....	20
CHAPTER III: RESULTS .....	23
Hypotheses and Research Questions .....	26
CHAPTER IV: DISCUSSION .....	29
Findings .....	29
Limitations .....	32
Future Directions .....	33
Conclusions .....	34
REFERENCES .....	35
APPENDICES .....	41
APPENDIX A- TEAMWORK SITUATIONAL JUDGEMENT TEST .....	42
APPENDIX B- TEAMWORK BEHAVIOR SCALE .....	61
APPENDIX C- INDIVIDUAL PERFORMANCE MEASURE .....	62
APPENDIX D: IRB APPROVAL .....	64

## LIST OF TABLES

Table 1. Taxonomy of team processes.....	<b>Error! Bookmark not defined.</b>
Table 2. Definitions for Team Type .....	20
Table 3. Descriptive Statistics for Measures.....	24
Table 4. Descriptive Statistics for Team Characteristics.....	24
Table 5. Dunn's Post Hoc Comparisons for Team Type.....	25
Table 6. Dunn's Post Hoc Comparisons for Team Size .....	26

## CHAPTER 1: INTRODUCTION

Teams have been an increasingly popular form of work structure over the past few decades. Nearly half of the U.S. organizations surveyed said they had some form of teams in their organization ( Devine et al., 1999). That was 20 years ago. Today, teams are even more commonplace, and they are becoming more complex. In 2016, 92% of companies said that their primary concern was to redesign the structure of their organization to work with complex networks of teams et al., 2016). The National Association of Colleges and Employers reported that ability to work in a team is the top preference of businesses (78%) for college graduates (JobStreet, 2017). Mathieu et al. (2019) state clearly that “Teams have become the basic building blocks of present day organizational designs...” (p. 18).

Teams are now put in a new light for organizations: survival. Organizations are increasingly feeling the pressure to be more productive, be more innovative, and be more agile. These are the same characteristics organizations and researchers use to describe team outcomes. Teams and work groups are sought out to be one of many solutions to a changing economy and work force (e.g. Levine & Moreland, 1990). They seem to be a natural fit for the complexity of the issues surrounding globalization, emerging technology, and generational shifts in workers. It appears that organizations are increasingly viewing teams a necessary work design rather than an optional one. “Teams enable organizations the flexibility to compose and reconfigure their team memberships

to align members' competencies with task demands ... and the research literature has expanded exponentially in the past two decades" (Mathieu et al., 2019, p. 18).

Even though research focusing on teams is not a new concept for academics, understanding its importance and function is steadily gaining the attention of organizational leaders. Originally, social psychology began the interest in terms of small group interpersonal interaction. Then, organizational utilization of teams led to a shift in team research. As organizations began craving tools for understanding and predicting team performance, organizational psychology became more interested in studying in the effectiveness of teams (Levine & Moreland, 1990).

### **Team Effectiveness**

While the proliferation of "team effectiveness" research is notable, the term itself is rarely concretely defined or agreed upon. Team effectiveness is seen as a process (e.g. Marks et. al, 2001), an outcome (e.g. Neuman & Wright, 1999), or some combination thereof. Of those who view it as an outcome, team effectiveness might even be used interchangeably with "team performance." The problem is that effectiveness as solely an outcome ignores the social context within teams. Outcomes may include effects from external sources or events outside of the team's control. LePine et al. (2000) remedy this with their team effectiveness model.

LePine et al. (2000) define team effectiveness as the combination of team performance (task accomplishments as an output), team maintenance (interpersonal processes), and team member satisfaction. Their definition is based on a widely used model (Hackman, 1983) . The team processes and team outcomes are generally researched with inputs, or antecedents, that stem naturally from an input-process-output

(IPO) effectiveness model, originally conceptualized by McGrath (1964). LePine et al. model does exactly this, too. This model, like the Motowildo et al. (1997) theory, will be especially relevant for this study with their focus of individual differences and behaviors creating the subsequent individual performance. The IPO foundation of the LePine et al. model lends to the idea that individual characteristics are considered the inputs, teamwork is considered the process, and team effectiveness is the outcome.

This team effectiveness model breaks team processes into two major components: taskwork and teamwork. Taskwork contains the technical and unique aspects of position; it is the technical competencies developed in the organization's training programs. Teamwork, the focus of this study, is the socioemotional and psychological environment that an individual contributes to that enables technical work to be done. Taskwork and teamwork are therefore analogous to the task performance/ contextual performance theory of job performance proposed by Motowildo et al. 1997. In this way, individual differences are conceptually related to inputs that influence taskwork and teamwork. They suggest that an individual's personality is related to teamwork and his or her task abilities are related to taskwork. Each individual then has unique contributions to the team so that team composition directly links to team performance in organizations (e.g. Bell, 2007).

Now that team effectiveness and performance are better understood by researchers, how can organizations utilize this research to build the most effective teams for themselves? Often times, it is through the careful creation and subsequent development of team members (LePine et al., 2000; Stevens & Campion, 1994).

Selection and development are generally implications that are mentioned at the end of an

article on team performance, rarely as a main consideration. Only relatively few articles focus on staffing in team (e.g. Mathieu et al., 2014; Neuman & Wright, 1999; Stevens & Campion, 1999). However, LePine et al. do find two main approaches for those articles that are centered on staffing: finding individual differences in personality or in teamwork specific knowledge, skills, and abilities (KSAs).

### **Individual Differences**

Personality may be a significant predictor of team effectiveness (Neuman & Wright, 1999). Personality has shown to be consistently related with team performance in a meta-analysis by Bell (2007). It revealed team conscientiousness, openness to experience, collectivism, and a member preference for teams are all positively related to team performance. Extraversion, emotional stability, and general mental ability held mixed support for team performance. Minimum amounts of agreeableness are far more detrimental in field settings. Overall, Bell (2007) recommends teams should be made of conscientious and collectivist individuals who prefer to work in teams.

Mount et al. (1998) also found agreeableness to be an important predictor for jobs involving cooperative and interdependent work. All of the big five personality factors were positively related to performance in jobs involving interactions with others. Extroversion was found to be more important for teams while conscientiousness is a better predictor of performance for work that is not in teams. Similarly, Agreeableness is needed for interpersonal skills and conscientiousness is need for task completion (Neuman & Wright, 1999).

Considering that field teams have more physically related tasks than teams in labs (Bell, 2007), a meta-analysis by Devine & Phillips (2001) found that cognitive ability



was a better predictor of team performance in lab settings than in field setting. They suggest that potential moderators of this effect could be task complexity, degree of physical activity, and task familiarity. The mean level of cognitive ability was a better predictor of team performance than the cognitive ability of the least or most intelligent member.

These studies, with all of their complexities, exemplify critiques LePine et al. (2000) express. First, team level aggregation is not always best expressed as a group mean. Other methods might represent performance better. The most predictive combination of group level aggregate could be the highest score, the lowest scores, or the amount of variance within a group. Second, multiple team processes, individual differences of personality, and performance requirements must be considered. To develop selection model that best represents taskwork and teamwork, multiple variables must be considered simultaneously at both the individual and team level. This is understandably not practical for either researchers or organizations, as they would have to develop their own models of team performance for each team. The model would then have to be examined each time a team member changed, because the composition and dynamic of the entire team would change, too. Instead of basing staffing decisions on numerous individual inputs, looking at individual differences based on KSAs of teamwork itself may be more effective.

Assessing members based on individual KSAs in general proves to be the best predictor of team member performance (Stevens & Campion, 1994) and is currently the most popular way. Cognitive ability is commonly used as a general predictor of individual performance, but two different meta-analyses suggest that its effects on teams

are less pronounced in field settings (Bell, 2007; Devine & Philips, 2001). They suggest it is an underlying factor contributing to other KSAs, like skills for example. Social skills are most important in highly interdependent groups where the probability of conflict is higher (Morgeson et al., 2005). A study of steel mill workers found that in teams, contextual and task performance may not be separate from one another. It was found that three different measures of social skills all predict contextual performance, indicating the importance of interpersonal skills. Additionally, gender has also been found to interact with interpersonal skills, as women display higher levels of interpersonal attributes (e.g. Hough et al. 2001; Mumford et al. , 2008). Other KSAs were also found to contribute to teamwork, the most notable summary of which will be mentioned next (Stevens & Campion, 1994).

