Team Selection

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Abstract

The use of teams in organizations has become ubiquitous. Yet, there has been comparatively little research on team selection. This chapter seeks to review the literature on team selection and identify areas for future research. To do this, we first briefly review existing models of team functioning to provide background for selection scholars who might not be familiar with team constructs. We then describe the work of teams, particularly in terms of how it might differ from the work of individuals. This is followed by a review of the different kinds of criteria that can be used in team settings, including criteria used in individually oriented selection, as well as some criteria unique to the team domain. We then articulate the different ways individuals can contribute to teams in terms of key knowledge, skills, abilities, and other characteristics (KSAOs) identified in the literature. These constructs represent the different attributes that can be assessed prior to selecting individuals or teams. Next, we discuss issues of team placement and staffing, particularly in terms of how to create teams to optimize the different worker KSAOs present in the organization or applicant population. Finally, we close with some thoughts about team selection and the need for future research in this area.

Key Words: teams, groups, selection, personnel selection, team selection, staffing

Overview

The use of collaborative work structures has become prevalent in organizational settings, with some estimating that over 80% of white-collar workers partner with others in performing their day-to-day tasks (Vella, 2008). The use of such structures produces two distinct advantages. First, the social facilitation that results from working with others often yields insights not possible when individuals work alone. For example, iteratively building upon and extending each other's ideas is a hallmark of collaborative work. Second, there are many tasks that require multiple individuals working simultaneously to perform, allowing groups to jointly accomplish things that are simply not possible when working alone. Examples include firefighting teams assembled to respond to various emergencies;

teams of steelworkers assigned to produce finished steel using a complex, multistep, and interdependent production process; automobile design teams composed of members of different functional areas, including styling, engineering, marketing, and manufacturing; and surgical teams composed of many distinctive team members, including nurses, anesthesiologists, and surgeons.

A common way in which these collaborative structures are implemented is through the use of teams, where teams can be defined as individuals who "see themselves and who are seen by others as a social entity...who are interdependent because of the tasks they perform as members of a group...who are embedded in one or more larger social systems...who perform tasks that affect others" (Guzzo & Dickson, 1996, pp. 308–309). As this definition suggests, teams

are embedded in a larger organizational context characterized by considerable interdependencies between the team and others. As such, a unique aspect of teams is that they require extensive collaboration among members within the team, as well as with other parties upon whom the team is dependent. Because of their essential role in ensuring organizational success, teams have become the basic building block upon which larger organizational structures are created.

Yet the use of teams and other collaborative work structures poses some unique challenges for most traditional human resource (HR) systems. For example, selection, training, performance appraisal, and reward systems are typically created for individually oriented work. Thus, individuals are selected based on a set of personal competencies, trained to enhance their individual knowledge and skills, and their individual performance is judged and rewarded. Such an individual focus is justified when work is fairly independent and little collaboration is required. When moving to team-based structures, however, individually focused HR systems can prove to be a liability. For example, assessing and rewarding individual performance without acknowledging the important role of team performance can foster individual behavior at odds with team (and organizational) goals.

Such an individual focus is a particularly important problem for selection systems for two reasons. First, organizations need to select people who will be able to work effectively in these more collaborative environments. As we will discuss, the work of teams poses some unique demands for individuals that have implications for job performance and selection systems. Second, individually oriented selection systems tend not to take into account broader contextual issues when making decisions about who to hire. Instead, the focus is on individual knowledge, skill, ability, and other characteristics (KSAOs). Yet, in team-based organizations there are numerous intact teams into which selected individuals must be placed, and selection decisions can often be informed by the needs of these teams.

Interestingly, there is comparatively little research on team selection. One of the likely reasons for this gap is that selection represents a classic industrial psychology or human resource topic area whereas the study of teams represents a classic organizational psychology or organizational behavior topic area, in which scholars work in one or the other areas but not both. In this chapter, we seek to integrate these different domains and articulate the range of issues that arises when selecting individuals in team settings.

Before proceeding, it is worth mentioning that we are not the first to discuss the topic of staffing in team contexts. Over the past 20 years, other book chapters and articles have also appeared on related topics (e.g., Klimoski & Jones, 1995; Ostroff, 2002; Ployhart, 2004; Ployhart & Schneider, 2002a, 2002b, 2005; Schmitt, 2002). Yet several factors differentiate the present chapter from previous work. First, Klimoski and Jones (1995) discuss selection issues as they pertain to decision-making teams. Although there are areas of overlap, we adopt a broader focus on teams and seek to incorporate additional research published over the past 15 years. Second, the set of chapters by Ployhart and colleagues discusses multilevel perspectives on selection, as opposed to team selection per se. Given our focus on selection in team settings and the multilevel perspective that team selection necessitates, we offer a more specific and concrete instantiation of some of the ideas forwarded by Ployhart and colleagues.

The chapter is organized into six main sections. First, we briefly review existing models of team functioning to provide background for selection scholars who might not be familiar with team constructs. Second, we describe the work of teams, particularly in terms of how it might differ from the work of individuals. Effective team selection requires an understanding of the unique considerations of the team performance environment, and these two sections lay the groundwork for such an understanding. Third, we describe the different kinds of criteria that can be used in team settings. This includes criteria used in individually oriented selection, as well as some criteria unique to the team domain. Fourth, we articulate the different ways individuals can contribute to teams in terms of key KSAOs identified in the literature. These constructs represent the different attributes that can be assessed prior to selecting individuals or teams. Fifth, we discuss issues of team placement and staffing, particularly in terms of how to create teams to optimize the different worker KSAOs present in the organization or applicant population. Finally, we close with some thoughts about team selection and the need for future research in this area.

