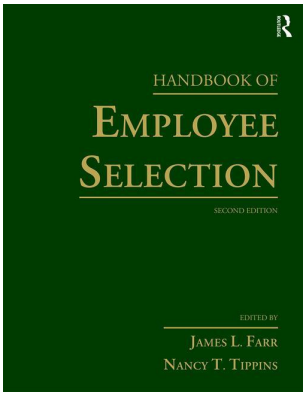

Handbook of Employee Selection

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37

SELECTION FOR TEAM MEMBERSHIP

Complexity, Contingency, and Dynamism Across Multiple Levels

SUSAN MOHAMMED AND ALEXANDER S. MCKAY

For well over half of a century, scholars have agreed that selecting the right team members is a key variable in the team[1] effectiveness equation (e.g., Mann, 1959; Mathieu, Maynard, Rapp, & Gilson, 2008). However, despite the importance of team selection, significant knowledge gaps remain regarding how to distinguish "team players" from "team inhibitors" and how to create teams whose members have the right mix of competencies. Ironically, despite a wealth of accumulated knowledge about how to select individuals to fit jobs and a burgeoning team literature, relatively little of this research has systematically focused on team selection issues (e.g., Mathieu, Tannenbaum, Donsbach, & Alliger, 2013; Zaccaro & DiRosa, 2012). Instead, the team composition literature has been described as fragmented and in need of coherence (Mathieu, Tannenbaum, Donsbach, & Alliger, 2014).

Therefore, the purpose of this chapter is to review and integrate what is currently known about team selection with the goals of identifying deficiencies in current knowledge and underscoring promising avenues for future research. In doing so, we emphasize the complexity underlying staffing teams by adopting a dynamic, contingency, and multilevel perspective. Recent work has highlighted that team membership is far more dynamic than assumed in team research, with individuals joining and leaving teams with increasing frequency (Tannenbaum, Mathieu, Salas, & Cohen, 2012). With respect to contingency, one of the overarching themes of the present work is that selection approaches will differ for diverse types of teams and tasks because the nature of the team and why it exists plays such a prominent role in determining what member characteristics are needed. The multilevel nature of team functioning acknowledges that choosing team members based on individual competencies alone is not sufficient to ensure team success. Rather, it is important to consider the *configuration* of members with regard to knowledge, skills, abilities, and other factors (KSAOs) such as personality traits and experience levels. Therefore, mechanisms must be developed to determine how a potential employee will "fit" into a particular team.

CONCEPTUAL FRAMEWORK FOR UNDERSTANDING SELECTION FOR TEAM MEMBERSHIP

Figure 37.1 presents a conceptual framework that captures the dynamic, contingency, and multilevel approaches of team selection. Each component of Figure 37.1 is discussed in the following sections.

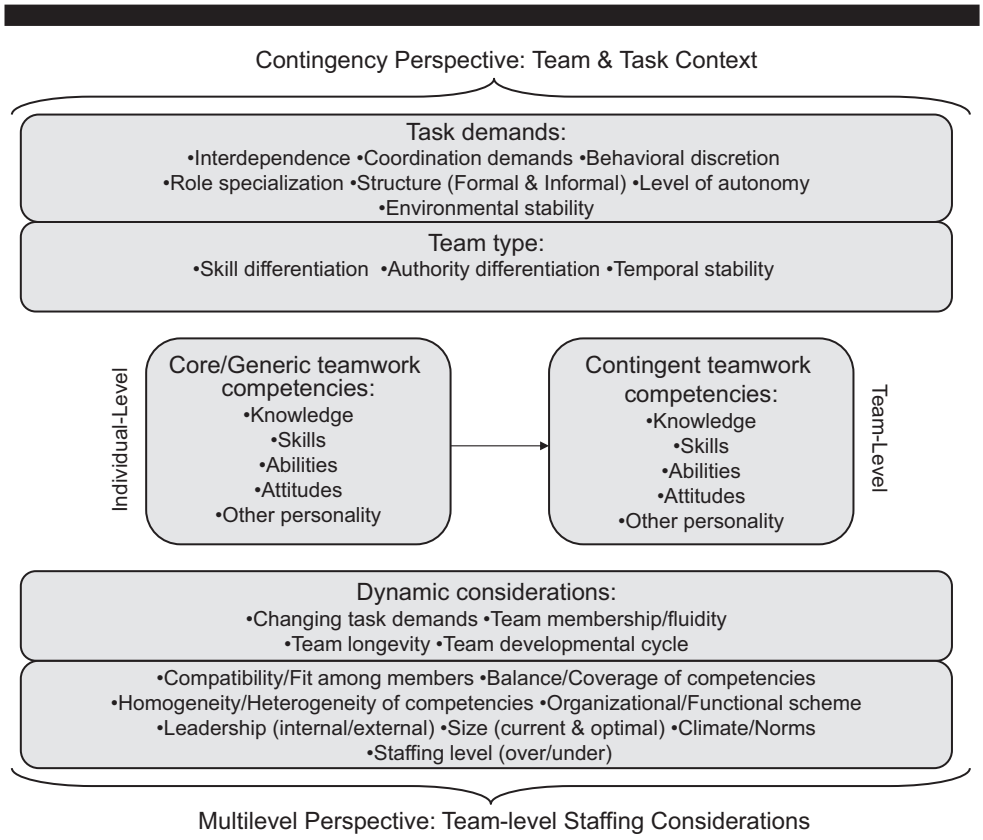

FIGURE 37.1 Conceptual Framework for Understanding Selection for Team Membership

Core and Contingent Teamwork Competencies

The first step in selection for team membership is to garner a thorough understanding of the KSAOs needed for effective team performance. Team selection subsumes the requirements of traditional selection, such as ensuring that individuals possess technical competence and maximizing the fit between the person and job. However, team members must also possess teamwork skills that enable interdependent work. Because taskwork skills are not unique to the team context, we focus on two types of teamwork competencies: core (general teamwork behaviors common to all team tasks) and contingent (dependent on the task and the team's configuration). Similar to other researchers (Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995), we posit that core teamwork competencies are generic or transportable—that is, they are important regardless of the particular task or team at hand. Examples of such competencies include interpersonal skills, knowledge of teamwork, communication skills, preference for teamwork, and agreeableness. Furthermore, we propose that these attributes can be measured at the individual level.

