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Team Task Analysis: Lost but Hopefully Not Forgotten¹

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Introduction

Teams have received an increasing amount of attention over the last 10 years (e.g., Guzzo & Shea, 1993; Hackman, 1987). There have been numerous articles on teams (see Dyer, 1984 for a comprehensive review of the literature), and a number of books have been published that specifically address critical issues related to team performance (e.g., Brannick, Prince, & Salas, 1997; Mohrman, Cohen, & Mohrman, 1995). It goes without saying that teamwork has become a critical element of almost all organizations and a topic of great interest in the research community.

Even with the tremendous amount of applied and empirical work that has been conducted on teams and their performance, there is at least one critical area that has *not* been adequately addressed—team task analysis. This is quite interesting given that there appears to be a general consensus as to what a team is and how teams differ from small groups. The purpose of this brief discussion then is to highlight this issue and to present, what we hope is a series of thought-provoking questions. We present these questions as a frame of reference for establishing a dialogue between scientists and practitioners with regard to the theoretical and practical issues associated with team task analysis. It should be noted that this article is not intended to be a critical review of the field, but rather a short note on our recent reflections and discussions.

Team Task Analysis: Why Should We Care?

Team task analysis refers not only to an analysis of a team's tasks, but also to a comprehensive assessment of a team's teamwork requirements (i.e., knowledge, skill, ability, and attitude requirements). Like job analysis, team task analysis is important because it forms the foundation for team design, team performance measurement, and team training. Essentially, it is the building block for all "team" resource management functions. For example, in the airline industry, the Federal Aviation Administration (FAA) has recommended that air carriers conduct a thorough team task analysis as the first step in redesigning pilot flight training. This new approach to training, referred to by the FAA as the Advanced Qualification Program (AQP), pro-

¹ The views expressed herein are those of the authors and do not necessarily represent the official positions of the agencies with which they are affiliated.

vides pilots with initial and continuing flight instruction in order to certify these individuals for flying specific aircraft. Unlike prior pilot training, AQP goes beyond the training of technical flying skills to include training and evaluation on specific teamwork skills. Furthermore, AQP requires that pilots train as crews as opposed to training as individuals. Such training is vital in the airline industry, where numerous examples of inadequate teamwork can be cited that have led to disastrous consequences (Helmreich & Foushee, 1993). In the context of the current example then, a team task analysis that produces both reliable and valid results is vital to ensure the efficacy of AQP training. However, there is currently little research on the effectiveness of various methodologies for analyzing teamwork, and questions remain regarding the generalizability of individual task analysis strategies to the team level.

Team Task Analysis: Lost In the Shuffle?

Given its importance, it is surprising that team task analysis has been lost in the shuffle. A review of literature showed that there have been hundreds of papers (e.g., journal articles, book chapters, conference presentations, etc.) on the topics of teams, team training, and team performance measurement. Perhaps this number may even stretch to a thousand if one were to include the additional research on small groups (McGrath, 1984). Regardless of the exact number, few will disagree that there has been an abundant amount of work in the area on teams and team performance and that teams are important in today's society. That's why it is particularly perplexing that very few, if any, of these journal articles, book chapters, conference presentations, technical reports, and so forth, clearly advocate a specific approach for analyzing what teams do. In fact, only one technical report by Levine and his colleagues (Levine, Penner, Bramnick, Coover, & Llobet, 1988) was identified that presented an approach for conducting a job/task analysis for teams, and only five journal articles addressed specific research questions associated with the process of analyzing what teams do. Three of these papers were by Salas and his colleagues (Baker & Salas, 1996; Bowers, Baker, & Salas, 1994; Bowers, Morgan, Salas, & Prince, 1993) and two additional articles were by Campion and his colleagues (Campion, Medsker, & Higgs, 1993; Campion, Papper, & Medsker, 1996). Furthermore, a review of several often-cited books on the topic of job analysis (Gael, 1983; Gael, 1988; Levine, 1983) and Harvey's (1991) chapter in the *Handbook of Industrial and Organizational Psychology* only produced an additional 12 pages devoted to the topic of team task analysis (Dieterly, 1988).