Models of Team Functioning

Although teams have been studied for decades, there has been a growing shift in how teamwork is conceptualized. Early models of teams took a linear

or static approach to their study. For example, two of the most influential team frameworks that emerged in the 1960s are Tuckman's (1965) model of team development and McGrath's (1964, 1984) Input-Output-Process (IPO) framework. Tuckman's work was invaluable because it synthesized existing research into a model of group development that is still discussed today. Yet this model assumed a simple, rigid linear process through which teams formed, developed, and performed. Similarly, the IPO model was invaluable for focusing researchers on three components of teamwork. This model utilized a machine metaphor for describing teams, such that the inputs into the system (e.g., the KSAOs of the team) were transformed through some mechanism (e.g., identification and prioritization of goals), resulting in team outcomes (e.g., the number of cars produced). Yet, the preponderance of research on teams examined a single link in the causal chain (e.g., the relationship between an input and a process), missing out on the overall relationship between the three teamwork components.

Researchers first critiqued Tuckman's (1965) model by showing that the development process was significantly more complex, and often idiosyncratic to the specific team, than Tuckman's model would suggest (Poole, 1981, 1983a, 1983b). Gersick (1988) presented the most influential criticism of this model. She found that the team development process could best be conceptualized as a sort of punctuated equilibrium (Eldredge & Gould, 1972), wherein teams primarily form and follow a lasting pattern of interaction specific to their team, and change these patterns only upon a shock to the system (in the case of Gersick, this shock was reaching the "halfway point" of a project, though subsequent researchers found that other shocks were relevant, e.g., Waller, 1999). This research thus showed that instead of an organized process of team development, teams could be thought of primarily as static entities that occasionally undergo radical transformations.

Following the publication of Gersick's (1988, 1989, 1991) research, scholars began to question the other foundational framework for teams, the IPO model. It became obvious in the late 1990s that this model did not fit the realities of team behavior (Moreland, 1996). Instead, researchers began to recognize that teams are not an assembly line in which inputs are fed into a system and turned into outputs, but instead living organisms in which inputs, processes, and outputs are consistently interacting

with each other (Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Marks, Mathieu, & Zaccaro, 2001). This means that a team may learn from behaviors today to impact behaviors tomorrow and can change goals or behaviors at any given moment in reaction to internal or external feedback.

Marks et al. (2001) highlighted the ongoing cyclical nature of teamwork by structuring a model of teamwork based upon team performance episodes. According to Marks and colleagues, team performance episodes are "distinguishable periods of time over which performance accrues and feedback is available" (p. 359). This model does not suggest that performance episodes have set lengths of time; instead, episodes reflect the tasks being performed (e.g., determining how to best design an automotive emissions control system) or the way the team work is structured (e.g., assembling the chassis of an automobile before attaching the doors). The key to this model is the recognition that team processes may occur during specific points in time (e.g., a team is not expected to set goals every hour of existence, but rather goals should be set before action occurs, and revisited upon receiving feedback), and that a team shifts between enacting these processes frequently during the team's lifespan. This framework is dramatically more dynamic than prior conceptualizations, given that the IPO model generally is perceived of as a linear process in which inputs are fed into the system and outputs emerge at the end.

Changing the focus on teamwork from static to dynamic introduces a number of complications from a team selection perspective. First, all team selection decisions need to directly account for the needs of the different phases of team performance episodes. For example, the KSAOs necessary for strategy formulation (a "big picture" process that occurs during the early part of the team) may be completely different than the KSAOs necessary for system monitoring (a "micro" process that occurs later). One implication is that some team members may be rendered irrelevant during specific phases of projects, perhaps resulting in bored or withdrawn members. Alternately, this may be an opportunity for team members to multitask, such that those individuals who provide strategy formulation can work on multiple projects at a time, leveraging their specific skills more efficiently for the organizational good.

Second, given that teams may frequently shift from periods of entrained, tightly coordinated action (Ancona & Chong, 1996) to periods of rapid change that require potentially dramatic updates to

coordination patterns, it is critical that teams have members who have a high tolerance for ambiguity and have hardy and resilient personalities. Although people naturally experience difficulty switching between tasks (Ravizza & Carter, 2008), some are better at it than others. The ability to effectively manage these shifts aids the ability of teams to avoid process loss and create high-quality team outcomes.

Third, membership change in teams is rampant in organizations (Arrow, McGrath, & Berdahl, 2000). One implication of the likely variation in team composition (i.e., the membership of the team) throughout the lifespan of the team is that they will have to update their coordination patterns continually to match team composition to task requirements. This will require members to have high cognitive ability, as cognitive ability has been shown to relate to adaptability (Hollenbeck, LePine, & Ilgen, 1996; LePine, Hollenbeck, Ilgen, & Hedlund, 1997). Moreover, the remaining team will be required to socialize the new members quickly and smoothly into the norms of the team, which will require openness on the part of the new member and effective communication and training skills on the part of remaining team members.

Team Processes

In addition to shifting to a more dynamic view of teamwork, scholars have also attempted to organize the teamwork process domain. A common thread in much of the early work on teamwork processes was that a seemingly unrelated set of processes was included in any given study. Teams researchers have recently attempted to provide order by reducing, combining, or eliminating processes. Although there have been several attempts at this approach, we will focus solely on a model for this chapter by Marks et al. (2001), as it is fairly comprehensive and it mostly subsumes the other existing models.

Marks et al. (2001) make three specific contributions in terms of teamwork processes. First, they clarify the difference between emergent states and teamwork processes. In reflecting upon the teams literature, they felt that many of the processes studied thus far could be conceptualized as emergent states that reflected the affective reactions of the team rather than transformative behaviors, which is the true definition of process (as reflected in an IPO model). This meant that constructs such as cohesion, which was frequently labeled a team process and studied as such, should no longer be thought of as a way for teams to transform their raw abilities into team effectiveness.

Second, they organized the processes in terms of three broader categories: transition processes, action processes, and interpersonal processes. These three categories reflected specific types of actions: transition processes include planning actions such as "mission analysis formulation and planning," "goal specification," and "strategy formulation;" action processes include activities such as "monitoring," "backup behavior," and "coordination;" interpersonal processes include "affect management," "conflict management," and "motivation."