In contrast to core competencies, contingent teamwork competencies are particular to the team and task for which an individual is being selected and must therefore consider team-level attributes. Because of the dynamic nature of teams, particular needs may change as a function of the team's changing structure, configuration, size, and/or life cycle. A culmination of the other categories of variables presented in Figure 37.1, contingent teamwork competencies are influenced by team type, task demands, dynamism, and team staffing variables, which are described in the following sections.

Team Type

Integrating the plethora of team taxonomies proposed in the literature, Hollenbeck, Beersma, and Schouten (2012) identified three critical dimensions underlying diverse team types. First, skill differentiation refers to the degree to which members possess specialized knowledge. Second, authority differentiation describes whether decision-making responsibility resides in individuals, subgroups, or the team as a whole. Third, temporal stability captures the extent to which team members have worked together in the past and plan to do so in the future. Because teams vary with regard to each of these dimensions, selection requirements will clearly differ for diverse team types. To illustrate, for stable, self-managed teams with low skill differentiation who make decisions relying on consensus and have a history and future of working together, a premium would be placed on contingent teamwork characteristics in the selection process. In contrast, for ad hoc emergency crisis teams with high skill differentiation in which one member has decision-making authority that disband after task completion, emphasis would be placed on taskwork characteristics in the selection process. Generic teamwork competencies that enhance human capital would be needed for both types of teams (Mathieu et al., 2013). Consideration must also be given to the particular form of staffing situation an organization is facing. Mathieu and colleagues (2013) delineated six types of team composition human resource decisions. Regarding existing teams, (1) a single member may be added, subtracted, or replaced, (2) multiple team members may be concurrently replaced, or (3) new personnel might be simultaneously assigned to multiple teams. Concerning new team creation, (4) a single team may be staffed at once (team cluster hiring), (5) multiple teams may be staffed concurrently, or (6) members may be reconfigured into multiple teams. Of the six categories listed above, the most frequently cited staff experiences were team cluster hiring (4) and multiple member replacement to an existing team (2) in 21 interviews with team staffing experts (Donsbach et al., 2009). Each approach has benefits and drawbacks. For example, team cluster hiring is proposed to be most useful in highly competitive industries because it better mitigates external threats, exploits diversity opportunities, and increases team motivation compared to individual staffing approaches (Munyon, Summers, & Ferris, 2011). Although pre-employment expenses are predicted to be higher for cluster hiring than for individual selection, costs should decrease over time if there is little member turnover (Munyon et al., 2011).

Task Demands

Influenced in large part by team type, the nature of the task includes different types of interdependence (Saavedra, Earley, & van Dyne, 1993),the behavioral requirements of members during performance (McGrath, 1984), coordination demands (Bowers, Morgan, Salas, & Prince, 1993), behavioral discretion (the degree of control team members have in performing the task as dictated by the level of proceduralization; Cannon-Bowers, Salas, & Blickensderfer, 1998), role specialization (how roles are defined in the team; Kilduff, Angelmar, & Mehra, 2000), structure (the nature of the formal organization and communication channels; Price, Harrison, & Gavin, 2006), and level of autonomy (the degree to which the team manages itself; Langfred, 2007). Given the importance of task demands, team researchers have developed team task analysis methods.

Team Task Analysis Analogous to job analysis for individuals (see Chapter 6, this volume), team task analysis (TTA) involves a comprehensive understanding of the nature of the team and the key skills necessary to function effectively as a collective unit (Baker, Salas, & Cannon-Bowers, 1998). Specifically, team competencies, job characteristics, and cognitive demands are three categories of information gathered during TTA (Lorenzet, Eddy, & Klein, 2003). Nevertheless, because of the lack of validated TTA techniques, traditional job analysis methods are often used for teams, violating multilevel principles (Lorenzet et al., 2003) and overlooking interactive teamwork processes, coordination, and interdependence requirements (Morgan & Lassiter, 1992).

Arthur, Edwards, Bell, Villado, and Bennett (2005) developed and validated three generic task analysis scales measuring team relatedness (extent to which tasks cannot be performed by a single individual), team workflow (paths through which information flows throughout the team), and team-task ratio (ratio of the number of tasks that cannot be performed alone to the total number of tasks). In addition, groupware task analysis has been proposed as a method for studying group activities, which involves modeling structure, workflow, artifacts, and the work environment (van Welie & van der Veer, 2003). Furthermore, cognitive TTA investigates the cognitive components underlying teamwork processes, including knowledge of goals, task procedures, sequences, timing, roles, and teammate characteristics (Blickensderfer, Cannon-Bowers, Salas, & Baker, 2000). Despite these promising developments, additional research is needed to validate existing TTA methodologies and to develop new tools.

Dynamism

Despite the prevalence of cross-sectional research designs assuming a high degree of stability, dynamism across levels of analysis is a reality in modern-day teams (Tannenbaum et al., 2012). Shifting task and environmental demands motivated by internal or external forces (Keck & Tushman, 1993) may cause members to join or leave teams at different times as well as lengthen or shorten a team's longevity. Thus, the fluidity and permeability of team and membership boundaries must be taken into account in team staffing decisions.