### **Teamwork Models**

Grasping which traits and skills are necessary in teams is only the first step. To build the most effective team, one needs to know the behaviors that stem from these traits and skills. Detecting which behaviors matter the most has spurred numerous helpful frameworks for understanding teams. As discussed, individual differences do predict some amount of team performance. Many organizations either cannot or do not want to select team members by personality, or even cognitive ability testing with its potential for adverse impact. This is especially true because assessing members based on task-specific KSAs prove to be the best predictor of performance (Hunter & Hunter, 1984).

Stevens and Campion (1994) assert that employees on teams must adequately display not just task KSAs but also teamwork KSAs. They synthesized the literature to focus more on effective behaviors in teams, creating a comprehensive framework of

teamwork KSAs and the relationship with individual performance. The authors found two broad dimensions of teamwork KSAs, interpersonal and self-management KSAs, with five sub-categories between them. Interpersonal skills include conflict resolution, collaborative problem solving, and communication. Self-management skills include goal setting and performance management, as well as planning and task coordination. Each of the subcategories have operationalizations for more pragmatic use of their findings which total to 14 specific KSAs.

The teamwork KSAs are a terrific application of how teamwork behaviors have staffing implications. However, the identification of teamwork KSAs does not directly lead to a further understanding of teamwork processes. The teamwork KSAs appear to be more of a list of behaviors and skills rather than a descriptive, theoretical model of teamwork.

Salas et al. (2005) look at the larger picture and explain team competencies with enabling contexts. They move farther along than Stevens and Campion (1999) by adding in team processes. The “big five components of teamwork” defines the dimensions important to team effectiveness across all interdependent team types (Salas et al., 2005). The big five of teamwork include team leadership, mutual performance monitoring, team orientation, back up behaviors, and adaptability. Team leadership involves defining goals and guiding individuals toward goal completion, organizing resources, and facilitating team problem solving. Mutual performance monitoring is tracking performance of yourself and your teammate to ensure that satisfactory progress is being made toward a goal (McIntyre & Salas, 1995). Back up behaviors follow monitoring logically. These behaviors include giving feedback, coaching, and assistance to team members and

completing a task for them when an overload is noticed (Marks et al., 2001).

Adaptability, while sometimes considered an outcome, is considered here a team process. It is the ability to detect deviations from the goal and react accordingly. Team orientation is the one attitudinal dimension in the big five model. Members need to show a preference for working in a team, and therefore they use coordination and evaluation while carrying out group tasks. Bell (2007) found that different facets of team orientation, collectivism and, preference for teams are strongly related to team performance. Each of these five dimensions work with coordinating mechanisms of closed communication loops, shared mental models, and mutual trust. Salas et al. (2005) advocated for a closed loop feedback that includes not only a sender conveying the message for the receiver to interpret, but also the receiver acknowledging its receipt and the sender follows up to confirm the correct interpretation. Shared mental models are an understanding among group members of the goals and processes. Mutual trust in this setting is having faith in the team members to complete their task and have the groups' interest above their own.

Over time, team research has moved from what predicts team performance to why some teams are more effective (Ilgen et al., 2005) from a developmental perspective. One of the most well-known models to business leaders is Tuckman and Jensen's (1965) easily understood developmental stages: forming, storming, norming, and performing. However, psychology researchers prefer other temporal frameworks (Ilgen et al., 2005; Marks et al., 2001) that are more prescriptive rather than just descriptive. Considering the importance of feedback loops and emergent states, linear development models of teams do not account for the complexity of teams. Moving from a linear input-process-output (IPO) understanding of teams to input-mediator-output-input (IMOI) models reflects

broader explanatory power of cyclical models. Teams go through organic cycles repeatedly in their time and have shown to grow and improve over time, not simply end as was suggested originally by Tuckman and Jensen (1965).

The most notable temporal framework (Marks et al., 2001) deals not with individual-level-behaviors, but group processes at the team-level. The recurring phase model assesses taxonomies of team processes and ties them to a model of team effectiveness. Teams can have multiple tasks at one time from multiple goals (McGrath, 1991). Marks et al. (2001) envisions that these tasks bundle into episodes. Outputs from one episode often become the inputs for another episode. Thus, each episode's processes become an IPO model, repeating until the goal for that task is complete. The two main cycling phases are action and transition. The three dimensions (action phase, transition phase, and interpersonal processes) have 10 general activities nested within them. The action phase behaviors are mostly acting to advance the goal and the transition phase behaviors revolve around planning and evaluation. General activities within an action phase include monitoring progress towards goals, systems monitoring, team monitoring and backup, and coordination. Transition activities consist of mission analysis, goal specification, strategy formulation and planning. Spanning through the duration of all action-transition cycles are the interpersonal processes. Interpersonal processes include conflict management, motivating and confidence building, and affect management. Table 1 defines each of the 10 activities.

This model was supported by a meta-analysis (LePine et al., 2008) that found confirmatory results on both a 10 dimension structure and a three factor model. The high correlations of the three are suggestive of one higher order factor. Finally, and most

**Table 1.***Taxonomy of team processes*

Process Dimensions	Definition
<u>Transition Processes</u>	
Mission analysis formulation and planning	Interpretation and evaluation of the team's mission, including identification of its main tasks as well as the operative environmental conditions and team resources available for mission execution
Goal specification	Identification and prioritization of goals and subgoals for mission accomplishment
Strategy formulation	Development of alternative courses of action for mission accomplishment
<u>Action processes</u>	
Monitoring progress toward goals	Tracking task and progress toward mission accomplishment, interpreting system information in terms of what needs to be accomplished for goal attainment, and transmitting progress to team members
Systems monitoring	Tracking team resources and environmental conditions as they relate to mission accomplishment, which involves (1) internal systems monitoring (tracking team resources such as personnel, equipment, and other information that is generated or contained within the team), and (2) environmental monitoring (tracking the environmental conditions relevant to the team)
Team monitoring and backup behavior	Assisting team members to perform their tasks. Assistance may occur by (1) providing a teammate verbal feedback or coaching, (2) helping a teammate behaviorally in carrying out actions, or (3) assuming and completing a task for a teammate
Coordination	Orchestrating the sequence and timing of interdependent actions
<u>Interpersonal processes</u>	
Conflict management	Preemptive conflict management involves establishing management conditions to prevent, control, or guide team conflict before it occurs. Reactive conflict management involves working through task and interpersonal disagreements among team members
Motivation and confidence building	Generating and preserving a sense of collective confidence, motivation, and task-based cohesion with regard to mission accomplishment
Affect management	Regulating member emotions during mission accomplishment, including (but not limited to) social cohesion, frustration, and excitement

This table is adapted from Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy for team processes. *Academy of Management Review*, 26(3), 356–376. <https://doi.org/10.2307/259182>

importantly, they found the model was also predictive of team performance.

A deeper look into the model's relationships by Mathieu and Schulze (2006) found the relationship between quality of the episodic processes and the episodic performance was positive for transition periods. Interpersonal processes were found to have relationships with performance only when the team has high knowledge levels or high-quality formal plans. Action processes were also found to have a positive correlation with team performance and member satisfaction.

### **Teamwork Tests**

Naturally, assessment tools were developed to assess teamwork models (e.g. Aguado et al., 2014; Mumford et al., 2008; Stevens & Campion, 1999). Each one was able to create actionable data from workers for professionals and researchers by showing the connection between teamwork and performance. Assessing teamwork KSAs over more global individual differences has the distinct advantage of being more practical, concise, and comparable to shifting team members. Following the need for practical tools, Stevens and Campion (1999) created a selection test for individual level teamwork KSAs from their own taxonomy (Stevens & Campion, 1994). Some studies have found the test to be sufficiently predictive of performance (McClough & Rogelberg, 2003); others question its limitations. The authors found sufficient reliability ( $\alpha = .80$ ) and validity among their own original validation tests. However, O'Neill et al.'s (2012) study on the Teamwork KSA finds more limitations than strengths. While the test demonstrated convergent validity, it also held limitations of lower reliability (Aguado et al., 2014) and strong correlations to cognitive ability (McClough & Rogelberg, 2003). The test was

even described as being a surrogate for GMA [general mental ability] (O'Neill et al., 2012).