This organization then leads directly into the third contribution. They suggested that these processes will occur at specific times in the lifecycle of a team. For example, given that transition processes reflect planning activities, these processes should occur whenever the team cycles into a new task, receives feedback about performance, or experiences a shock (e.g., member replacement).

Recent research has shown a connection between the processes and team effectiveness (LePine, Piccolo, Jackson, Mathieu, & Saul, 2008), with some indication that the processes differentially affect team effectiveness. However, research has not yet documented exactly which combinations of team inputs affect the processes. It is reasonable to speculate that characteristics such as intelligence or experience will affect transition processes, given that these reflect planning activities. We would also expect that the monitoring requirements of action processes would require conscientiousness (Porter, Hollenbeck, Ilgen, Ellis, West, & Moon, 2003), whereas the interpersonal processes would likely require interpersonal characteristics such as agreeableness and extroversion.

The Work of Teams

Selection in teams can be challenging because it is necessary to consider not only the work of individual team members, but also the work of the team as a unit. This includes the tasks of the team and how such tasks may be described, as well as the distinctive roles that become relevant when teams perform their tasks. We consider these two issues in this section, as well as work analysis techniques that might be employed in team settings. Given the extensive literature on individual work tasks, we discuss individual-level issues only when they are relevant for our discussion of team work.

Team Tasks

Teams are composed of individuals who perform various tasks in the service of team goal

accomplishment. As such, there is a set of tasks that must be performed by each team member in order to achieve collective goals. This individual task level is commonly the lowest level of abstraction analyzed when considering individual-level work. Yet when considering the work of teams, two additional considerations become relevant.

First, we can take a more macroview of the kinds of tasks faced by the team as a whole. Although there are many different typologies, the task circumplex outlined by McGrath (1984) is perhaps the most complete. McGrath (1984) suggested that there are four performance processes in teams, and that tasks can be classified into broad actions that reflect "generating," "choosing," "negotiating," and "executing." For *generating*, teams can be engaged in *planning tasks* that yield action-oriented plans or *creativity tasks* in which unique or original ideas are generated. For *choosing*, team can be engaged in *intellective tasks* that involve solving problems with known correct answers or *decision-making tasks* that involve team members agreeing upon a key set of facts. For *negotiating*, teams can be engaged in *cognitive conflict tasks* that involve resolving conflicting viewpoints or *mixed-motive tasks* that involve resolving conflicting motives or interests. For *executing*, teams can be engaged in *contests/battles* that involve resolving conflicts of power or otherwise competing for victory or *performances* that involve tasks performed against some standards of excellence.

Second, in addition to individual task-related activities, there is also a set of functions that emerges or becomes relevant only because of the interdependencies among team members that necessitate coordinated action. These synchronized activities have been referred to as team performance functions and reflect a common set of activities that is relevant across teams and tasks (Fleishman & Zaccaro, 1992). These functions are another way to describe teamwork and can be helpful in understanding the unique requirements of team contexts.

Fleishman and Zaccaro (1992) describe a program of research designed to explore the nature of team performance functions and identify a set of seven key functions. This includes (1) *orientation functions* where teams plan for their upcoming performance by exchanging information and establishing priority among tasks; (2) *resource distribution functions* where teams assign team members to task requirements and balance the workload among team members; (3) *timing functions* where teams seek to ensure that team activities will be completed within desired time frames; (4) *response coordination functions* where teams attempt to coordinate, integrate, and synchronize their independent actions; (5) *motivational functions*, which include a diverse set of activities oriented around establishing norms, creating team level performance–reward linkages, reinforcing a task orientation, balancing team needs with individual needs, and resolving conflict among team members; (6) *systems monitoring functions* where teams monitor the activities of the team and individuals in the team to ensure correct task performance; and (7) *procedure maintenance functions* where teams monitor behavior to ensure that it conforms to the standards established by the team.

The distinct task types articulated by McGrath (1984) describe the kind of work the team must perform and the demands placed on the team given the nature of this work, and have implications for the specific ways in which teams must mobilize their efforts in order to accomplish their goals. These task types can be thought of as the broad "behaviors" of the team as a whole much in the same way that individual behavior can be described in general behavioral terms (Peterson et al., 2001). The team functions articulated by Fleishman and Zaccaro (1992) describe a common set of activities that takes on meaning only when teams of individuals must engage in coordinated action. As we will discuss shortly, each of these ways to describe teamwork represents potentially useful starting points when conducting work analyses of team-based work structures.

Team Roles

Central to the investigation of work has been a consideration of what individuals are actually expected to do. One path for investigating this has been to undertake job analyses to determine the specific requirements of a job. This has resulted in the development of formalized positions in organizations. Yet these formalized positions are generally just the starting point for any job. A second path has therefore been to consider the expectations associated with a position. The difference between these two paths is that the first reflects formalized requirements that should be applied to all positions with a specific job description, whereas the second reflects the informal expectations developed between an individual and his or her supervisor and co-workers. These expected behaviors are often thought of as the employee's role (see White, Boorman, & Breiger, 1976).

Given the embedded social interactions characteristic of teamwork, team members are likely to develop roles unique to the specific context and demands of the team's work. These team roles may reflect the tasks being performed, the social aspects of work, or the boundary management requirements (Mumford, Campion, & Morgeson, 2006). In each case, these roles are emergent, socially derived patterns of expected behaviors that influence what a team member does and how the remainder of the team judges that member.

It is not immediately obvious how to select for roles, given that roles emerge from interdependent action and are not necessarily vested in the actions of a single person or position. However, because roles simply need to be performed by someone on the team, selection decisions could be informed by the ability of an individual to adopt numerous different roles, switch between roles, or identify which role behavior might be the most appropriate in a given situation. In this way, "team role knowledge" is likely to be a key individual characteristic predicting success in team contexts (Mumford, Van Iddekinge, Morgeson, & Campion, 2008).

