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Putting the right people in the right place: Development of a Team Task Analysis protocol for assignment purposes in the U.S. Army

The gold standard for conducting team task analysis (TTA) has been outlined in the literature (Burke, 2004; Burke & Howell, 2018), yet only a few published papers provide a report of a successful execution, perhaps because of the time and effort required. Theoretically, TTA can be used to predict team performance via identification of individual knowledge, skills, and abilities (KSAs) and teamwork processes relevant for team tasks. The goal of this research is to adapt the TTA protocol for team assignment in the U.S. Army, with a focus on predicting the teamwork necessary for successfully executing collective tasks. Specifically, teamwork is proposed to be the mediating factor between individual- and team-level KSAs and team effectiveness outcomes.

To identify which individual KSAs (separately and/or in combination) predict teamwork, the research team will conduct focus groups with Soldiers to understand the teamwork necessary (e.g., coordination) for units in various military occupational specialties to perform at optimal levels. Expert ratings of collective tasks specified by U.S. Army doctrine will be used to establish frequency and importance of the tasks. Focus groups of leaders and intact teams will provide information about teamwork needed to carry out those collective tasks. Next, the teamwork identified will be linked to individual KSAs and to collective tasks.

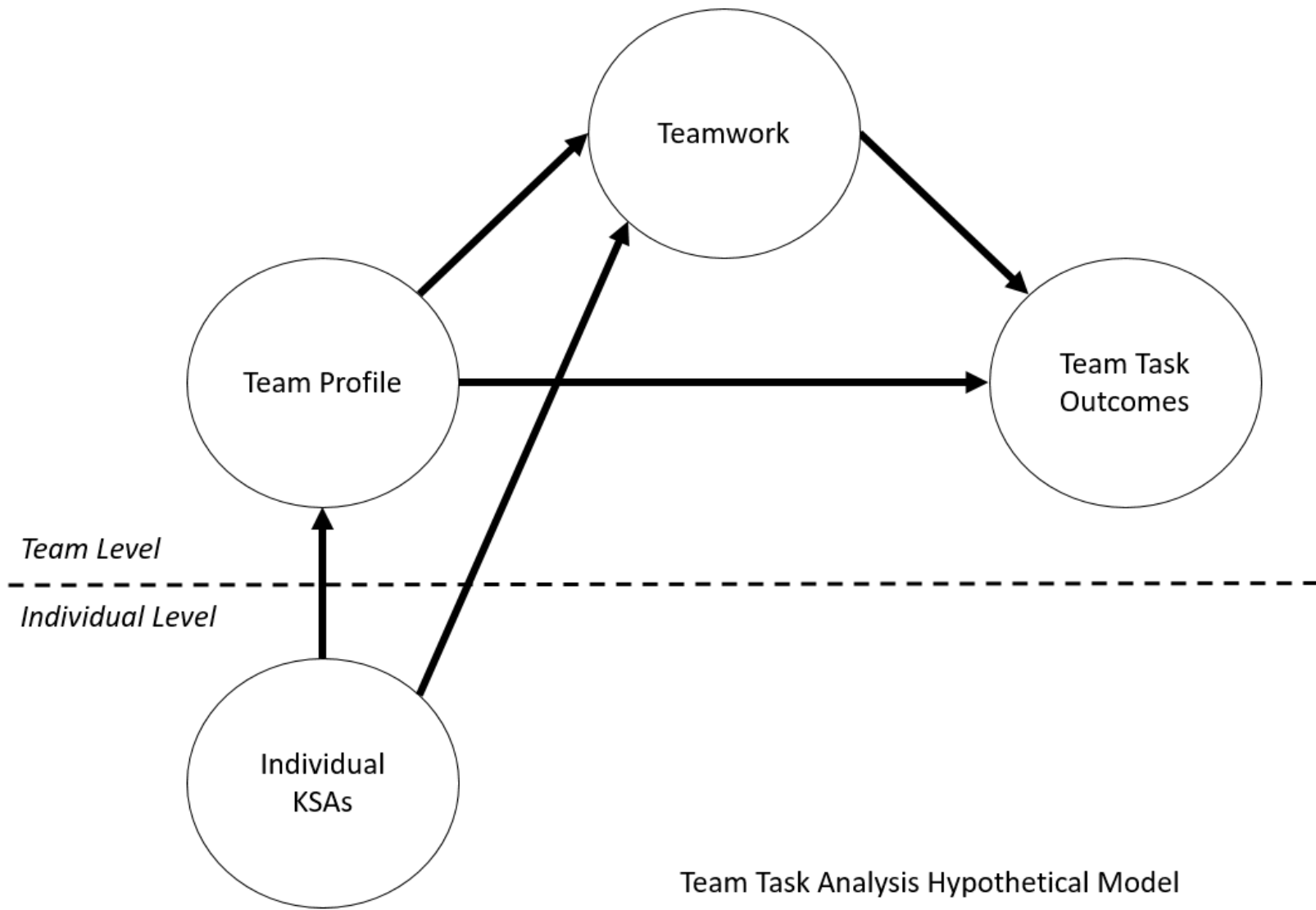
This applied research presents two unique challenges. First, prior literature has focused on conducting TTA for training purposes (e.g., Bowers et al., 1993). The purpose of our analysis is to identify teamwork and relevant KSAs for team composition and staffing. Second, the military assignment process presents constraints by which businesses are often not bound. Specifically, tens of thousands of Soldiers annually must be assigned to vacancies on *existing* teams. This situation differs from an organizational setting because organizations generally do not need to assign everyone in the talent pool and employees may be assigned to teams of varying structure, purpose, and expected lifespan.