Team Staffing Considerations

The level of complexity of team selection is substantially increased by the need to consider an additional set of team-relevant KSAOs and to navigate multiple levels of analysis. Indeed, a fundamental difference between selection for individual and team positions is that in team situations, the fit of members with each other and the team as a whole must be taken into account (Zaccaro & DiRosa, 2012). Therefore, when considering team selection systems, it is crucial to consider the mix of attributes across members, as well as issues like size, current staffing levels, member compatibility, and the team's climate.

Another potential difference between traditional and team selection involves the locus of responsibility for staffing. Although normally ascribed to management, some autonomous work groups are tasked with member recruitment, testing, and hiring (Hackman, 2002; Wellins, Byham, & Wilson, 1991). With the rising popularity of self-managing teams, member-initiated team selection is becoming increasingly common (D'Souza & Colarelli, 2010). In a policy capturing study of hypothetical profiles of team member selection decisions, task skills were significantly more important than attitudinal similarity, race, or physical attractiveness in selecting members of virtual teams (D'Souza & Colarelli, 2010). In face-to-face teams, only gender had a significant effect on decision policies; women chose women more than men in both face-to-face and virtual teams.

As these results highlight, team staffing decisions are generally made from positions within the company and therefore may be smaller and less heterogeneous than external candidate pools more common to individual selection (Zaccaro & DiRosa, 2012). The decision to recruit internal or external candidates for team positions should consider the longevity of the team as well as the depth and breadth of the candidate pool for the task and team skills needed (Zaccaro & DiRosa, 2012). In addition to the distinction between internal and external candidates, the criteria considered by organizational insiders and outsiders making selection decisions are also likely to vary. To illustrate, Whiting and Maynes (2016) found that National Football League (NFL) insiders valued contextual performance much more than external experts did, although both utilized prior task performance in evaluating college football players in the NFL draft. Contrary to predictions, workplace deviance did not significantly affect insider or outsider evaluations.

INDIVIDUAL-LEVEL CONSIDERATIONS

Individual Attributes That Contribute to Effective Teamwork

From a purely practical perspective, organizations typically hire employees individually even if they are going to work as part of a team. For this reason, it behooves team selection researchers to attempt to identify teamwork competencies that can predict as much variance in team performance as possible. Table 37.1 provides a summary of the knowledge, skills, attitudes, and personality traits that are important for team selection, although we do not claim to be exhaustive. In some cases, the variables displayed here have been studied, and even validated, in a selection context. However, in other cases, we have made the link to selection by extrapolating from the broader team performance literature, particularly if the attribute is difficult to train.

Measurement and Validation

Survey-Based Measures and Tests

Because of ease of administration and relatively low cost, surveys are a popular means of assessing KSAOs and personality traits for team member selection. The Teamwork KSA test is commercially available and frequently used by organizations for team selection (O'Neill, Goffin, & Gellatly, 2012). The Teamwork KSA test consists of 35 situational judgment items answered in a multiple-choice format (Stevens & Campion, 1999). On the basis of the conceptual model of teamwork requirements developed by Stevens and Campion (1994), the test captures both interpersonal (conflict resolution, collaborative problem-solving, communication) and self-management (goal-setting, performance management, planning, and coordination) KSAs. Validation efforts showed that the Teamwork KSA test correlates with supervisory ratings of teamwork and taskwork performance (Leach, Wall, Rogelberg, & Jackson, 2005; Stevens & Campion, 1999), peer nominations of teamwork (Stevens & Campion, 1999), team task proficiency (Hirschfeld, Jordan, Field, Giles, & Armenakis, 2006), observed ratings of effective teamwork (Hirshfeld et al., 2006), and contextual performance (Morgeson, Reider, & Campion, 2005) in organizational and military samples. Moreover, one sample revealed incremental criterion-related validity beyond employment aptitude tests (Stevens & Campion, 1999). Higher scores on the Teamwork KSA test also yielded higher observable teamwork behavior scores and peer ratings of individual effectiveness in a student sample (McClough & Rogelberg, 2003). In a recent quantitative review of the Teamwork KSA test, which included nine studies (33 coefficients), O'Neill and colleagues (2012) found an average criterion validity of .20.

Despite these strengths, a cautionary note is that strong correlations (.80) have raised the issue of redundancy with cognitive ability. Furthermore, in a field sample of 268 job candidates using a predictive validity design in a team-based organization, O'Neill and colleagues (2012) concluded that none of the observed correlations between the Teamwork KSA Test and team performance were significant. In addition, subscale reliabilities were inadequate, and no interpretable factor structure emerged, although these findings are not uncommon for situational judgment test (SJT) measures. The Teamwork KSA Test also correlated higher with taskwork than did teamwork criteria (perhaps because of the strong correlation with cognitive ability). Another SJT developed and validated for team member selection is the Team Role Test (Mumford, van Iddekinge, Morgeson, & Campion, 2008), which assesses declarative and procedural knowledge of team role types and the situational contingencies needed for role adaptability. The Team Role Test consists of nine team scenarios, each requiring one appropriate role, 10 items per scenario. In academic and work team samples, the Team Role Test was positively related with peer ratings of team role performance (Mumford et al., 2008). Furthermore, the SJT demonstrated incremental validity beyond cognitive ability and Big Five traits in predicting role performance (Mumford et al., 2008).