Without discriminant validity from cognitive ability, the test is of little value as a selection instrument. Aside from limitations in validity, no meaningful nomological network or factor structure was found (O'Neill et al., 2012). This suggests the test is a better indicator of overall teamwork knowledge rather than its component KSAs.

Because the need of such a measure conflicts with its numerous shortcomings, Aguado et al. (2014) revised the Teamwork KSA test into the Teamwork Competency test (TWCT). They also found the original Teamwork KSA test had low reliability, deficiencies in content validity, and structural issues. The TWCT still represents the 14 subcompetencies present in Stevens and Campion (1994). The factor analysis found only eight subcompetencies that fit into either a one factor or two factor model. Their testing of the redesign suggests combining conflict resolution and communication competencies, indicating that the original dimensions overlap and addressing a major flaw to the original structure of the Teamwork KSA test. Aguado et al. (2014) admit that since their test is based on the Teamwork KSAs, it does not consider skills associated with other important aspects of teamwork, like shared mental models and trust. Additionally, the test has undesirable results for discriminant validity from impression management and test taking anxieties (O'Neill et al., 2012).

Also trying to rectify the lack of a strong teamwork measure, Mumford et al. (2008) created a situational judgment test (SJT) of role knowledge called the Team Role Test. They found that knowledge of a member's role with a group can be predictive of their performance within that role. The researchers asserted that more effective team



members are able to perceive changes in role requirements and adapt accordingly. Role knowledge is likely a more proximal indicator of role behaviors than distal factors like personality or cognitive ability. The Team Role test does not include major facets of teamwork, like back-up behavior or resource monitoring (Marks et al., 2001; Salas et al., 2005). While conceptually sound, a role knowledge test is good for a development tool but not for selection since understanding your role would have to come after time spent in a team.

### **Current Study**

This study is a continuation and extension of a previous validation effort for the Teamwork Situational Judgement Test (Teamwork SJT; Littlepage et al., 2015). The Teamwork SJT was created to assess the application of teamwork knowledge. Its objective is to capture the most likely behaviors of an individual in a real-world team scenario. With both selection and developmental purposes, this test aims to predict individual teamwork performance of a team member. The SJT seeks to address some of the shortcomings from other teamwork tests.

There are a couple reasons an SJT format was chosen. An SJT asks a participant about how they would respond to real-life, job-related scenarios. An SJT format is the best option because of its possible capture of tacit knowledge or its mediation of constructs (ability and skill dimensions) with job performance (Weekley & Jones, 1999). SJTs may work because they could capture tacit knowledge, an ability to solve real world problems; this type of knowledge is “independent of cognitive ability and derived from experience” (Weekley & Jones, 1999 p. 681). Another perspective is that situational judgement mediates other constructs (ability and skill dimensions) and job performance.

That is, ability and skill may affect performance because it leads to better strategy choices.

There are some specific recommendations put forth by researchers on how to make SJT most effective. Rate-all response formats, which require a for a rating on every one of the possible situation responses, tend to have higher reliability (Campion et al., 2014). Campion et al. (2014) found that SJTs were found to have higher coefficient alphas when developed from a theory-based method rather than critical incidents technique. Additionally, response method also influences coefficient alpha. It is also advised to specifically identify constructs the SJT measures (Christian et al., 2010). These specifications enable other researchers or practitioner's ability to compare and generalize results. They also recommended to use longitudinal designs for predictive criterion-related validations. For contextual performance, SJTs measuring interpersonal, teamwork, and leadership skills have stronger relationships than heterogeneous composite SJTs (Campion et al., 2014). Or to sum up, the content covered in SJTs matters.

The framework laid out by Marks et al. (2001) is the underlying structure of the Teamwork SJT. The 10 general activities described in the framework are each represented in the 10-item Teamwork SJT. This test includes three transition items, four actions items, and three interpersonal items. Each of the questions has 6 response options of potential actions. Respondents judge each of the responses on what they would do by means of a Likert-style scale ranging from very unlikely (1) to very likely (7).

The previous study on this measure has already determined some validity and reliability of the measure (Littlepage et al., 2015). Multiple correlational studies were conducted at a southeastern university. Test-retest reliability is supported by a correlation of .79. Internal consistency was assessed four times and the average  $r$  was .845. Construct validity of teamwork knowledge was supported with both convergent validity with another teamwork knowledge test and discriminant validity from both cognitive ability and personality. Moderately high correlation between the Teamwork KSA and the Teamwork SJT,  $r(112) = .550$ ,  $p < .01$ , supports convergent validity. Discriminant validity was supported in low correlations between cognitive ability: ACT Composite,  $r(86) = .26$ ,  $p < .05$  and Wonderlic Cognitive Ability Quicktest,  $r(82) = .25$ ,  $p < .05$ . The SJT had non-significant correlations to agreeableness, extraversion, conscientiousness, and neuroticism and a moderate correlation to openness,  $r(101) = .33$ ,  $p < .01$  (Littlepage et al., 2015).

### **Hypotheses and Research Questions**

To continue the validation efforts, this study seeks to add criterion validity. Criterion validity will be assessed by examining the predictive power of teamwork knowledge on teamwork performance. There are a variety of ways to measure teamwork performance; individual behaviors and outcomes were chosen here. The CATME-b measures individual teamwork outcomes. A rating scale based on categories of behaviors from Marks et al. (2001) model provides a measure of individual teamwork behaviors. Both measures will be further discussed. These two measures should have a positive

relationship to indicate that they measure related aspects of performance, but they are different enough to represent separate facets of teamwork performance.

H1. Scale ratings of teamwork behaviors will be positively related to CATME-b scores.

H2. The Teamwork SJT will predict teamwork performance.

H2a. The Teamwork SJT will be positively related to scale ratings of teamwork behavior.

H2b. The Teamwork SJT will be positively related to the CATME-b score.

For this test to be of practical use, it should perform as well as or better than existing measures of teamwork, such as the Teamwork KSA. The Teamwork KSA was chosen for its consistency with the Littlepage et. al (2015) study.

H3. Teamwork SJT will explain incrementally more variance in teamwork performance than the Teamwork KSA Test.

H3a. The Teamwork SJT explain incrementally more variance in scale ratings of teamwork behaviors than the Teamwork KSA Test.

H3b. The Teamwork SJT explain incrementally more variance in CATME scores than the Teamwork KSA Test.

Other research questions are also explored in this study. What other factors relate to teamwork SJT scores? Based on the theoretical foundation of the Teamwork SJT, which includes interpersonal processes, gender could affect Teamwork SJT scores. As afore mentioned, females tend to score higher on interpersonal measures (Hough et al., 2001). The Teamwork SJT does cover

interpersonal processes, but it is only a small facet of the test. Gender effects may be too small to detect, but are still viable, nevertheless.

RQ1: Does gender relate to Teamwork SJT scores?

According to Hackman (1987), group design can influence team effectiveness. Other studies have found group size has mixed results for its relationship to team performance (e.g. Fleishman, 1980; Stewart, 2006). Hackman does link elements of group design to processes, knowledge and skill, and strategy. The link from team characteristics to teamwork is not explicit so much as it can be logically derived. Overall group design and structure has not been examined much with teamwork directly and their relationships are fairly unresearched. Factors like level of interdependence and trust could relate to group characteristics and teamwork simultaneously. A few team characteristics were chosen to assess if any unidentified influences on teamwork exist that would influence teamwork scores on a specific team. No specific predictions are made; these questions are purely exploratory.

RQ2: Do team characteristics of group size and interdependence relate to Teamwork SJT scores?