Obstacles to accomplishing this research include ensuring that the protocol established has a generalizable application to teams in other military occupational specialties. Moreover, the presence of a strong hierarchy and power dynamic introduces unique considerations when evaluating the role the leader has in teamwork. Also, Soldiers inherently spend more time together than members of a typical organizational team, as military teams work *and* live together. Despite these practical challenges, a workable solution to the constraints imposed can greatly benefit the U.S. Army and advance the SciTS field.

We aim to seek feedback about the protocol and methodology used to gather data for this project in addition to discussion about how to establish links between individual KSAs, team profiles, and teamwork, extending beyond traditional compositional and compilational models.

References

- Bowers, C. A., Morgan Jr, B. B., Salas, E., & Prince, C. (1993). Assessment of coordination demand for aircrew coordination training. *Military Psychology*, 5(2), 95-112.
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Team Task Analysis Hypothetical Model



U.S. Army Research Institute for the Behavioral and Social Sciences

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Presentation for:

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Conference**

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Alissa C. Fleming
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1

Hello, everyone. My name is Alissa Fleming, and I am a Research Psychologist at the Army Research Institute. With my colleague Trevor Fry, our team has been working to develop a team task analysis protocol for use in Soldier assignment in the U.S. Army.



Team Task Analysis



- Team effectiveness is seen as a critical way to improve human capital (Army People Strategy, 2019).
- Team Task Analysis will generate
 - a list of the critical and frequently performed collective tasks
 - a list of the teamwork necessary to accomplish those tasks



Staff Sergeant William Tremblay. The U.S. Army Flickr. "Help your battle buddy."



2

Team effectiveness is one way to improve human capital in the Army. In order to best improve team effectiveness, a team task analysis needs to be conducted to better understand the teamwork occurring.

A team task analysis is similar to job analysis - a technique used in the field of industrial-organizational psychology to outline the job tasks and individual knowledge, skills, and abilities (KSAs) necessary to complete the job tasks. Through the completion of a team task analysis, collective tasks that the team completes and individual KSAs that help team members perform effectively as a team will be identified.

More detail about the team task analysis process will be given later on in the presentation.

Photo credit: Staff Sergeant William Tremblay. The U.S. Army Flickr. "Help your battle buddy." Taken 25 JUN 2010.



Team Task Analysis



- Gold standard for conducting team task analysis (TTA) has been outlined in the literature (Burke, 2005; Burke & Howell, 2018).
- Theoretically, TTA can be used to predict team performance via identification of individual knowledge, skills, and abilities (KSAs) and teamwork processes relevant for team tasks.
- Few published examples of successful execution (e.g., Baker & Salas, 1996; Bowers et al., 1994)
- Team task analysis protocol → training purposes



Daren Reehl. The U.S. Army Flickr. "2010 Best Ranger Competition."

3

Steps for conducting a team task analysis have been outlined in the literature. Theoretically, the information gathered from a team task analysis can be used to predict team performance via identification of individual KSAs and teamwork processes relevant for team tasks.