One could conclude, on the basis of this discussion, that little or no work has been done on team task analysis and that this is an area that sorely needs to be addressed. Indeed, this is a central argument here; but it could also be argued that this lack of a sound methodology for conducting team task analysis has not prevented researchers and practitioners alike from analyzing

what teams do and using the resulting information to design work teams, develop team training, and construct team performance measures. Certainly, there are numerous examples in which the analysis part of team training design was treated as a given and the information as valid even though techniques were borrowed from job analysis that may or may not be sufficient for analyzing the complexities of a team (see for example, Prince & Salas, 1993). In all cases, theories of teamwork and information and technologies from job analysis were used that seemed to be the best fit for the analysis at hand. However, it would have been more desirable to employ a comprehensive and valid system that was designed specifically for conducting team task analysis.

Team Task Analysis: Are Techniques From Job Analysis A Solution?

To date, the primary strategy for conducting team task analysis has been to use techniques from job analysis to determine team task and skill requirements. Our literature review produced examples of the critical incident technique being employed by researchers to identify critical team behaviors (Morgan, Glickman, Woodward, Blaiwes & Salas, 1986; Prince & Salas, 1993) and task importance scales being utilized to establish relative team behavioral importance (Stout, Prince, Baker, Bergondy, & Salas, 1992). We also found researchers who used questionnaires to collect information on team characteristics and the relationships of these characteristics to team performance (Bowers et al., 1993; Campion et al., 1993; Campion et al., 1996). While it is not the intent here to analyze in detail the merits of these approaches for team task analysis, it is doubtful that these adaptations of job analysis methodologies are an adequate approach to analyzing teams. For one thing, each of the applications described above relied on a single method (e.g., critical incidents, questionnaires, etc.) in order to capture a single aspect of team performance (e.g., team behaviors, team characteristics, etc.). We would advocate that a thorough team task analysis needs to result in a more comprehensive assessment of a team, producing information on both the tasks performed and the corresponding team-member knowledge, attitude, and skill requirements.

One might also question whether or not the literature on job analysis should be the primary source of guidance on how to conduct a team task analysis. As Morgeson and Campion (1997) recently pointed out, there are numerous social and cognitive factors that may produce inaccuracy in job analysis, and it seems likely that many of these factors will impact team task analysis as well. This is not to suggest that methods and tools from job analysis should be cast aside, but rather to suggest that the appropriateness of any given technique should be closely examined. Furthermore, scientists and practitioners should consider literature from the field of cognitive engineering (Cooke, 1994) on how to elicit individual and shared knowledge.

These techniques might prove to be quite useful in determining team-member knowledge requirements.

Team Task Analysis: Questions

In conclusion, a series of 10 questions are posed to both scientists and practitioners. As previously stated, it is likely that there are many I/O psychologists (both scientists and practitioners) who are actively involved in analyzing what teams do. Also, there may in fact be a wealth of information that is not readily available in the mainstream literature. These questions will hopefully serve to establish a dialogue regarding the practical and theoretical issues associated with team task analysis.

1. What are the critical issues confronting researchers and organizations with respect to the practice and conduct of team task analysis?
 2. To what extent can research from job analysis and/or other fields provide adequate solutions to these critical issues?
 3. What are the critical facets of teamwork that should be addressed when conducting a team task analysis?
 4. Should team task analysis only focus on team tasks, team process, or some combination of both? Or does it depend on the purpose of the team task analysis?
 5. What techniques, methods, tools, et cetera from job analysis would be particularly useful for conducting team task analysis?
 6. How do tools from job analysis need to be modified to meet the new demands of teamwork?
 7. Are there generic methodologies that could be developed for use with any type of team regardless of its unique characteristics or will methodologies have to be tailored to address specific team requirements?
 8. To date, the results of team task analysis have been primarily used to design teams or develop team training. Should these be the primary functions of team task analysis?
 9. How should team task analysis results be used? In particular, how could team task analysis aid in team selection?
 10. What lessons have been learned from past job analysis or team task analysis efforts that could be used for guidance in the future?
- Certainly, there are other questions as well, but we feel these are particularly stimulating. Please e-mail any one of us at the following addresses (i.e., dpbaker@pegasus.cc.ucf.edu; eduardo_salas@ntsc.navy.mil; janis_cannon-bowers@ntsc.navy.mil) with your questions, thoughts and/or comments on this issue.

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