Although there is a long history of studying team roles (e.g., Bales, 1950; Benne & Sheats, 1948), there has been no single structure to organize what team members do. Mumford et al. (2006) attempted to remedy this by grouping the team role literature into the broad categories of task, social, and boundary spanning roles. These categories fit the traditional dichotomy of task versus social-oriented behaviors found across numerous domains (e.g., leadership, negotiation), and adding a category (boundary spanning) that is characteristic of most organizational collectives.

Task roles represent the specific behaviors necessary for completing a team's objectives, including behaviors such as coordinating team actions or structuring the team's tasks. Social roles represent the maintenance of the social environment within the team, and involve behaviors such as communicating or managing social interactions. Finally, boundary spanning roles represent behaviors that occur outside of the collective, such as managing stakeholder perceptions and facilitating coordination between teams.

These roles and their successful performance have a number of implications for team selection, in part because the KSAOs of the role holders may have important implications for team success. Recently, Humphrey, Morgeson, and Mannor (2009) theorized

that certain task roles have a disproportionate impact on team effectiveness, and thus the characteristics of these role holders are more important for team performance than the characteristics of the other role holders. Humphrey et al. (2009) argued that it is possible to identify the extent to which roles are "strategically core" based upon three criteria: the extent to which a role (1) encounters a greater amount of the problems in the team, (2) has greater exposure to the tasks performed by the team, and (3) is central to a team's workflow. They empirically demonstrated that several team member characteristics (career experience, team experience, and job-related skill) have a stronger relationship with team effectiveness when held by strategically core role holders than when held by nonstrategically core role holders.

The direct implication of this research is that team selection decisions must take into account which role is being filled in a team. Organizations can extract a great deal of value by assigning top performers ("A-players") to the most important roles ("A-roles"), whereas secondary roles can be staffed with less accomplished individuals (Huselid, Beatty, & Becker, 2005). This suggests that depending on the structure of the team, only a subset of the team could be staffed with star performers (Groysberg, Polzer, & Elfenbein, 2011), allowing an organization to fill the remainder of the team with individuals with lower levels of relevant KSAOs.

Work Analysis

An essential starting point for the development of any selection system is a comprehensive analysis of the work. Although job analysis is a well-established method in personnel research and practice, it is well-recognized that traditional approaches to job analysis that operate solely at the individual level may not be adequate in team contexts (e.g., Werbel & Johnson, 2001). That is, HR practices and interventions intended to change or influence processes or outcomes at the team level should be based on work and task analyses that explicitly take into account phenomena at the team level (Arthur, Edwards, Bell, & Villado, 2005). In team contexts, the focus of work analysis can involve at least two levels: the individual-within-the-team (Ostroff, 2002) and the team itself.

We obviously want to know about task requirements for each individual role in the team. Because there are such well-established prescriptions for conducting these kinds of analyses (e.g., Brannick, Levine, & Morgeson, 2007; Morgeson

& Dierdorff, 2011), however, we will not discuss them here other than to note that such analyses should be conducted. Instead, we will describe some of ways work analyses could be conducted at the team level, as it has been suggested that an exclusive focus on the individual level in job analysis practice is insufficient in multilevel contexts (Ployhart & Schneider, 2002a). The key to this is shifting the referent from the individual to the team level, which is often the level at which ratings should be directed. Building from our earlier discussion, we will focus on analyzing a team's tasks, its performance functions, or the roles performed by team members.

A comprehensive system for conducting team task analyses was developed by Levine and colleagues (Levine & Baker, 1990; Levine, Penner, Brannick, Coovert, & Llobet, 1988; see Brannick et al., 2007, pp. 148–155 for a summary). Although originally designed to examine team tasks for the purpose of developing training program content, the "Multiphase Analysis of Performance" (MAP) system could be readily adapted to generate a fairly fine-grained analysis of team tasks. From this information we could then infer the range of KSAOs needed in the team to perform these tasks. In terms of analyzing team performance functions, Fleishman and Zaccaro (1992) describe a methodology whereby expert judges rate different teams and their functions. Once the functions are defined, the relevant KSAOs can be defined.

The assessment of roles poses an interesting challenge given their emergent nature. Yet once teams have performed for a period of time, it would be possible to analyze the roles in the teams and reach some conclusions about the relative importance of different roles. Because roles are simply clusters of related behaviors and distinctive role sets have been identified in past research (e.g., Mumford et al., 2006), this would be a useful starting point in identifying the important roles in teams. In addition, given the research that has pointed to the disproportionate importance of certain team roles (e.g., Humphrey et al., 2009), any role analysis should seek to identify these strategically core roles. Finally, because of the interdependencies inherent across roles in a team, assessing such work aspects would also be an important consideration (Arthur et al., 2005).

This brief review of different techniques for analyzing team tasks, functions, and roles was designed to offer some initial suggestions as to how it might be possible to assess some of the unique features of teamwork. Yet this is an area in which there has been comparatively little research (Ployhart & Schneider, 2002b). As such, we know relatively little about how these techniques work in practice and the challenges associated with using them when conducting work analyses in team-based settings. Because of the fundamental importance of work analysis in HR practice, additional research in this domain is clearly needed.

Criteria in Team Settings

A final consideration before examining important characteristics that can lead to team success is the meaning of success in a team environment. Considering what might be relevant criteria in a team setting is essential, in part because there are relevant criteria at both the individual and team levels. One potential way to organize the various outcomes is to draw from self-regulation theory (Hinsz, Tindale, & Vollrath, 1997). Self-regulation theory suggests that individuals and teams process information from the environment through their behaviors, their affective reactions, and their cognitions (see also Barsade, Brief, & Spataro, 2003; Ilgen, Major, & Tower, 1994; Watson, 1913). Using this framework, we discuss both individual-level and team-level criteria.

Individual-Level Criteria

At the individual level, several of the most important behavioral outcomes of teamwork have been individual in-role performance (performance of formal job requirements; also known as task performance), extra-role performance (behaviors beyond formal job requirements; also known as contextual performance), and counterproductive work behaviors (CWBs; voluntary behaviors that are detrimental to the team or organization; Mount, Ilies, & Johnson, 2006). Although how the team as a whole performs is generally the most important level of analysis in a team setting, understanding and measuring team member in-role performance constitute a valuable diagnostic tool. Failure to meet in-role performance expectations suggests that the person is unmotivated to perform, that he or she has too high of a workload, or that he or she does not have the KSAOs necessary to complete the task (Porter et al., 2003). Analyzing the situation could provide insight into whether the role should be changed, the team member should be retrained, or the member should be replaced.