However, there are a limited number of published examples of successful executions of team task analysis, perhaps because of the time and resources involved to complete one.

Moreover, existing guidance on and published examples of team task analysis have a focus on training development such that the results of a team task analysis would identify relevant KSAs so that team members could be trained on them in order to improve team effectiveness. However, because of the extensive training on tasks that Soldiers receive, our team task analysis seeks to identify the teamwork necessary to complete collective tasks and the critical KSAs needed to execute those team processes.

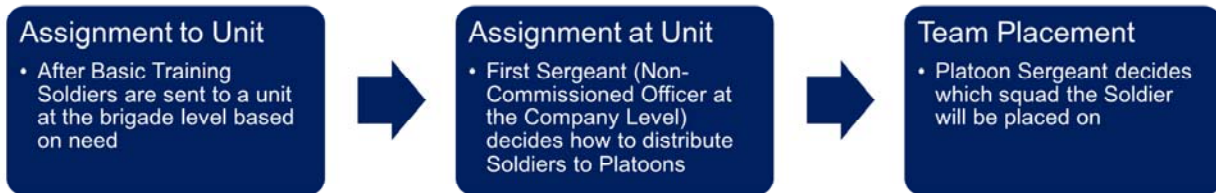
Photo credit: Daren Reehl. The U.S. Army Flickr. "2010 Best Ranger Competition." Taken 07 MAY 2010.



Soldier Assignment to Teams



- Soldiers move frequently in the Army
 - Permanent Change of Station (PCS)
 - Unit Assignment for New Soldiers after Basic Training
 - Special Project Assignments
- Current assignment process:



4

Soldiers move in and out of units and positions frequently in the Army. Examples of times when Soldiers change positions include permanent change of station moves (where a Soldier moves from one duty station to another), initial unit assignments for new Soldiers following basic training, and special project assignments.

With the data from the team task analysis, the goal is to build an assignment algorithm in order to assist with assignment of new Soldiers once they arrive to their new unit.

We hope that the results of the team task analysis will identify individual differences that can be used to improve team effectiveness through improvement in the assignment process.



Project Goal



Develop TTA protocol for team assignment

- Focus on predicting teamwork necessary for executing collective tasks
- Results will be used to inform an algorithm that assigns Soldiers to different teams to optimize team performance and teamwork processes



The U.S. Army Flickr (photographer not listed). "Army pit crew receives 'Army Strong' lessons at Fort Benning."

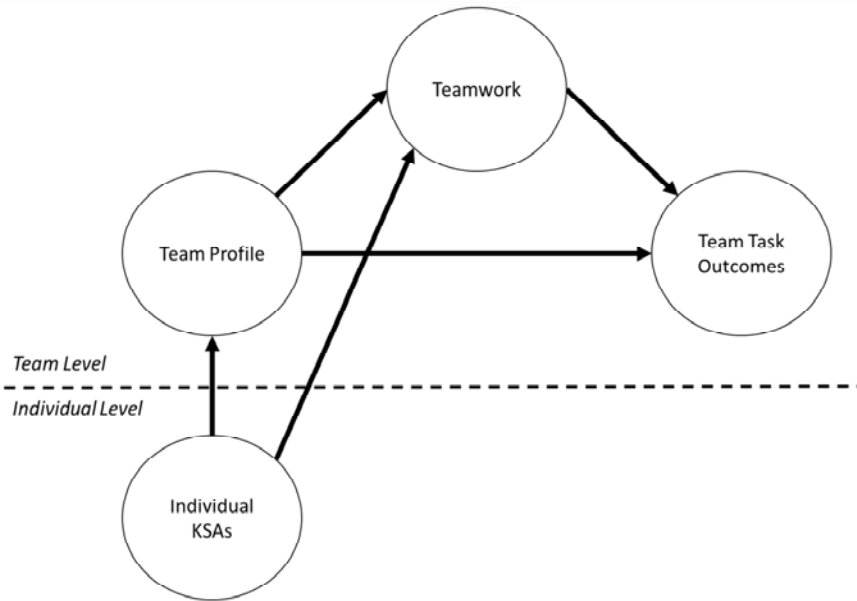


The team task analysis will identify the collective tasks for which effective teamwork will provide the greatest return on investment. With identification of the KSAs that are necessary for teamwork, we will be able to inform an algorithm that assists with the Soldier assignment process. Pairing Soldiers with complementary KSAs together on a team will improve team effectiveness and improve performance on collective tasks.