## CHAPTER II: METHOD

### Measures

#### *Teamwork Knowledge*

Both the Teamwork SJT and Teamwork KSA were used. As previously stated, the Teamwork KSA was the most comparable measure of teamwork for the purpose of the Teamwork SJT. The Teamwork KSA has a total of 35 multiple choice items. Each correct response is worth one point, creating a range of 0 to 35. An example questions reads:

Your team wants to improve the quality and flow of the conversations among its members. Your team should:

- A. set up a specific order for everyone to speak and then follow it;
- B. use comments that build upon and connect to what others have already said;
- C. let team members with more to say determine the direction and topic of conversation;
- D. do all of the above.

The Teamwork SJT has 10 scenarios with 6 responses each. The responses have a 7-point Likert scale of likelihood. The responses are written to have an equal mix of correct, incorrect, and neutral responses. Respectively, each response is scored positively, negatively, or not at all. Scores for each scenario were computed by subtracting the ratings for the two incorrect responses from the ratings for the two correct responses. For each scenario, the score could range from -12 to +12. Scores on the individual scenarios were totaled to provide an overall measure on the Teamwork SJT. Therefore, the possible

range of scores ranges from -120 to +120. The full Teamwork SJT measure is found in Appendix A.

### ***Individual Performance***

In order to predict teamwork behaviors, an observer-rated Teamwork Scale was used. This scale was developed by Littlepage (unpublished) in order to assess teamwork performance. Each team member was asked to rate himself or herself on how well they followed each teamwork dimension. There are 10 items, each reflecting a dimension of Marks et al.'s (2001) taxonomy that was described earlier. Respondents rated each item from 1 (not at all) to 5 (to a very great extent). The highest possible score is 50. One example item reads "Please use the preceding scale to indicate the extent to which you actively work to: Identify the team's key tasks." The full measure is found in Appendix B.

The Comprehensive Assessment of Team Member Effectiveness (CATME) (Loughry et al., 2007) was chosen. The CATME is a peer or self-evaluation of a member's contribution to the team. It measures teamwork performance, not taskwork. Five areas of individual team performance were found: contributing to the team's work; interacting with teammates; keeping the team on track; expecting quality; and having relevant knowledge, skills, and abilities. The measure can be used as a self-evaluation.

The shorter, 5-item version of the evaluation, CATME-b (Ohland et al., 2012), was also found to have sufficient reliability. It is in a behaviorally anchored rating scale (BARS) format. Ratings are on a 5-point Likert scale with examples of behaviors ranging from 1 (below average) to 5 (excellent) on outcomes for each dimension, creating a score

ranging 0 to 25. The generalizability coefficient  $\rho$  was used for estimating reliability because this version has only one item per dimension. Adequate reliabilities were found for each dimension: contributing to the team's work (.90), interacting with teammates (.87), keeping the team on track (.74), expecting quality (.70), and having relevant KSAs (.70). Therefore, this shorter BARS version was chosen over the original Likert version to reduce the amount of time participants spent on responding. The BARS version of this measure is found in Appendix C.

### ***Team Characteristics***

Work team characteristics asked about the team leadership style- leader-lead or self-managed. Team types included Functional, Cross-functional, Troubleshooting, Project, Taskforce, Other. Definitions are found in *Table 2*. Questions were also included about team size and time characteristics. Participants could choose from size categories that ranged from 2 to 15+ members. They also chose the length of time they participated on the team (less than a month to more than two years). One question asked about the participant's gender. The last question asked if the whether the team was part-time or full-time.

### **Participants and Procedure**

The measures were added into an online survey program, Qualtrics. The survey consists of measuring the CATME-b, the teamwork behavior rating scale, Teamwork SJT, and Teamwork KSA, in that order. Participants were screened out of the survey if they were not a part of a work team, either currently or within the past year. Both



personal and work team demographic questions were asked at the beginning of the survey. Personal demographics included race and gender.

**Table 2.**

*Definitions for Team Type*

Functional	All the members belong to the same functional area and respond to a single manager.
Cross-functional	They are formed to develop work with a multidisciplinary view, in which each area represented by team members complements the knowledge of others.
Troubleshooting	Organizations employ these teams usually to improve processes to find out how to solve the problems that are harming them.
Project	Members define the division of labor, responsibilities and the distribution of tasks, as well as make decisions and even control and supervise themselves. They typically dissolve once the project is complete.
Task force	They form only when emergency situations emerge which the organization needs to solve.
Other	

Note: Definitions were selected and adapted from Devine, Dennis J. (2002). A review and integration of classification systems relevant to teams in organizations. *Group Dynamics*, 6(4), 291–310.

Participants were sourced from Amazon’s Mechanical Turk (MTurk). Participants had to be adults who were literate in English, live and work in the U.S., and be on a work team. In this context, a work team was defined as a collection of individuals who share responsibility for specific organizational outcomes, have different roles and responsibilities, and have interdependent workflows, goals, and outcomes. To be

included, participants also needed to have taken at least 25 minutes to complete the survey and correctly answer an attention check question buried within the survey. After responding to the Teamwork SJT, participants were asked to select a specific answer choice to a nonsensical question. Individuals were informed of participation requirements and qualified individuals received \$1.50 for compensation. IRB Approval of these methods and measures are found in Appendix D.

A total of 168 participants responded. Of those, 143 participants remained after screening: one was removed for non-consent, seven were removed for not being part of a valid work team, 12 were removed for failing attentions checks, and five were removed for non-response. Further, if any participant stopped responding before completing a measure, the calculated score for that measure was removed. Of the 143 participants, 111 were white, 23 were black, and a combined 8 were other (American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, or other). There were 60 female and 83 males.

## CHAPTER III: RESULTS

Scale scores for the CATME-b, the behavior rating scale, and Teamwork KSA responses for each participant were created using the scoring function on Qualtrics. Teamwork SJT scores were calculated in Excel. Descriptive statistics for CATME-b, the teamwork behaviors scale, Teamwork SJT, and Teamwork KSA can be found in Table 3. Work team characteristic frequencies can be found in Table 4. The Teamwork SJT was compared against demographics and work group characteristics to determine if there are any significant differences that could influence scores. A Welch t test ( $\alpha = 0.05$ ) indicated that females ( $M = 44.47, SD = 39.55, n = 45$ ) scored significantly higher than males ( $M = 23.77, SD = 32.25, n = 70$ ) on the Teamwork SJT,  $t(80.3) = -2.94, p < 0.01$ , Cohen's  $d = .57$ . Welch t tests ( $\alpha = 0.05$ ) also indicated that there were no significant differences in Teamwork SJT scores between leader-led and self-managed teams,  $t(106.50) = -.51, p = 0.61$ , or between full-time and part-time teams,  $t(39.04) = 0.68, p = 0.50$ . Using multiple one-way ANOVAs ( $\alpha = 0.05$ ), there were no significant differences in Teamwork SJT scores among race,  $F(5, 109) = 1.46, p = 0.21$ , or team tenure,  $F(4, 109) = 2.12, p = 0.08$ . A one-way ANOVA indicated that Teamwork SJT scores vary significantly on team type,  $F(4, 110) = 2.812, p = 0.03$ , and team size,  $F(3, 110) = 4.94, p < 0.01$ . Post Hoc comparisons for team type are in Table 5 and team size are in Table 6. Functional teams scored significantly higher on the Teamwork SJT than troubleshooting and project teams. Team size also has significant differences in scores from participants working in smaller (2-person) teams scoring higher on the Teamwork SJT than participants working in larger teams.