TABLE 37.1

Examples of KSAOs That May Be Important for Team Selection

Attribute	*Definition*	*Related/Subsidiary Constructs*	*Validation/Measurement Issues*
Ability			
Cognitive Ability	Capacity to perform higher mental processes such as problem solving and reasoning	Verbal, numerical, spatial	Evidence of a positive relationship with team performance across multiple meta-analyses (Bell, 2007; Devine & Phillips, 2001; Stewart, 2006)
Knowledge			
Knowledge of teamwork skills	Understanding of the necessary underpinnings and behavioral requirements of effective team performance	Understanding teamwork, familiarity with teamwork, knowledge of teamwork KSAs	Assessed via Teamwork KSA test. Some validation data predictive of effective teamwork (Hirschfeld et al., 2006; McClough & Rogelberg, 2003; Stevens & Campion, 1999), but also non-supportive predictive validity evidence (O'Neill et al., 2012).
Knowledge of team roles	Knowledge of team roles and their situational contingencies		Assessed via Team Role Test. Validation data show that this test predicts role performance (Mumford et al., 2008).
Skills			
Adaptability	Ability of team members to adjust their strategies in response to task demands, by reallocating team resources	Compensatory behavior, backing-up behavior, dynamic reallocation of function, mutual adjustment, workload balancing	Best assessed in a work sample or other simulation. Some data to suggest that adaptability improves teamwork (Salas, Nichols, & Driskell, 2007).
Interpersonal	Ability of team members to optimize the quality of team member interactions through resolution on dissent, motivational reinforcement, and cooperative behaviors	Morale building, conflict resolution, negotiation, cooperation, consulting with others, interpersonal trust, social perception, persuasion, helping others	May be assessed through a combination of survey-based and behavioral measures. Some validation data suggests that interpersonal skills predict teamwork (Morgeson et al., 2005).
Team management/leadership	Ability of team members to direct and coordinate activities; assign tasks; organize workflow among members; and plan, organize, and establish a positive climate	Task motivation, goal-setting, planning and task coordination, establishing roles and expectations, instructing others, planning, organizing	Best assessed in a work sample or other simulation, although survey-based instruments may add value. Some research indicates that individual leadership skills are associated with teamwork effectiveness (Burke et al., 2006).
Assertiveness	Capacity of team members to communicate effectively by sharing ideas clearly and directly in interpersonal situations	Task-related assertiveness, component of extraversion	Can be assessed via survey-based measures or tests, but behavioral measures are better. Some validation data exist (Pearsall & Ellis, 2006; Smith-Jentsch, Salas, & Baker, 1996).

(Continued)

TABLE 37.1 (Continued)

Attribute	*Definition*	*Related/Subsidiary Constructs*	*Validation/Measurement Issues*
Skills			
Mutual performance monitoring	Ability of team members to accurately monitor and assess the work of others; ability to give, seek, and receive task-clarifying feedback in a constructive manner, and to offer advice	Accepting suggestions/criticism; giving suggestions/criticism; intrateam feedback; monitoring and giving feedback; cross checking; error correction; team maintenance	Best assessed through a combination of survey-based and behavioral measures. Has been linked to team performance (Marks & Panzer, 2004).
Communication	Ability to clearly and accurately articulate and exchange information among team members using accepted terminology; acknowledge of receipt of information; clarify message when needed	Active listening; information exchange; closed-loop communication; information sharing; open exchange; consulting with others	Best assessed through a combination of survey-based and behavioral measures. Closed-loop communication has been shown to predict teamwork (Bowers, Pharmer, & Salas, 2000).
Cross-boundary	External, task-related actions directed to other teams or the larger organizational context	Organizational awareness, organizational resourcefulness, building relationships with other teams	Survey-based measure developed by Druskat and Kayes (1999).
Attitudes			
Preference for teamwork	Inclination and desire to be part of a team; willingness to engage with other people in pursuit of task success; appreciation for the importance of teamwork in accomplishing challenging tasks	Team/collective orientation, importance of teamwork; appreciation for teamwork; desire to work in a team; collectivism; preference for teamwork	Assessed with survey-based measures. Some evidence to suggest that a collective orientation leads to better teamwork (Driskell & Salas, 1992) and that those who enjoy working in a team engage in less social loafing (Stark, Shaw, & Duffy, 2007) and have better team performance (Bell, 2007; Helmreich & Foushee, 1993).
Self-efficacy for teamwork	Degree to which individuals believe that they have the requisite knowledge, skills, and other attributes to be a successful team member	Teamwork self-efficacy	Measured with surveys (McClough & Rogelberg, 2003). Some data support the link to effective teamwork (e.g., Tasa, Taggar & Seijts, 2007).
Other Characteristics			
Team Role Experience and Orientation (TREO) dimensions Personality	Predisposition to occupy team roles based on prior experience	Organizer, doer, challenger, innovator, team builder, and connector roles	Measured with surveys. Some content and predictive validity evidence for TREO dimensions (Mathieu et al., 2015)
Conscientiousness	Extent to which a person is self-disciplined and organized	Need for achievement, ambition, responsible, dependable	Assessed with survey-based measures. Evidence of a positive relationship with team performance from multiple meta-analyses (Bell, 2007; Mount, Barrick, & Stewart, 1998; Peeters, van Tuijl, Rutte, & Reymen, 2006). Positively related to contextual performance in team settings (Morgeson et al., 2005).

Attribute	*Definition*	*Related/Subsidiary Constructs*	*Validation/Measurement Issues*
Extraversion	Extent to which an individual is social, outgoing, and talkative	Enthusiasm, optimism, assertiveness, dominance, gregariousness	Assessed with survey-based measures. Small, but significant positive relationship with team performance in two meta-analyses (Bell, 2007; Peeters et al., 2006). Positively related to contextual performance in team settings (Morgeson et al., 2005).
Agreeableness	Extent to which an individual is gentle and cooperative	Likeability, interpersonal facilitation, trustworthy, tolerance, courteousness	Assessed with survey-based measures. Evidence of a strong, positive relationship with team performance from multiple meta-analyses (Bell, 2007; Mount et al., 1998; Peeters et al., 2006). Positively related to contextual performance in team settings (Morgeson et al., 2005).
Emotional stability	Extent to which an individual is calm and poised	Neuroticism (negative relationship), adjustment, lack of nervous tendencies, not anxious, security	Assessed with survey-based measures. Small, positive relationship with team performance when mean-aggregated in two meta-analyses (Bell, 2007; Mount et al., 1998). Positively (but only marginally) related to contextual performance in team settings (Morgeson et al., 2005).
Openness to Experiences	Extent to which an individual is curious and imaginative	Original, daring, and broad-minded	Assessed with survey-based measures. Positively related with team performance in two meta-analyses (Bell, 2007; Mount et al., 1998).