Extra-role performance is generally considered valuable for teams and organizations, and thus identifying team members who are going beyond their job requirements to help the team. However, it is important to note that recent research has suggested that these helping behaviors can actually be detrimental to individual, team, and organizational performance when taken to extreme levels (cf. Bolino, Turnley, & Niehoff, 2004). Finally, CWBs are specifically negative work outcomes that can significantly hurt the team through both their direct action as well as their potential contagion across members (Robinson & O'Leary-Kelly, 1998).

Turning to affective reactions, research has examined how teamwork affects satisfaction (how positively someone feels about the team) and identification (the psychological attachment to the team). These affective outcomes are particularly important, as they may signal negative well-being outcomes (e.g., stress or burnout) as well as turnover intentions. Finally, cognitive outcomes such as self-efficacy (the belief you can do the task) and learning (e.g., better understanding how to perform in teams) are important team outcomes.

Team-Level Criteria

In terms of team-level criteria, Humphrey, Karam, and Morgeson (2010) identified 13 key dimensions of team effectiveness across behavioral, affective, and cognitive domains. Within the behavioral category, they suggested that *performance quality* (the accuracy or precision of team output; Jenkins, Mitra, Gupta, & Shaw, 1998), *performance quantity* (the amount of work produced; Jenkins et al., 1998), *in-role performance* (performance on the job-related aspects of work; Hollenbeck et al., 2002; Tjosvold & Yu, 2004), *extra-role performance* (team behaviors that extend beyond formal role requirements; McIntyre & Salas, 1995), *goal attainment* (the extent to which a team reaches or exceeds its goals; Hackman, 1987), and *counterproductive work behaviors* are all important outcomes.

Within the affective category, they suggested that *team satisfaction* (how the team feels about various contingencies), *viability* (whether team members would like to continue to work together in the future; Hackman, 1987), *cohesion* (the interpersonal attraction toward, or the bond within, a team; Beal, Cohen, Burke, & McLendon, 2003), and *team identification* (a psychological attachment to a team; Van der Vegt & Bunderson, 2005) are valuable outcomes.

Within the cognitive category, they suggested that *innovation* (the extent to which a team has creative outputs; West, 1990), *potency* (the collective belief that a team is effective; Guzzo, 1986), and *team learning* (a change in the team's level of knowledge and skill; Ellis, Hollenbeck, Ilgen, Porter, West, & Moon, 2003) are critical outcomes. Finally, they suggested that a holistic measure of team effectiveness (*overall team effectiveness*) captures unique aspects of team performance not reflected in the dimensions themselves (Ganzach, Kluger, & Klayman, 2000).

One of the interesting features of these team-level criteria is that they partially overlap with past discussions of individual-level criteria, but also include several criteria that do not exist at the individual level. Thus, when considering issues of team selection, a broader set of criteria may become relevant. The relevance of any particular criterion, however, is governed by a team's tasks, the context within which the team is operating, and an organization's goals. For example, some teams may strive to maximize performance quantity whereas other teams may seek to maximize learning or viability over time.

The usefulness of an expanded view of team level criteria was provided by Humphrey et al. (2010). They found that the 13 dimensions of team effectiveness described above produce a more nuanced view of the relationship between team processes and team effectiveness. For example, in contrast to research that showed little evidence for differential relationships between team processes and overall team effectiveness (LePine et al., 2008), Humphrey et al. (2010) found that specific processes related to different sets of outcomes. This finding is particularly useful for team selection, because it suggests that if organizations are able to identify specific criteria, they can then determine which specific processes will produce those outcomes, and make selection and placement decisions in teams based upon the narrower criteria rather than attempting to maximize all outcomes simultaneously.

Performance Measurement in Team Contexts

In addition to the structure or dimensionality of team performance, there has been some discussion in the literature concerning other issues associated with team performance measurement. For example, team performance researchers have highlighted the distinction between objective, results-oriented, or outcome performance measures, and subjective, behaviorally oriented performance measures

(e.g., Beal et al., 2003; Mathieu, Maynard, Rapp, & Gilson, 2008; Prewett, Walvoord, Stilson, Rossi, & Brannick, 2009). Choice of objective versus subjective performance measurement has implications for team selection, in part because predictors seem to have differential relationships with these different kinds of performance measures. For example, Prewett et al. (2009) found that team composition constructs were more weakly related to objective measures of performance compared to behavioral measures.

Another area that team performance researchers have begun examining is performance over time. Some researchers have looked at how team level characteristics influence individual-level trajectories of team members. For example, Christie and Barling (2010) examined how team-level characteristics (e.g., status inequality) influenced individual-level performance and absence trajectories over time. Other researchers have explored performance trajectories at the team level. For example, Mathieu and Rapp (2009) examined the relationship between trajectories modeled from simulation performance measures and team charters and performance strategies. Team charters were positively related to performance midway through the simulation, whereas team performance strategies were not. Conversely, team performance strategies were positively related to linear change in performance over time, whereas team charters were not. This suggests that the link between team member characteristics, team processes, and team performance is dynamic and complex. Much more research needs to be conducted to understand the implications of this dynamism for team selection.

Despite this research, theoretical conceptualization and empirical research on team level criterion measurement are significantly underdeveloped when compared to the level of attention given to studying team inputs and processes (Mathieu et al., 2008). Yet given the importance of criterion measurement for team selection (as well as related HR functions), additional research on performance measurement at the team level is needed.