**Table 3.***Descriptive Statistics for Measures*

Variable	Mean	SD	N
CATME-b	18.23	2.70	128
Behavior Rating Scale	36.89	6.92	129
Teamwork KSA	18.30	6.69	115
Teamwork SJT	31.87	36.56	115

**Table 4.***Descriptive Statistics for Team Characteristics and SJT scores*

	N	Teamwork SJT Scores	
		Mean	SD
Team Type	136		
Functional	63	41.50	36.61
Cross-functional	25	37.79	40.54
Troubleshooting	12	16.25	26.91
Project	33	18.97	33.86
Taskforce	3	14.67	10.41
Other	0	0.00	0.00
Team Leadership	136		
Leader-lead	54	30.22	33.73
Self-managed	80	36.00	37.19
Team Size	135		
2-5 people	28	54.50	35.50
6-10 people	56	31.40	36.47
11-15 people	31	20.92	34.94
More than 15 people	20	19.44	28.33
Team Time	129		
Part-time	31	37.12	31.16
Full-time	98	39.64	36.31
Team Tenure	135		
Less than one month	2	20.00	
Between one month and six months	20	14.61	28.95
Between six months and a year	31	33.19	39.91
Between one and two years	36	28.26	37.78
More than two years	46	43.49	34.15

While team tenure did not have significant differences among each of the five levels, a trend was noticed. It appeared that that shorter amount of time the participant was a part of a team, the lower their Teamwork SJT score. Levels were recoded into two categories instead of five, “6 months or less” ( $n = 19, M = 14.90, SD = 28.16$ ) and “more than 6 months” ( $n = 95, M = 35.59, SD = 37.24$ ). A Welch t-test revealed that participants who had been on a team for more than 6 months had significantly higher Teamwork SJT scores,  $t(32.04) = 2.76, p = 0.01, \text{Cohen's } d = .63$ .

**Table 5.**

*One Way ANOVA Dunn's Post Hoc Comparisons for Team Type*

		<i>z</i>	<i>W<sub>i-j</sub></i>	<i>p</i>
Functional	Cross-functional	0.57	5.08	0.29
	Troubleshooting	1.89	20.12	0.03
	Project	2.33	18.00	0.01
	Taskforce	0.60	11.96	0.27
Cross-functional	Troubleshooting	1.22	15.04	0.11
	Project	1.31	12.92	0.10
	Taskforce	0.33	6.88	0.37
Troubleshooting	Project	-0.19	-2.13	0.43
	Taskforce	-0.38	-8.17	0.35
Project	Taskforce	-0.30	-6.04	0.38

**Table 6.**

*One Way ANOVA Dunn's Post Hoc Comparisons for Team Size*

		<i>z</i>	<i>W<sub>i-j</sub></i>	<i>p</i>
2-5 people	6-10 people	2.28	18.79	0.01
	11-15 people	3.18	30.35	0.00
	More than 15 people	2.94	30.28	0.00
6-10 people	11-15 people	1.40	11.56	0.08
	More than 15 people	1.26	11.49	0.10
11-15 people	More than 15 people	-0.01	-0.08	0.50

### Hypotheses and Research Questions

Supporting the first hypothesis, the individual performance measures of the CATME-b and behavior rating scale are positively related as indicated by a Pearson correlation,  $r(115) = 0.22, p = 0.02$ . The positive relationship among these variables confirms that the CAMTE-b and behavior rating scale are related, but the correlation is low enough to suggest they measure different aspects of teamwork.

The second hypothesis was supported in finding that the Teamwork SJT is positively related to the individual teamwork performance measures. According to a Pearson correlation, the Teamwork SJT was positively related to both the behavior rating scale ( $r(115) = .21, p = .02$ ) and the CATME-b ( $r(115) = .32, p < .001$ ). The Teamwork KSA was only positively related to the CATME-b ( $r(115) = .31, p < .001$ ) and not the behavior rating scale ( $r(115) = .04, p = .71$ ).

A regression analysis was used to test if the Teamwork SJT significantly predicted behavior scale ratings. The results indicate the Teamwork SJT ( $\beta = .21, p = .02$ ) explained 4.6% of the variance ( $F(1, 113) = 5.429, p = .02$ ). Another regression was used to test if the Teamwork SJT significantly predicted CATME-b scores. The results

indicate the Teamwork SJT ( $\beta = .32, p < .001$ ) explained 10.2% of the variance ( $F(1, 113) = 12.90, p < .001$ ). Therefore, the Teamwork SJT is a significant predictor of team outcomes and team behaviors.

The third hypothesis was also supported in finding that the Teamwork SJT outperformed the Teamwork KSA. First, a multiple regression was run to see the extent to which the Teamwork KSA and Teamwork SJT together could predict variance in behavior scale ratings. The results of the first multiple regression indicated the two predictors explained 5.4% of the variance in behavior scale ratings ( $F(2, 112) = 3.20, p = .04$ ). It was found that Teamwork KSA did not significantly predict behavior scale ratings ( $\beta = -.12, p = .33$ ), but the Teamwork SJT ( $\beta = .27, p = .014$ ) was a significant predictor. A hierarchical regression was conducted as a follow-up to see if the Teamwork SJT could predict incrementally more variance in behavior scale ratings. The Teamwork KSA was entered as the first step and the Teamwork SJT was the second. The first model of the hierarchical regression containing only the Teamwork KSA ( $\beta = .035, p = .71$ ) was not predictive ( $F(1, 113) = .035, p = .71$ ) as it only accounted for 0.1% of the variance. Introducing the Teamwork SJT ( $\beta = .27, p = .01$ ) explained an additional 5.3% of variation in behavior scale ratings and this  $r^2$  change (.053) was significant,  $F(1, 113) = 6.26, p = .014$ . The Teamwork KSA ( $\beta = -.11, p = .33$ ) in model 2 remained nonsignificant.

In the same way, a multiple regression, then hierarchical regression, were run to determine if the Teamwork KSA and Teamwork SJT were significant predictors of CATME-b scores. The results of the second multiple regression indicated the two predictors explained 12.9% of the variance in CATME-b scores ( $F(2, 112) = 8.30,$

$p < .001$ ). It was found that Teamwork KSA did not significantly predict CATME-b scores ( $\beta = .19, p = .07$ ), but the Teamwork SJT ( $\beta = .22, p = .04$ ) was a significant predictor. A hierarchical regression was conducted to follow up to see if the Teamwork SJT could predict incrementally more variance in CATME-b scores. The Teamwork KSA was entered as the first step and the Teamwork SJT was the second. The first model of the hierarchical regression containing only the Teamwork KSA ( $\beta = .31, p = .001$ ) was predictive ( $F(1, 113) = 11.76, p = .001$ ) as it accounted for 9.4% of the variance. Introducing the Teamwork SJT explained an additional 3.5% of variation in CATME-b scores and this change in  $r^2$  was significant,  $F(1, 112) = 4.47, p = .037$ . However, the Teamwork KSA ( $\beta = .19, p = .07$ ) became nonsignificant when the Teamwork SJT ( $\beta = .22, p = .04$ ) was introduced. The two hierarchical regressions suggest that the Teamwork SJT is a better predictor of individual teamwork behavior and performance than the Teamwork KSA.



## CHAPTER IV: DISCUSSION

### **Findings**

Previous research has demonstrated that females tend to score slightly higher on measures of interpersonal skills than males (Hough et al., 2001). Gender was thought to influence Teamwork SJT scores because there are interpersonal processes woven into the Marks et al (2001) model. This gender effect was seen in the current study; females scored higher than males on the Teamwork SJT. On the positive side, this indicates that the interpersonal processes within the Teamwork SJT are captured sufficiently. On the negative side, this also means that gender should be taken into account when comparing individual Teamwork SJT scores across teammates. The gender effect is not a large concern for the test itself since females score higher on many interpersonal measures and, therefore, does not necessarily point to a limitation specific to the Teamwork SJT.

As far as team characteristics, two interesting relationships appeared. First, respondents on functional teams scored significantly higher than those on troubleshooting and project teams. They would likely have scored higher than those on taskforce teams as well, but the sample ( $n = 3$ ) was too small for that particular group to come to any meaningful conclusions. Members of functional team might have had higher Teamwork SJT scores for a number of reasons. It could be their level of interdependence (LePine et al., 2008), job or task design, or an interaction with another team characteristic. The second interesting relationship that appear was that Teamwork SJT scores decreased as team size increased. While somewhat counterintuitive, this relationship is not completely surprising. Some researchers say that coordination decreases as team size increases (Fleishman, 1980). Others say that smaller teams permit team members more voice

(LePine et al., 2000), by increasing the amount that members can speak and interact.

Anecdotally, larger groups allow for the diffusion of responsibility and accountability of taskwork, therefore reducing the amounts of teamwork used or acquired. Both functional style teams and smaller teams demand more involvement, giving members more opportunity to gain teamwork knowledge.