Recently, a 48-item survey measure has been developed and validated to assess members' propensities to occupy different team roles independent of particular team contexts (organizer, innovator, doer, challenger, team builder, and connector; Mathieu, Tannenbaum, Kukenberger, Donsbach, & Alliger, 2015). Self-reports of these six Team Role Experience Orientation (TREO) dimensions were content validated, found to be distinguishable from Big Five personality constructs, and predicted corresponding peer ratings of their behaviors three months later (Mathieu et al., 2015). It should be noted that there were high intercorrelations (averaging .70 across samples) among the six dimensions.

Work Sample and Interview Measures

Although the advantages of behaviorally based measures for team processes and performance are readily acknowledged by team scholars (Salas, Burke, Fowlkes, & Priest, 2004), placing applicants in realistic team situations is more difficult and expensive to employ than administering survey-based measures and tests. Nevertheless, team-oriented assessment centers utilizing team consensus exercises have been successfully implemented (Kirksey & Zawacki, 1994; Wellins, Byham, & Dixon, 1994). Moreover, interviews have been shown to effectively measure interpersonal skills (Huffcutt, Conway, Roth, & Stone, 2001). Indeed, a study investigating the selection of individuals in organizational teams found that social skills, as measured by a structured interview, predicted contextual performance beyond Big Five traits and the Teamwork KSA test (Morgeson et al., 2005). Technologies such as intelligent video-based systems may also prove useful in providing a realistic context in which to assess team skills (Cannon-Bowers, Bowers, & Sanchez, 2007).

TEAM-LEVEL CONSIDERATIONS

Thus far, we have discussed the individual-level KSAOs needed for team functioning, which assumes that teams whose members score higher on taskwork and teamwork competencies will perform better. However, "when individuals form groups the effects of a valid selection procedure can be nullified by any lack of cooperation within groups and by bottlenecks, shirking, and social loafing" (Schneider, Smith, & Sipe, 2000, p. 99). Therefore, it is critical that the overall team context be considered in selection for team membership. In the following sections, we discuss team size, person-group fit, and team composition.

Team Size

Because too few members can result in unreasonable work demands and too many members can produce unnecessary redundancy, an important consideration in team staffing involves determining an appropriate team size. Although larger teams are generally advantaged in terms of division of labor and knowledge resources, they are disadvantaged by lower member involvement and heightened coordination difficulties (Aube, Rousseau, & Tremblay, 2011; Staats, Milkman, & Fox, 2012). Managers tend to focus on the potential for process gains when increasing team size, but they underestimate process losses (Staats et al., 2012). This is unfortunate, as a number of studies have found negative outcomes for increasing the number of team members. For example, Aube and colleagues (2011) found a negative relationship between team size and the quality of group experience in organizational teams, as mediated by counterproductive work behaviors (e.g., interpersonal aggression, boastfulness, misuse of resources). Across 329 U.S. work groups, Wheelan (2009) concluded that groups with 3–6 members were more productive and more developmentally advanced than groups with 7–10 members or more than 11 members (no significant difference between the latter two categories). Evidencing the same trend, groups of 3–4 members were more productive and developmentally advanced than groups of 5–6 members (Wheelan, 2009).

Based on the studies presented above, one prescription is to staff teams with the smallest number required to do the work, but determining the optimal figure is contingent on team and task type (Steiner, 1972). To illustrate, a meta-analysis by Stewart (2006) found that the overall relationship between team size and performance was very small, but moderation effects revealed stronger positive results for project and management teams as compared to production teams. Because project and management teams involve unstructured tasks and interaction with external constituencies, more team members may be desirable when the environment is complex (Stewart, 2006). Thus, the right size for a team depends on its goals and purpose.

Person-Group Fit

Subsumed under the broad, multilevel construct of person-environment (PE) fit, person-group (PG) or person-team fit refers to the compatibility between members and their groups (Werbel & Johnson, 2001). Two general categories of PG fit have been identified. Supplementary PG fit occurs when the individual and the workgroup share similar personality, goals, values, and abilities. In contrast, complementary PG fit occurs when members have different competencies, offsetting others' weaknesses and offering resources that support each other (Werbel & Johnson, 2001). For example, a person with a marketing background may fill a gap in a team comprising engineers with complementary fit, whereas a person with an engineering background may join a team of other engineers with supplementary fit.

Research on supplementary fit or PG congruence has examined fit on a variety of content domains, such as values (e.g., Adkins, Ravlin, & Meglino, 1996; DeRue & Morgeson, 2007), goals (e.g., Kristof-Brown & Stevens, 2001), and personality traits (e.g., Kristof-Brown, Barrick, & Stevens, 2005a). Among these various content dimensions, PG value congruence appears to have the strongest correlations, with various outcomes given the relative constancy of value systems (Kristof-Brown, Zimmerman, & Johnson, 2005b). With respect to complementary fit on personality traits, there is some evidence that extraverts are more attracted to teams of introverts, whereas introverts are more attracted to teams of extraverts (Kristof-Brown et al., 2005a). Compared with the other types of fit (e.g., person-job, person-organization, person-supervisor), PG fit has received the least research attention. However, research activity has grown in the past several years.