Individual Contributions to Teams

Having described the range of considerations associated with team selection, we now turn to a discussion of the individual differences that may contribute to team success. It is the characteristics of individual team members that form the foundation for any team action. Although we have spent much of this chapter discussing some of the unique considerations that arise at the collective level, rarely are whole teams hired. Instead, individuals are typically subjected to selection processes and then placed into teams. As such, it is necessary to understand which individual differences can be assessed prior to organizational entry.

What follows is a selective review of the primary individual characteristics that are thought to be related to success in teams and team-oriented settings. This review draws from extant research where possible. Given the limited empirical research on team selection, however, we have chosen to be somewhat more speculative and identified other characteristics that may be important for team outcomes based on the team task and role considerations outlined earlier.

Knowledge, Skills, and Abilities

Teamwork KSAs. In perhaps the first attempt to directly identify team-centric knowledge, skills, and abilities (KSAs), Stevens and Campion (1994) developed a conceptual model describing a set of key interpersonal and self-management KSAs. Interpersonal KSAs are needed in teams because the amount and frequency of required interactions and interpersonal exchanges are much greater when collaborating with others. These include conflict resolution KSAs, collaborative problem-solving KSAs, and communication KSAs. Self-management KSAs are needed in teams because team members often perform many managerial and supervisory functions for themselves. These include goal setting and performance management KSAs and planning and task coordination KSAs. As a set, these KSAs reflect distinctive individual-level capabilities or competencies (see also Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995) that can help satisfy many of the team functions identified earlier. Drawing from their conceptual model, Stevens and Campion (1999) then developed a situational judgment test designed to measure these teamwork KSAs. In this and subsequent research (Leach, Wall, Rogelberg, & Jackson, 2005; McClough & Rogelberg, 2003; Morgeson, Reider, & Campion, 2005), it was found that these teamwork KSAs were positively related to a host of individual-level and team-level outcomes, including contextual performance, team performance, and task performance, and negatively related to team strain. In addition, although it appears that these KSAs are related to general cognitive ability, they do provide incremental prediction beyond general cognitive ability.

Team Role Knowledge. As described earlier, there are a number of roles in teams that can be

important for a team's ultimate success (Mumford et al., 2006, 2008). Contractor, creator, contributor, completer, and critic roles function to carry out the work that is part of the team's formal goals and thus can be grouped under the broader "task role" category. Communicator, cooperator, and calibrator roles function to "create a social environment that is positive, open, and conducive to collaboration" (p. 252) and thus can be grouped under the broader "social role" category. Coordinator and consul roles function to represent the team to other individuals and groups in the broader organizational context and thus can be grouped under the broader "boundary spanning" category. Because these roles are critical to team success, individuals with greater knowledge of them are likely to be better performing team members. Mumford et al. (2008, p. 253) define team role knowledge as "the knowledge an individual possesses about the nature of team roles and the situational contingencies governing their use." Such role knowledge will enhance role performance, in part because individuals with a large amount of role knowledge will have broader role repertoires and be more adaptable and flexible as a team encounters different challenges. Mumford et al. (2008) developed a situational judgment test designed to measure these different forms of role knowledge. As expected, team role knowledge was positively related to role performance in two samples, with team role knowledge providing incremental predictive validity beyond cognitive ability and Big-Five personality factors. Although research on team role knowledge is in its infancy, this appears to be a promising area for future selection research.

Social Skills. Given the high levels of interaction among team members, having team members with strong interpersonally oriented skills is critical. As Mohrman and Cohen (1995, p. 384) have noted, individuals must "be able to communicate with others, listen to others, influence others, and so forth." Often referred to as social skills, they include a wide range of interrelated skills, including social perceptiveness, coordination, persuasion, negotiation, instructing, and service orientation (Peterson et al., 2001). Broadly defined, these social skills reflect a constellation of skills that reflects "interpersonal perceptiveness and the capacity to adjust one's behavior to different situational demands and to effectively influence and control the responses of others" (Ferris, Witt, & Hochwarter, 2001, p. 1076). Given the coordination demands inherent in interdependent work, these skills are likely to

be highly important in team settings. The limited research that has been conducted is supportive of the role of social skills in predicting individual-level contextual performance in team intensive environments (Morgeson et al., 2005).

General Cognitive Ability. Although teamwork KSAs and social skills are important for effective team functioning, such process-oriented skills are unlikely to be of much use if the team members lack fundamental judgment and information-processing capabilities. As shown in individually oriented jobs, general cognitive ability is one of the best predictors of overall job performance (Schmidt & Hunter, 1998). In teams and team settings, team members need the abilities to perform the job as individuals as well as the abilities to work effectively in a team, because both are important for team performance (West & Allen, 1997). Considerable research at the team level has shown the benefits of having a team composed of high-ability members (Barrick, Stewart, Neubert, & Mount, 1998; Bell, 2007; LePine et al., 1997; Tziner & Eden, 1985). For example, Bell (2007) reported an observed sample-weighted mean validity estimate of 0.23 when results were collapsed across composition[1] methods.

Personality Traits

A considerable amount of research has suggested that individual personality can be described in terms of five distinct personality factors (Costa & McCrae, 1988). These include agreeableness, conscientiousness, emotional stability, extraversion, and openness to experience. Individuals high in agreeableness are courteous, helpful, trusting, good-natured, cooperative, and tolerant. They are often cheerful and work well with others. Individuals high in conscientiousness are hardworking, organized, responsible, and dependable. They tend to be careful, thorough, and persistent. Individuals high in emotional stability are even-tempered, calm, and secure. They tend to be relaxed, are able to accept criticism, do not dwell on negative situations, and are in control of their emotions. Individuals high in extraversion are sociable, gregarious, talkative, ambitious, and active. They often seek leadership roles, are ambitious, enjoy social situations, and take the initiative in most situations. Individuals high in openness to experience are intellectual, imaginative, and creative. They like to work with abstract ideas, tend to be introspective, and enjoy trying new things.