Directly relating to this idea of amount of involvement, are the time-related relationships of the team characteristics. While being a full-time or part-time team didn't matter, the length of time an individual was on a team did matter. Those who had not been on a team for at least 6 months scored significantly lower on the Teamwork SJT. It suggests that teamwork knowledge can increase over time with exposure. This supports the popular idea is that teamwork is akin to a trainable skill (Stevens & Campion, 1994). Another explanation is a selection bias. Those with good teamwork knowledge may be more attracted to (or be more likely to be selected to join) teams that require more interaction or interdependence. This could mean smaller teams, more permanent teams, or more time-consuming teams.

Perhaps the most the most important finding about the teamwork SJT is its relationship with the individual teamwork performance. The regression analysis suggests that not only is the Teamwork SJT a sufficient predictor individual teamwork performance, but it is a better predictor than the Teamwork KSA. The relationship to individual teamwork performance establishes criterion validity. Combining that with the previous studies on the Teamwork SJT, the test can be used by researchers and organizations confidently for numerous purposes.

Additionally, the Teamwork SJT shows to be more predictive than the Teamwork KSA on both measures of individual teamwork performance, giving it the advantage of usability.

The implications for this study are diverse. The Teamwork SJT is designed to be a selection and development tool. With the previously discussed growing popularity in organizational use of teams, a succinct assessment of teamwork knowledge could save time and money. Organizations could use the Teamwork SJT as component of an employment testing program. For selecting external candidates to be a part of a team, a valid teamwork knowledge test should theoretically raise the performance of team by finding well-qualified candidates. For internal candidates, it allows organizations to differentiate which employees are better suited for a team environment. In both cases, the Teamwork SJT should work equally well when either creating an entirely new team or simply adding in a new member to a pre-existing team.

Identifying high scoring respondents is not the only benefit this tool presents. Identifying low scorers can be just as important. Low scoring respondents within organizations can signal a need for revised training or new personal development opportunities. The Teamwork SJT has 10 questions directly related to the 10 major facets discussed by Marks et al. (2001). Weak areas can be identified directly. Development can be team or individually based to correct specific areas that are deemed critical opportunities for improvement. One concern that should be more carefully considered is which aspects are better suited for individual-level training (i.e. interpersonal skills) and what is better for team training and team building (i.e. systems monitoring).

## **Limitations**

One concern for this study was attrition. Participants had little real-world incentive to participate other than collecting the small payment. Even those willing to participate initially, some did not finish the measures once they had started answering. It is likely because the measure could take up to an hour to complete. Care was taken to choose shorter versions of each measure if such a version existed. If any future studies are done on the Teamwork SJT, performance measure and teamwork measures could be administered at separate times.

Social desirability is always a concern for self-reports of performance. The SJT format was chosen for its specific strengths to overcome this. SJTs are generally good at predicting performance (Weekley & Jones, 1999) because they are based on job-related scenarios. As previously stated, the Teamwork SJT was developed from a previous teamwork theories (Marks et al., 2001). This test is grounded in team processes and behaviors. It asks what a respondent would do, not what they should do in a situation. Therefore, more of a concern lies with the self-reports of teamwork performance, not with the Teamwork SJT. While a couple of factors influence self-report accuracy, many of them could not have been avoided. Participants were asked for their honesty and ensured anonymity, but social desirability is still likely to be seen. Care was taken when writing instructions to increase the accuracy of the self-evaluations. Yet, without comparison ratings from other teammates, there is little assurance that the self-ratings are completely accurate.

Another area to consider is not a shortcoming so much as it is a direction for future research. In this study, the Teamwork SJT was compared against the Teamwork

KSA to see how they related to individual performance on a team. The Teamwork SJT was not investigated with overall team effectiveness. It was also not studied within teams, comparing individual and aggregated scores among team members. This study also did not try to predict individual performance over time. The aim of the study, to establish criterion validity, was met. The other concerns are outside of the intent of this study. A groundwork for further studies was laid.

### **Future Directions**

The next step for the Teamwork SJT is examining its relationship as a predictor for other measures of team performance. While concurrent validity was the focus of the study, future replication might focus on its predictive power with another criterion. This could mean measuring the other facets of team effectiveness, such as viability or member satisfaction, or it could mean individual outputs. The Teamwork KSA was found to have a relationship with taskwork (Morgeson et al., 2005; Stevens & Campion, 1999).

Although the correlation with GMA is much lower for the Teamwork SJT than for the Teamwork KSA, it is possible that scores on the Teamwork SJT can predict taskwork. That is because taskwork and teamwork are often intertwined in teams with interdependent work (LePine et al, 2000). Traditionally, organizations tend to select and measure productivity of members based on taskwork, even if teamwork contributes to that productivity. If the Teamwork SJT is found in the future to predict some taskwork, then it could be argued that the value of the test for organizations interested in teamwork would increase, not decrease.

Another future study from this would be aggregating Teamwork SJT scores up to a team-level to understand its relationship with team-level effectiveness. The highest

team mean is predicted to yield the highest team performance. But, as was the case for individual differences (e.g., Bell, 2007), means may not necessarily be more predictive than highest or lowest scoring member. If broken into individual questions, would particularly high or low scores in one area tell a better story about performance or effectiveness than the overall score of a member?

### **Conclusions**

Organizations require highly effective teams to meet the challenge of complex and competitive international economy. As organizations continue to increase their use of teams, the demand for useful and practical tools will continue to grow as well. Choosing team members based on certain individual differences, like a specific personality trait, may create effective teams, but the method of doing so is not practical with all of the complexities in team composition. Therefore, measuring teamwork directly is the suggested method. A valid teamwork measure was needed to continue to advance teamwork and effectiveness. The most popular one, Teamwork KSA, has not held up to be a reliable measure and shows limited incremental validity over measures of cognitive ability.

This study was an extension of previous validation efforts on the Teamwork SJT, a test based on the Marks et al (2001) model of team processes. It established that not only did the Teamwork SJT have a positive relationship with individual teamwork performance on teams, it was more predictive of teamwork performance than the popular Teamwork KSA. Designed for selection and developmental purposes, having a better teamwork measure will benefit both researchers and organizational effectiveness.

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**APPENDICES**

## APPENDIX A- TEAMWORK SITUATIONAL JUDGEMENT TEST

### TEAMWORK SITUATIONAL JUDGMENT EXERCISE (FORM A)

**Instructions:**

You will be presented with 10 scenarios related to team functioning. For each scenario, there are various actions you might take. Review each scenario and use the following scale to rate your likelihood of taking each of the possible actions:

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

Please rate each response choice on how likely you would be to take the actions.

After you have completed your ratings, transfer your scores to the Answer Sheet at the end of the exercise. Deposit the completed Answer Sheet in the appropriate D2L dropbox.

Once the dropbox closes, use the discussion feature to discuss your preferred choices for each scenario. Try to reach consensus on what your discussion group sees as the most appropriate choice for each scenario. Note: the exercise is designed to have two effective, two moderately effective, and two ineffective responses.

## Scenario 1

The CEO of a high-end restaurant chain comes into your office and says that she has a disturbing finding. The service quality of waiters and waitress (servers) is at a two year low, and customers that usually go to your restaurant are going to other places to eat instead. As the Vice President of Human Resources, you are tasked with analyzing the situation and coming up with a solution improve the server performance. You have decided that the first step to tackle the problem is to create a team of individuals from corporate Human Resources and local managers in the organization that may be useful in solving this issue. Right after forming the team, you are trying to decide what should be your next immediate step in trying to solve this problem.

Please rate each response choice on how likely you would be to take the action(s):

1. Have a team meeting to discuss possible nature of the problem and potential steps that can be taken to improve server performance.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Have your team research industry trends to see if they can find any useful information that could be used to identify common problems with server performance.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Immediately start to work on the task, leaving everyone to figure out how to accomplish the CEO's goal for themselves.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Have your team call managers in various restaurant locations to find out if they understand the nature of the problems in server performance.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Have a meeting with your team discuss relevant tasks, challenges, and resources needed to analyze the problem.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Fire your old service staff and put your team in charge of hiring new service staff.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely



## Scenario 2

You are on a team that has goals set to meet specific organizational standards. You have noticed that deadlines for team tasks are not being met. It has come to your attention that the goals being set are too general and members are becoming unsure of the standards they should meet. The timelines for meeting goals are too vague, which has resulted in lack of consensus among group members of which goals should be prioritized. The group's productivity is declining.