Photo credit: The U.S. Army Flickr (photographer not listed). "Army pit crew receives 'Army Strong' lessons at Fort Benning." Taken 05 MAY 2010.



Team Task Analysis Hypothetical Model



6

This model depicts how we believe individual differences are related to teamwork and subsequently to team outcomes. Generating an accurate conceptualization of how information about the individual team members and the profile of teammates fits together will be crucial to creating an algorithm that can assist with assignment of Soldiers to teams.



Method for Team Task Analysis



1. Compile Task List
2. Conduct Focus Groups/Interviews
 - “What differentiates good from bad teammates early on in a Soldier’s career?”
 - “Thinking about all of the tasks that Soldiers complete, can you give one example of good teamwork in an Armor Company?”
3. SME Task Ratings
4. Develop Teamwork List
5. Linkage Analysis



After reviewing the literature and keeping in mind our purpose to develop an assignment algorithm, we laid out this process for conducting our team task analysis.

In Step 1 of the process, we compiled documentation of the collective tasks performed by Soldiers in a specific job type. Because of the criticality of teamwork in the Army, the majority of collective tasks are well-documented. We reviewed other relevant training materials and doctrine for additional tasks. We examined doctrine for any task that required at least two people to complete.

In Step 2, we conducted a series of focus groups and interviews with Soldiers. Before the focus groups, we familiarized ourselves with the job by speaking with subject matter experts (SMEs) and reviewing Army doctrine to understand components such as the structure of the team. Examples of focus group questions are listed on the slide. We also asked the SMEs to review our list of collective tasks and make suggestions for additions. During this step, we spoke with both officers and enlisted Soldiers from the Company, Platoon, and Squad levels. To help identify which individual differences were the most important, we had participants generate a list of good teammate characteristics as a group and then individually pick their top five characteristics.

For Step 3, we had SMEs rate collective tasks on frequency and importance of the task on a 5-point scale. We added additional tasks to the list based on feedback we received during focus groups.

For Step 4, we will develop a list of teamwork that is necessary for teams within each job type. We plan to use thematic analysis to analyze focus group transcripts and identify themes of teamwork. We will also use information from the focus groups to identify individual differences and KSAs that are relevant for the performance of teamwork.

In Step 5, we will have SMEs make judgements about the teamwork that is necessary for the collective tasks identified as most important and most often performed. In addition, we will ask them to make judgements about the individual differences that are necessary for teamwork.



Current Progress and Future Plans



- Finished conducting and transcribing focus groups the first job type
- Beginning qualitative analysis to identify teamwork and good teammate characteristics themes
- Planning Linkage Analysis
- Use information to inform preliminary version of assignment algorithm



Staff Sergeant Angelita M. Lawrence. The U.S. Army Flickr. "Waiting to jump."



Our current status is that we have finished conducting and transcribing the focus group data from the first job type we examined. We are beginning qualitative analysis on that data to identify teamwork and characteristics of good teammates.

In the future, we will use a sample of SMEs to conduct the linkage analysis. Once completed, we will write up a report that will describe the findings to be used for other projects, including developing an algorithm that will assist with Soldier assignment.

Photo credit: Staff Sergeant Angelita M. Lawrence. The U.S. Army Flickr. "Waiting to jump." Taken 14 SEP 2010.



Feedback/Comments



- Feedback about:
 - Ways to address challenges
 - Existing or to-be-developed focus group and task rating protocol content
 - Methodology

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Mass Communication Specialist 2nd Class Walter J. Pels. The U.S. Army Flickr. "Hovering Hawks."



Now that our protocol has been outlined, we are seeking feedback about our approach.

If you have past experiences conducting team task analysis yourself, we would love to hear about any lessons learned, considerations, or tips you would recommend.

We look forward to your comments and feedback either through methods sponsored by the conference or by reaching out to us directly at our e-mail addresses listed on the slide.

Photo credit: Mass Communication Specialist 2nd Class Walter J. Pels. The U.S. Army Flickr. "Hovering Hawks." Taken 22 MAR 2009.



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