Although there has been some disagreement about the extent to which personality predicts task

performance at the individual level (see Morgeson, Campion, Dipboye, Hollenbeck, Murphy, & Schmitt, 2007; Ones, Dilchert, Viswesvaran, & Judge, 2007; Tett & Christiansen, 2007), at the team level it appears that different configurations of team personality are positively related to team performance and other outcomes (Bell, 2007). For example, averaged over various composition methods, Bell (2007) found that observed predictive validities for the Big-Five ranged from 0.14 (Extraversion) to 0.28 (both Agreeableness and Conscientiousness) in field studies.

Experience

Prior experience has been shown to impact both individual (Schmidt & Hunter, 1998) and team performance (Berman, Down, & Hill, 2002; Gladstein, 1984; Mohammed, Mathieu, & Bartlett, 2002). One of the reasons for this relationship is that experiences often offer challenges that stimulate learning and development, both of which can be critical for future team behavior (McCall, Lombardo, & Morrison, 1988; McCauley, Ruderman, Ohlott, & Morrow, 1994). In addition, because experience directly affects knowledge and skill (Schmidt, Hunter, & Outerbridge, 1986), it can influence task-relevant knowledge (Humphrey et al., 2009). This occurs through the acquisition of task-relevant knowledge as individuals learn the simplest way to perform a task and through the sharing of knowledge whereby more experienced team members help less experienced members enhance their knowledge and skill. Because knowledge and skills are retained by people as they move from one team to another, experience can profoundly shape future team-related behavior.

Yet it is only until relatively recently that there have been comprehensive theoretical frameworks describing the nature of experience. Quiñones, Ford, and Teachout (1995) and Tesluk and Jacobs (1998) offer useful frameworks that suggest a number of different forms of experience that might impact team success. For example, the Tesluk and Jacobs (1998) model specifies both measurement modes of work experience (i.e., amount, time, density, timing, and type) and levels of specification (i.e., task, job, work group, organization, and career/occupation). This model of work experience suggests that there are different dimensions of work experience that occur at distinctly different levels. These different types of experience offer a much greater set of possibilities to consider when exploring the link between work experience and team outcomes. Some recent research has demonstrated the utility of such an approach by linking career and team experience to objective measures of team performance (Humphrey et al., 2009).

Placement and Staffing

Throughout this chapter, we have discussed various issues that pertain to teamwork, and how these issues can affect how an organization makes selection decisions. The final component to this discussion is determining how to take the raw materials of teams (i.e., the potential team member KSAOs) and placing them on teams. In this section, we will discuss strategies for creating teams, as well as organizational strategies for producing high-performance teams.

Creating Teams

Classic research on composing teams focused primarily on the idea that more of a resource is better. That is, this research attempted to transfer the individual-level selection perspective that having higher levels of ability, conscientiousness, experience, and so on would uniformly increase performance of teams. Yet this perspective soon encountered resistance, as scholars recognized that (1) acquiring the "best" talent is difficult and thus organizations must make do with a less than uniformly perfect applicant population to place on teams, and (2) having a team composed of a mix on certain characteristics may actually be more beneficial to a team than having homogeneity on those characteristics.

There have been several advanced strategies put forth for making placement decisions. Authors in the diversity literature have argued that certain "deep-level" individual differences (i.e., attitudes, beliefs, and values; Harrison, Price, & Bell, 1998) have unique combinatory value for teams, and thus organizations should look to make placement decisions based upon heterogeneity on these characteristics. In contrast, this literature suggests that "surface-level" individual differences (e.g., race, sex) do not have a direct effect on teamwork, and thus should not be focused upon when making placement decisions (i.e., we should not attempt to create homogeneity or heterogeneity on these characteristics).

Recently, Harrison and Klein (2007) argued that diversity is more complex than homogeneity or heterogeneity on specific characteristics. Instead, we should consider the type of characteristic (and the

resulting type of diversity) of interest when making placement decisions. They therefore advocated classifying specific diversity compositions in terms of *separation* (differences in horizontal position among members on issues of value, belief, or attitude), *variety* (differences in knowledge or experience), and *disparity* (differences in proportion of valued resources). When considering separation characteristics, they argue for homogeneity. For variety characteristics, they argue for maximum heterogeneity. Finally, for disparity characteristics, they suggest moderate homogeneity, in which characteristics such as pay dispersion may be useful from a tournament theory perspective (Becker & Huselid, 1992) or status differences may be useful from an efficiency perspective (Murnighan & Conlon, 1991).

Yet for all of the proponents of diversity (in general) and heterogeneity (in specific), the empirical support for heterogeneity in teams is largely disappointing. For example, Joshi and Roh (2009) find that the strongest positive relationship between heterogeneity and team effectiveness (functional diversity) explains less than 2% of the variance in team performance. Similarly, Bell (2007) found that for team personality composition, the strongest positive relationship between heterogeneity on a characteristic and team effectiveness was with extraversion (as studied in field samples), and even that relationship explained less than 0.5% of the variance in team performance. Similar findings have been reported by Prewett and colleagues (2009).

One potential reason for these relatively limited findings is that extant research has not explicitly created teams with a specific staffing strategy in place. As Humphrey, Hollenbeck, Meyer, and Ilgen (2007) noted, a significant issue with past team diversity research is a lack of heterogeneity due to random assignment to teams in laboratory studies and seemingly random assignment (at least on characteristics of interest) in field studies. They propose an alternative they called "seeding," which is a holistic approach to placement decisions, in which an organization or researcher takes into account the entire population available for creating the teams, and then places individuals on teams in an effort to maximize or minimize heterogeneity on the trait of interest.

For example, to maximize heterogeneity on extraversion (given that extraversion heterogeneity is expected to produce leaders and followers), people should be placed on teams by using a sorting process in which the most extraverted member is placed on one team, the next high scorer is placed on a second team, and so on. This is followed by pairing the least extraverted members (in order) with the most extraverted members, and so on until teams are composed. Through this process, team heterogeneity is maximized in a specific population of potential team members or recent hires, thereby increasing the likelihood that the theorized benefits of heterogeneity will manifest themselves in the population. The specifics of the seeding process, however, should be guided by the numerous considerations noted throughout this chapter. The nature of the team's task, the essential team functions, and strategically core roles would not only dictate the critical KSAOs on which to focus, it would also dictate exactly how to seed the team.