Please rate each response choice on how likely you would be to take the action(s):

1. Exclude the goals that are set by the organization and focus on prioritizing group goals.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Suggest to the group that fewer goals should be set.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Consult with the group for more specific and attainable goals.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Criticize group members for the goals not being met.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Take responsibility for establishing new individual goals for other team members.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Suggest to the group that new timelines should be set to clarify which tasks are to be prioritized.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

## Scenario 3

You are a part of a team that has been working on a project for six months. It has become apparent to the team that the original strategy set for completing the project is not working out. The team is unsure of how to proceed.

Please rate each response choice on how likely you would be to take the action(s):

1. Suggest that a new strategy should be created and implemented in order to better complete the team's task.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Continue with the current strategy but try to fix areas of the plan that need improving.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Use the experience to highlight the importance of having alternative strategies for when problems arise.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Criticize the current strategy and the lack of group productivity on the team task.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Develop an alternative strategy for the team and present it at the next meeting for discussion.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. In front of the team's external supervision, place the responsibility of the failed strategy on the other team members.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

## Scenario 4

You work for a home construction team that was recently subcontracted to develop the frame for a two-story home. The framing contract has a firm timeline of three weeks because a roofing team from another construction company has been subcontracted to begin roofing detail the day after your timeline closes. Your team developed a three-week outline with established goals for frame development. One week from the deadline, the lumber company delivering your last shipment of wood tells you that the shipment is going to be two to three days late. Seeking out an alternative wood provider would take longer than the two to three day delay.

Please rate each response choice on how likely you would be to take the action(s):

1. Discuss the delivery delay with one or two team members without notifying the contractor, complete a minor amount of work with the available supplies, and allow team members to rest until the new delivery day even if achievable goals are not yet complete.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Identify the exact percentage of completed framing through team member meetings, communicate production progress and sub-goal completion to your team and the contractor, and redevelop goals into a compressed timeline.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Notify the contractor and your team members that a delivery delay has temporarily stalled production and demand that the contractor extend the deadline so your team can establish new goals for the project.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. With the help of team members, estimate how much framing has been completed and the amount of time that will be required to complete the project after the delay and request a deadline extension from the contractor based on your team's estimations.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Accept the fact that the delivery will be delayed and that the deadline cannot be reached, completely stall production without notifying the contractor, and give team members two days off until the supplies arrive.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Complete the goals that were established until the point of the delivery delay and hope that the delivery will actually arrive earlier than the 2 to 3 day delay.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

## Scenario 5

You are the resource and systems monitor to the logistics team at We Deliver Packages, Inc. that is in charge of making sure WDP delivery trucks have the resources and information they need to make their deliveries on time in the greater metropolitan area of one major city in the USA. During the middle of the night, a storm hit your metropolitan area. As a result, major roadways are closed and electricity is out around town, which makes refueling of your delivery trucks a problem. You need to collect information about your team's delivery system and resources and provide the relevant information to each driver so that he or she can deliver all of the packages today.

Please rate each response choice on how likely you would be to take the action(s):

1. Tell your drivers about major road closings and to keep an eye out for working gas stations.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Tell your drivers about major road closings and to radio in when they are low on gas to find out where working gas stations are located.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Tell your drivers to do the best they can and to return to base when they are low on gas.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Tell your drivers about the road closings, detours and working gas stations on their routes.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Tell your drivers to keep an eye out for working gas stations and give them a map of the area.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Remove some of today's deliveries from the trucks so the drivers will not need to refuel.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

## Scenario 6

You are in a team with several team members that report to a team leader. The assigned proposal requires team members to work interdependently with common knowledge. The due date of the proposal is in 3 days and one of your team members in the same office is away on sick leave. Reading through the proposal, you notice that your team member's assigned section is in such disarray that it is difficult to understand and follow.

Please rate each response choice on how likely you would be to take the action(s):

1. Assume the team leader probably has it all under control and will deal with the situation soon.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Inform the team leader that attention is needed for the sick team member's section and offer your assistance.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Finish your own assigned section first and then decide whether or not to tell the other team members about the situation of the sick member's section.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Report the situation to the team leader and ask whether you can spare some time to improve your sick team member's section.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Inform your sick team member immediately that his/her assigned section requires attention.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Consult with other team members immediately and let them decide what to do.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely



## Scenario 7

You are the leader of a team that has been assigned various complex tasks that must be completed in a very short time period. These tasks require that the team work together interdependently to accomplish them successfully. Your team members all have very different schedules. That makes it difficult to coordinate one specific meeting time for all members, and also makes it difficult to compile each person's work efforts into one product. As the team leader, it is your responsibility to make sure the overall tasks is completed successfully in a timely manner.

Please rate each response choice on how likely you would be to take the action(s):

1. See about pushing the deadline back until all members are able to meet together to complete the tasks.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Thoroughly examine all members' individual schedules and set a weekly meeting time that works for everyone, even if the time is not ideal (i.e. late nights/weekends).

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Decide as the team leader how the tasks can be split up and assign each team member a specific task to complete on their own. Then, have one meeting where all completed individual work will be compiled into one cohesive product.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Convince the team members to ignore their other obligations at this time in order to meet this deadline.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Accept that the tasks cannot be done in the time allotted and step down as team leader.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Add more members to the team in hopes that their schedules will coordinate better.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

## Scenario 8

Currently you are a member of a team and your team has been assigned a new project to complete. During the initial team meeting to discuss the project and its details you notice that conflict is arising between the team members. The team met to discuss roles during the project and to assign tasks to each individual. There is conflict among the team members over who will be responsible for each part of the project. The team has a very tight deadline and cannot afford to waste any time.

Please rate each response choice on how likely you would be to take the action(s):

1. Try to identify each team member's strengths and weaknesses and match tasks according to individual strengths.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Go to your supervisor and explain the situation in hopes that he or she will be able to resolve the problem.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Suggest that tasks be randomly assigned to each team member so the project can move forward.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Ask the group leader to assign roles to each individual based on whom they believe will do the best job.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Ask the group leader to assign roles without any input from others.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Propose that everyone identify which tasks they would like and have them provide an explanation as to why they feel they would be the best one for this task.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

## Scenario 9

You are part of a team and you have an important project that needs to be completed in three months. Your team has been working well for the past month. Recently, you have come to notice that some of your team members have started to slow the pace of their work and are not working on the project as much as they had been previously. Also, you have found that a few of your team members do not interact much with the team. If these circumstances continue, it will be impossible for your team to complete the project in the next two months.

Please rate each response choice on how likely you would be to take the action(s):

1. Inform the team there will be a party after the successful completion of the project.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Propose that the manager reward the team member who shows the best performance on the project.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Inspire your team members by telling them that it is their collective responsibility to complete the project by the due date, and that the successful completion of this important project depends on each of their efforts.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Remind the team members about their past successes and how hard they have worked towards achieving the team's goals.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Hold a team meeting and focus on the lack of work that has been completed so far.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Remove all the assigned deadlines for each of the team member's work.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

Scenario 10

You are the leader of a team that has been working on a project for several months now. The project is almost finished, but there is still a lot of work to be completed and the deadline is quickly approaching. While the team members have consistently worked well together throughout the duration of the project, the urgency of the project's deadline is causing stress among members. You sense that tension is rising among your members as the deadline approaches and you believe this may lead to the project not getting finished on time.