Individual member characteristics have been shown to be important predictors of PG fit. In particular, individual performance and growth satisfaction of team members were found to positively predict person-team congruence on values and person-role demands-abilities fit (DeRue & Morgeson, 2007). In addition, individuals who worked in many companies in the past placed greater emphasis on person-organization fit, whereas individuals with longer working experience prioritized person-job fit more, deflating the significance of PG fit when evaluating satisfaction with work and team (Kristof-Brown, Jansen, & Colbert, 2002). Hollenbeck (2000) discussed the various ways in which individual personal traits can be matched with team type to improve team performance. For example, to achieve internal person-team fit, it is recommended that researchers and practitioners select individuals who are high on cognitive ability for teams characterized by broad and undefined roles, but select individuals who are relatively high on openness to experience for teams that constantly need to change and adapt to the environment (Hollenbeck, 2000). Additionally, functional team structures, which are defined by roles that are narrow and low in scope, require agreeable members, whereas self-managing teams are better suited for high-conscientiousness members. Finally, misaligned team structures, which occur when the team structure is not well matched to the environment, need emotionally stable individuals to handle the stress of associated problems (Hollenbeck, 2000).

Research on PG fit has also demonstrated various advantages for the individual and team. For example, PG value congruence contributed to increased satisfaction with work and social relationships, improved performance on interpersonal dimensions, and reduced tardiness and absenteeism (Adkins et al., 1996). Additionally, similarity between the individual and team on perceived self and team mastery goals as well as self and team performance goals led to increased interpersonal contributions to the workgroup (Kristof-Brown & Stevens, 2001).

Self-team performance goal congruence also improved satisfaction with work and the team (Kristof-Brown & Stevens, 2001). The PG fit-outcome relationship can be characterized as reciprocal and cyclical, in that improved PG fit enhances individual and group outcomes, which then results in better perceived PG fit (DeRue & Morgeson, 2007). It is important for researchers to measure the perceptions of team members in assessing PG fit, as studies have shown the greater salience of perceived PG fit as opposed to actual PG fit in determining individual outcomes (Kristof-Brown & Stevens, 2001). Indeed, shared team member perceptions of high supplementary and high complementary fit was associated with better performance (De Cooman, Vantilborgh, Bal, & Lub, 2016).

Two meta-analyses have shed light on the relationship between PG fit and a number of outcomes. First, Kristof-Brown and colleagues (2005b) established that PG fit (broadly defined) taps an independent conceptual domain distinct from other types of fit. Interestingly, PG fit predicted outcomes such as work satisfaction and overall performance equally as well as more established dimensions of fit (Kristof-Brown et al., 2002; Kristof-Brown et al., 2005b). Specifically, PG fit was positively correlated with job satisfaction, organizational commitment, supervisor satisfaction, overall performance, and contextual performance and negatively correlated with intention to quit (Kristof-Brown et al., 2005b). Coworker satisfaction and group cohesion exhibited particularly strong relationships with PG fit. In a second meta-analysis, Oh et al. (2014) obtained similar results to Kristof-Brown and colleagues (2005b), but also compared the relationship between PG fit and various outcomes across cultures. They found that the relationship between PG fit and organizational commitment, job satisfaction, and performance was stronger in East Asian samples than in North American samples. These differences appeared to be driven by cultural values of in-group and institutional collectivism and power distance. The results indicate that culture plays an important role in shaping PG fit, which has implications for cross-cultural team selection.

Although previous research focused on individual-level outcomes, recent studies have begun focusing on team-level outcomes. Kristof-Brown, Seong, Degeest, Park, and Hong (2014) examined team-level collective fit, which was defined as "team members' shared assessment of compatibility with each other and with the requirements of the task environment" (p. 971). Team-level collective fit positively predicted team cohesion, team efficacy, and team performance beyond individual-level fit. Team-level collective fit also positively predicted individual-level commitment and performance beyond individual-level fit. Also at the team-level, Seong, Kristof-Brown, Park, Hong, and Shin (2015) found that supplementary and complementary fit were better represented as a single PG fit factor. Sex diversity and work experience diversity were negatively related to PG fit perceptions, whereas age diversity and education diversity were positively related to PG fit perceptions. Furthermore, team-level fit was more strongly related to performance compared to the relationship between individual-level fit and performance, as indicated by the Kristof-Brown and colleagues (2005b) meta-analysis.

Given the advantages gleaned from PG fit, it is important for managers and practitioners to consider the match between individuals and the groups to which they are assigned. Measuring individual-level teamwork skills is necessary, but not sufficient, for team selection, as the interaction between individual characteristics, the team environment, and culture must be taken into account. One available tool for determining PG fit is the Team Selection Inventory, which assesses an individual's preferred style for working in a team as compared to the team's current climate (Burch & Anderson, 2004). Evidence of acceptable psychometric quality was reported across six studies (Burch & Anderson, 2004).

Team Composition

Composition is a broad term referring to configurations of attributes within small groups (Levine & Moreland, 1990). Whereas the PG fit literature has mostly examined individual-level criteria, team composition studies aggregate member characteristics to the group level and investigate their impact on group-level outcomes.

The emerging conceptual framework reflects a contingency perspective by suggesting that how and why composition variables influence team outcomes will depend on a multiplicity of factors, including the aggregation method used, the individual differences assessed, the particular outcomes studied, and the nature of the team task (Mathieu et al., 2013). For example, team composition research is complicated by the various ways that individual scores can be combined to arrive at a group score (e.g., mean, variance, the lowest or highest team member scores). Studies have demonstrated that results differ, depending on the type of aggregation used, and that each captures a unique aspect of team composition (e.g., Barrick, Stewart, Neubert, & Mount, 1998; Bell, 2007). In the following sections, we organize our discussion of these contingency factors by reviewing three broad approaches to assessing team composition: mean values, diversity indices, and more complex configurations (Mathieu et al., 2008).