The predominant mode of team-based selection has been a formally designated, top-down selection process that is driven by organizational or managerial prerogative. Yet there is another potential selection process that is important to acknowledge that is driven by the prerogatives of intact teams. Particularly with fully autonomous or self-managing teams, the team members themselves might choose future team members (or at least have considerable input into the ultimate selection decision). In fact, one of the authors of this chapter has worked with two organizations in which this was how team members were selected. One of the challenges of such team-driven selection processes, however, is that such decisions may be suboptimal, in part because of a variety of well-known dysfunctional group processes (Barker, 1993; Harrison & Humphrey, 2010). This would include teams that have low-productivity norms, high levels of conflict, or exhibit greater interest in maintaining friendships than in achieving organizational goals. Thus, organizations should be careful about the kinds of autonomy granted to teams in terms of making selection decisions.

Another practice for building teams is cluster hiring, which consists of hiring a team en masse from another organization (Munyon, Summers, & Ferris, 2011). The direct advantage of this approach is that teams come ready-formed, with existing shared mental models, high levels of coordination, and demonstrated performance. On the other hand, there are numerous costs to this process, including the direct monetary costs of hiring a large set of individuals at the same time (who likely have increased bargaining power because they are arrayed as a coalition) and the potential for a rigidity in role structure that

impedes team creativity. To date, cluster hiring has rarely been studied, though it has been employed by numerous organizations (e.g., Bastedo & Gumport, 2003; Greene, 2003; Smith, Turner, Osei-Kofi, & Richards, 2004). Thus, researchers need to examine this approach in greater depth to determine the advantages and disadvantages of this approach.

Multilevel Perspectives on Team Selection and Placement

Staffing in team contexts is a fundamentally multilevel practice. Decisions are made concerning the selection and placement of individual members into teams with the aim of maximizing outcomes at the individual and team levels. This necessitates a multilevel perspective on the practice of selection that explicitly considers how such individual-level decisions can influence outcomes at multiple levels of analysis (Ployhart & Schneider, 2005).

Fortunately, Ployhart and Schneider (2002a) described two ways in which multilevel linkages between individual-level predictor measures and outcomes at higher levels may be established. First, measures of individual attributes may correlate with relevant criterion measures at the individual level. If evidence can be generated that the individual-level criterion measure aggregates to form a meaningful team-level criterion measure (via indices of agreement or between-team variance), then selection based on the individual attribute will contribute positively to team-level performance. Establishing this linkage is likely to be particularly critical in situations in which team members independently work on parts of a larger task or project and in which their individual resources (in the form of relevant knowledge, skills, abilities) contribute additively to team success.

Second, if evidence can be generated that the individual-level predictor measure forms a meaningful team-level predictor measure (e.g., individual cognitive ability to team-level cognitive ability) and this team-level predictor is positively related to a team-level criterion, then selection based on the individual attribute will again contribute positively to team-level performance. Establishing this linkage is likely to be particularly critical in situations in which team members work interdependently and this interaction creates collective resources (e.g., positive team processes) that are relevant for task completion (Morgeson & Hofmann, 1999).

Finally, although not discussed by Ployhart and Schneider (2002a), a role-based perspective offers a third way in which individual-level attributes may be linked to team-level outcomes. Specifically, measures of individual attributes for holders of specific roles (e.g., team leader) may be related to relevant criterion measures at the team level. If so, selection of role holders on the measure of the attribute will contribute positively to team-level performance. It should also be noted that the above discussion assumes that the team-level criterion measure can be conceptually linked to a relevant team-level performance domain. Establishing this linkage is likely to be particularly critical in situations in which each team member holds a specific, unique, and identifiable role within the team and where some deficiency in one of these roles has negative implications for team performance.

These multilevel linkages reflect some particularly important multilevel issues relevant to staffing in team contexts. We agree with Ployhart and Schneider (2005) that a stronger emphasis needs to be placed on multilevel perspectives in selection research in general, and to team-based selection in particular. A stronger multilevel emphasis will benefit not only theory that articulates how staffing interventions affect relevant processes and outcomes in team contexts, but also the practice of team-based selection itself and the application of the principles derived from the literature as they emerge over time.

Conclusions

In this chapter we have sought to provide an introduction to the topic of team selection. This included a discussion of existing models of team functioning and the nature of teamwork. This provided a background for understanding different kinds of individual-level and team-level criteria and some of the KSAOs thought to lead to higher levels of team performance. We closed with a discussion of how to create teams, particularly when individuals are hired and placed into teams. As our review shows, research on team selection is still in its early stages, with a considerable amount of reviewed research not actually conducted in a selection environment. Selection research in almost any of the areas reviewed would constitute a meaningful and important contribution to the research literature. We have identified potential areas for future research throughout the chapter and these are summarized in Table 36.1. We hope that our chapter provides some help in advancing team selection research.

Table 36.1 Areas for Future Team Selection Research.

Develop and study team work analysis techniques.

Develop comprehensive measures of team effectiveness and devote more attention to team effectiveness criteria.

Conduct research on all of the individual differences identified, with particular attention given to team-centric individual differences such as teamwork KSAs, team role knowledge, and different forms of team experience.

Conduct research that explores multiple individual differences simultaneously.

Conduct multilevel research that links individual differences to meaningful team level constructs.

Determine what situations result in individual differences being more important for team performance.

Examine how certain combinations of individual differences create different types of team processes.

Conduct research on deliberate strategies of team composition such as seeding and strategically core team roles.

Examine alternative team selection methods such as cluster hiring or team selection as instigated by the team rather than just team selection as instigated by the organization.

Conduct research at the team level.

Note

1. There are many different ways to aggregate scores on an individual-level measure to the team level in order to obtain an estimate of the team's standing on that measure. This can include taking the average, the lowest or highest score on the team, or the variance across team members on the measure. "Composing" the measure in these different ways is typically referred to as different composition methods.

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