Please rate each response choice on how likely you would be to take the action(s):

1. Suggest to your team to use the stress they are experiencing as a motivator and to keep pushing forward until the project is complete.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

2. Plan a celebration upon completion of the project that team members can look forward to, while reminding them that success depends on all of their combined efforts.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

3. Stress the importance of the approaching deadline to your members, and remind them that there is not time for conflict or for anyone to get emotional.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

4. Realizing the urgency of the deadline, require team members to work longer hours and turn in a daily progress report of the work they have completed.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

5. Ignore the tension between team members and hope it does not escalate.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely

6. Encourage team members to maintain positive attitudes and to not let the pressure cause conflict amongst themselves.

1	2	3	4	5	6	7
Very Unlikely	Unlikely	Somewhat Unlikely	Neither Likely or Unlikely	Somewhat Likely	Likely	Very Likely



**APPENDIX B-TEAMWORK BEHAVIOR SCALE**

Please use the preceding scale to indicate the extent to which you actively work to:  
1= Not at all, 2= Very Little, 3= To Some Extent, 4= To a Great Extent, 5= To a Very Great Extent

1. Identify the team's key tasks.
2. Focus on team goals.
3. Plan a course of action.
4. Monitor team progress toward goals
5. Monitor team resources.
6. Assist other team members as needed.
7. Coordinate team member activities
8. Work to manage conflict within the team.
9. Foster team confidence.
10. Foster positive feelings among team members.

### APPENDIX C- INDIVIDUAL PERFORMANCE MEASURE

<p>Rate each team member on their performance on 5-point scale from Excellent (1) to Below Average (5).</p>
<p>Contributing to the team's work</p> <ul style="list-style-type: none"> <li>• 5. Does more or higher-quality work than expected, makes important contributions that improves the team's work, helps teammates who are having a difficulty completing their work</li> <li>• 3. Completes a fair share of the team's work with acceptable quality, keeps commitments and completes assignments on time, helps teammates who are having difficulty when it is easy or important</li> <li>• 1. Does not do a fair share of the team's work, delivers sloppy or incomplete work, misses deadlines; is late, unprepared, or absent for team meetings, does not assist teammates</li> </ul> <p>Interacting with teammates</p> <ul style="list-style-type: none"> <li>• 5. Asks for and shows interest in teammate's ideas and contributions, makes sure teammates stay informed and understand each other, provides encouragement or enthusiasm to team</li> <li>• 3. Listens to teammate's and respects their contributions, communicates clearly, shares information with teammates, participates fully in team activities</li> <li>• 1. Interrupts, ignores, bosses, or makes fun of other teammates; takes actions that affect teammates without their input; does not share information; complains, makes excuses, or does not interact with teammates; is defensive</li> </ul> <p>Keeping the team on track</p> <ul style="list-style-type: none"> <li>• 5. Watches conditions affecting the team and monitors the team's progress, makes sure the teammates are making appropriate progress, gives teammates specific, timely, and constructive feedback</li> <li>• 3. Notices changes that influence the team's success, knows what everyone on the team is doing and notices problems, alerts teammates or suggests solutions when the team's success is threatened</li> <li>• 1. Is unaware of whether the team is meeting its goals, does not pay attention to teammate's progress, avoids discussing team problems even when they are obvious</li> </ul> <p>Expecting quality</p> <ul style="list-style-type: none"> <li>• 5. Motivates team to do excellent work; cares that team is doing outstanding work, even if there is no additional reward; believes that the team can do excellent work</li> </ul>

- 3. Encourages the team to do good work that meets all the requirements; wants the team to perform well enough to earn all available rewards; believes that the team can fully meet its responsibilities
- 1. Satisfied even if the team does not meet the assigned standards; wants the team to avoid work, even if it hurts the team; doubts that the team can meet its requirements

Having relevant knowledge, skills, and abilities

- 5. Demonstrates knowledge, skills, and abilities to do excellent work; acquires new knowledge or skills to improve the team's performance; able to perform the role of any team member if necessary
- 3. Has sufficient knowledge, skills, and abilities to contribute to the team's work; acquires knowledge or skills needed to meet requirements, able to perform some of the tasks normally done by other team members
- 1. Missing basic qualifications needed to be a member of the team, unable or unwilling to develop knowledge to contribute to the team, unable to perform any of the duties of other team members

## APPENDIX D: IRB APPROVAL

**IRB**  
**INSTITUTIONAL REVIEW BOARD**  
 Office of Research Compliance,  
 010A Sam Ingram Building,  
 2269 Middle Tennessee Blvd  
 Murfreesboro, TN 37129

**MIDDLE**  
**TENNESSEE**  
 STATE UNIVERSITY

**IRBF024 - INFORMED CONSENT for ONLINE STUDIES**

**(Use this consent template when recruiting adult participants when online data are collected)**  
 Language to be used for online surveys that qualify for "no more than minimal risk"

**Primary Investigator:** Haley Hembree  
**PI Department & College:** Psychology, College of Behavioral and Health Sciences  
**Faculty Advisor (if PI is a student):** Glenn Littlepage  
**Protocol Title:** Criterion Validation of a Teamwork Situational Judgement Test  
**Protocol ID:** 19-2198      **Approval Date:** 03/27/2019      **Expiration Date:** 03/31/2022

**Information and Disclosure Section**

1. **Purpose:** This research project is designed to help us evaluate the validity of a teamwork test. The Teamwork Situational Judgment Test aims to predict teamwork performance in individuals. If this study supports the claim that it will predict levels of teamwork performance, the researchers and organizational will have a better teamwork tool to use in selection or development.
2. **Description:** There are several parts to this project. They are:
  - o The first part consists of the test to be validated, a comparison measure, control variables, and other relevant data in a survey format.
  - o The second part, administered later in the semester, asks participants to confidentially rate their team members on teamwork behaviors.
3. **Duration:** The whole activity should take about 45 minutes. The participants will be compensated as described below.

**Here are your rights as a participant:**

- Your participation in this research is voluntary.
  - You may skip any item that you don't want to answer, and you may stop the experiment at any time (but see the note below)
  - If you leave an item blank by either not clicking or entering a response, you may be warned that you missed one, just in case it was an accident. But you can continue the study without entering a response if you didn't want to answer any questions.
  - Some items may require a response to accurately present the survey.
4. **Risks & Discomforts:** There are no known risks associated with this study.
  5. **Benefits:** If validity is supported, this test will be a useful tool for both researchers and organizations. There is a personal benefit: a chance to win one of two \$50 Amazon giftcards.
  6. **Identifiable Information:** We may request your contact information for compensation purposes.

7. **Compensation: The participants will be compensated by one or more of the following as described below.**

Cash     Gift Card     Merchandise    Value per participation \$Chance of \$50

*Compensation Requirements:*

- a) *The qualifications to participate in this research are: Both parts must be completed with usable data (e.g. not marking all 1s or stopping halfway through). If you do not meet these qualifications, you will not be included in the research and you will not be compensated.*
- b) *After you complete this consent form you will answer screening questions. If you fail to qualify for the research based on these questions, the research will end and you will not be compensated.*
- c) *Please do not participate in this research more than once. Multiple attempts to participate will not be compensated.*
- d) *To be compensated, you must receive a completion code. That requires clicking on the final screen of the study. If you choose to stop for any reason, you will still need to click through until the end to receive compensation (just leave the items blank and click through until the end <; if items require a response to present the survey accurately, you will need to respond to those items as your progress to the end of the survey)>.*

8. **Confidentiality.** All efforts, within reason, will be made to keep the personal information private but total privacy cannot be promised. Your information may be shared with MTSU or the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protections, if you or someone else is in danger or if we are required to do so by law.

9. **Contact Information.** If you should have any questions about this research study or possibly injury, please feel free to contact Haley Hembree by telephone 615-898-3391 or by email [hah4q@mtmail.mtsu.edu](mailto:hah4q@mtmail.mtsu.edu) OR my faculty advisor, Dr. Glenn Littlepage, at [glenn.littlepage@mtsu.edu](mailto:glenn.littlepage@mtsu.edu). You can also contact the MTSU Office of compliance via telephone (615 494 8918) or by email ([compliance@mtsu.edu](mailto:compliance@mtsu.edu)). This contact information will be presented again at the end of the experiment.

**Participant Response Section**

- No     Yes I have read this informed consent document pertaining to the above identified research  
 No     Yes The research procedures to be conducted are clear to me  
 No     Yes I confirm I am 18 years or older  
 No     Yes I am aware of the potential risks of the study

By clicking below, I affirm that I freely and voluntarily choose to participate in this study. I understand I can withdraw from this study at any time without facing any consequences.

- NO I do not consent  
 Yes I consent