Mean Values

The most popular and straightforward approach to aggregate individual scores to the team level is to simply average each member's responses. *Cognitive ability* has yielded the most robust results in team composition research, replicating across field maintenance teams (Barrick et al., 1998), student laboratory groups (Day, Arthur, Miyashiro, Edwards, & Hanson, 2004), human resource teams (Neuman & Wright, 1999), military tank crews (Tziner & Eden, 1985), and hierarchical decision-making teams (Lepine, Hollenbeck, Ilgen, & Hedlund, 1997). Isomorphic to the strong positive relationship between cognitive ability and individual-level performance (Schmidt, 2002), several meta-analyses have concluded that teams with smarter members do better (Bell, 2007; Devine & Philips, 2001; Stewart, 2006). When different operationalizations of cognitive ability are compared (e.g., mean, maximum, minimum, variance), the mean has emerged as the strongest predictor of team performance across several task types (Day et al., 2004; Devine & Philips, 2001). Although the results for cognitive ability were notably stronger, a meta-analysis by Stewart (2006) found a small positive relationship between *expertise* (mean-aggregated member experience and education) and team performance.

Regarding *personality traits*, much of the existing mean-aggregated research has focused on the Five-Factor Model (conscientiousness, extraversion, agreeableness, neuroticism, and openness to experience). Multiple meta-analyses have concluded that teams composed of conscientious and agreeable members perform better (Bell, 2007; Peeters, van Tuijl, Rutte, & Reymen, 2006; Stewart, 2006). Bell's (2007) meta-analysis also found that mean levels of all five traits of the Five-Factor Model positively predicted performance in field settings. Not surprisingly, these personality traits generally exhibited stronger relationships with performance for organizational teams as compared to laboratory groups (Bell, 2007; Peeters et al., 2006).

In terms of *values*, there is meta-analytic support for a positive relationship between team performance and both mean team collectivism and mean preference for teamwork in field settings (Bell, 2007). In addition, a study by Hobman, Bordia, and Gallois (2004) found that group openness to diversity was positively associated with team involvement.

Diversity Indices

Diversity describes the "distribution of differences among the members of a unit with respect to a common attribute" (Harrison & Klein, 2007, p. 1200). Diversity can be represented as differences of opinion among group members on a horizontal continuum (separation), differences in access to distinct sources of information (variety), or differences regarding valued resources (disparity; Harrison & Klein, 2007). As the team diversity literature is voluminous, we will briefly highlight mostly meta-analytic work on demographics, job-related diversity, and personality.

The results of multiple meta-analyses have consistently yielded negligible effects for the relationship between heterogeneity on *demographic variables* (e.g., gender, race, age) and team performance (Bell, Villado, Lukasick, Belau, & Briggs, 2011; Bowers, Pharmer, & Salas, 2000;

Horowitz & Horowitz, 2007; Joshi & Roh, 2009; Stewart, 2006; van Dijk, van Engen, & van Knippenbert, 2012; Webber & Donahue, 2001). Therefore, researchers have been strongly advised to explore moderating influences rather than focus solely on main effects (van Knippenberg & Schippers, 2007).

Team and task types have been strongly implicated as moderator variables that account for the inconsistency in research findings concerning the effect of composition variables on team outcomes (e.g., Bell et al., 2011; Bowers et al., 2000; Webber & Donahue, 2001). The potentially positive effects of work group diversity on group performance are more likely to emerge in teams performing relatively complex tasks that require information processing, creativity, and collaborative decision making where the exchange and integration of diverse task-related information may stimulate thorough consideration of ideas (Bowers et al., 2000; Stewart, 2006; van Knippenberg, De Dreu, & Homan, 2004). Time is another moderator that has proven fruitful in explaining some of the null and inconsistent research findings. Specifically, the effects of demographic diversity on team processes have been shown to weaken over time (or with greater group tenure), whereas the effects of deep-level diversity (e.g., job-related attitudes) strengthen over time (e.g., Harrison, Price, & Bell, 1998; Harrison, Price, Gavin, & Florey, 2002). In addition to team/task types and time, accounting for contextual factors such as industry and occupation increased the size of the relationship between demographic diversity and team performance in a meta-analysis by Joshi and Roh (2009). Moreover, meta-analytic results revealed the role of rater biases in that the relationship between demographic diversity and performance was negative when performance was rated by external team leaders but nonsignificant when performance was objectively measured or rated by internal team leaders or team members (van Dijk et al., 2012).

Meta-analytic results for *job-related diversity* have also been inconsistent. Although Webber and Donahue (2001) found that highly job-related diversity (functional, educational, and industry background) was not related to team outcomes, Horowitz and Horowitz (2007) found a positive relationship with both the quality and quantity of team performance. A more recent meta-analysis by Bell et al. (2011) established that diversity of functional background measured as variety (but not educational diversity) was positively associated with team performance (Bell, 2007). Once again, interactive effects play a key role in interpreting mixed results. In their meta-analysis, Van Dijk and colleagues (2012) found that task complexity moderated the relationship between job-related diversity and team performance, and that job-related diversity was more positively associated with innovative performance than in-role performance. Similarly, functional background and educational diversity yielded stronger effects with performance when innovation was the criterion compared to efficiency as the criterion (Bell et al., 2011). Industry, occupation, and team context also meta-analytically emerged as moderators of the relationship between job-related diversity and team performance (Joshi & Roh, 2009).

With regard to *personality*, heterogeneity may be disadvantageous for some traits and advantageous for others. Because low- and high-conscientiousness members hold different perspectives on how much effort to invest toward goal achievement, diversity on conscientiousness has been negatively related to performance (Barrick et al., 1998; Humphrey, Hollenbeck, Meyer, & Ilgen, 2011). In contrast, diversity on extraversion may lead to more positive outcomes because roles are complementary, with some members talking/leading and others listening/following (e.g., Humphrey, Hollenbeck, Meyer, & Ilgen, 2007; Neuman, Wagner, & Christiansen, 1999). Several studies have found favorable results for variability on extraversion (e.g., Barry & Stewart, 1997; Humphrey et al., 2011; Mohammed & Angell, 2003; Neuman et al., 1999), but meta-analytic results have not been supportive (Bell, 2007; Peeters et al., 2006). In general, meta-analyses investigating member heterogeneity on personality characteristics have not yielded strong findings (e.g., Bell, 2007; Stewart, 2006). Extending beyond Big Five personality traits, research has begun to demonstrate that temporal diversity on traits such as time urgency (chronic hurriedness), polychronicity (preference for multitasking), and pacing style (pattern of effort distribution in working toward deadlines) has implications for team processes and performance (Mohammed & Angell, 2004; Mohammed & Nadkarni, 2011, 2014).

Complex Configurations

Whereas mean and diversity aggregation methods assume that all members make equal contributions to the team, selecting the maximum or minimum team member score assumes that particular members exert a disproportional influence on team processes and outcomes (e.g., Mathieu et al., 2014). For example, the Bell (2007) meta-analysis found that a single disagreeable member impaired team performance. Considerably less research has been devoted to compilational models capturing complex patterns of lower-level constructs in comparison to compositional models representing more straightforward combinations like the mean or variance (Kozlowski & Klein, 2000).

Also representing a compilational approach, faultline theory explores the hypothetical dividing lines that may split members into subgroups based on one or more attributes (Lau & Murnighan, 1998). Rather than focusing on a single demographic characteristic at a time (e.g., gender), the faultline approach recognizes that individuals have multiple identities simultaneously (e.g., Hispanic female under 30) and that the configuration of those differences matters in teams. Meta-analytic evidence shows that the more demographic differences converge with each other (e.g., all male members of a work group are Caucasian, while all female members are Hispanic), the more groups experience heightened task and relationship conflict as well as decreased cohesion, satisfaction, and performance (Thatcher & Patel, 2011).

Team and Task Type Revisited

Steiner's (1972) task typology has been the most commonly used approach to specifying the appropriate operationalization in the team composition literature. According to Steiner (1972), mean aggregation is best suited for additive tasks, in which group performance is the sum of each member's contribution (e.g., shoveling snow). Minimum scores are deemed appropriate for conjunctive tasks where the weakest member determines team performance (e.g., mountain climbing), and maximum scores are deemed appropriate for disjunctive tasks where the most competent member determines team performance (e.g., problem solving). However, studies have been critical of this rationale (e.g., Day et al., 2004), and a meta-analysis found that stronger effects were not observed when the operationalization matched the task type of Steiner's typology (Bell, 2007).

Because Steiner's (1972) task taxonomy focused exclusively on the way in which group members' contributions combine into a team outcome, additional variables must be considered in determining the appropriate method of aggregation, including the predictor and outcome variables being assessed as well as team and task type. For example, in a sample of business student teams, Mohammed and Angell (2003) found that diversity on agreeableness, neuroticism, and extraversion affected oral presentation scores, but mean cognitive ability positively affected written reports. Reflecting these findings, Bell's (2007) meta-analysis concluded that the best aggregation method depended on the composition variable of interest and that no single operationalization emerged as superior for all composition variables. To illustrate, the strongest relationships with team performance were observed when conscientiousness was operationalized as the team mean but when agreeableness was operationalized as the team minimum (one disagreeable member was enough to be a disruptive force) (Bell, 2007).

Team Composition Tools

In recent years, computer-based systems have been developed to assist with the multiplicity of factors that should be taken into account when compositing teams. In this section, we feature three tools, the first specifically designed for student teams and the second and third developed for organizational teams.

A team of academics developed a free web-based system (www.CATME.org) designed to compose student teams and track their performance, called the Comprehensive Assessment of Team

Member Effectiveness (CATME; Layton, Loughry, Ohland, & Ricco, 2010). Relevant to team selection, the *Team-Maker* tool in the CATME system allows instructors to collect student data on various criteria (e.g., demographic information, grade point average, preferred team roles, meeting availability) via a computer-aided team formation survey. Instructors can then select which criteria to use, weight each factor, and determine the maximum and minimum team size in assigning members to teams (Hrivnak, 2013). The system algorithm then automatically composes teams as specified.

Based on interviews with team staffing experts from a variety of industries, researchers developed a generic, customizable tool to help decision makers compose teams (Donsbach et al., 2009). The *Team Optimal Profile System* (TOPS) provides an algorithm that balances competing demands, including individual team and task competencies, task interdependence, and interrelationships among members. A variety of team staffing decisions are accommodated, including assigning multiple people to a new team or more than one person to an existing team. Leaders provide information in the customization process, including individual KSAOs, minimum job requirements, member availability, and constraints such as which individuals should not be paired together. Decision makers also assign each attribute a weight representing its importance. The TOPS algorithm then optimizes the mix of members' KSAOs with job demands, and changes can be made as new information becomes available (Donsbach et al., 2009).

Millhiser, Coen, and Solow (2011) investigated how information about employee interdependencies could be used to compose teams to maximize performance. Computer simulation was used to run thousands of experiments testing various interdependence configurations. Specifically, policies that divided members equally across teams based on individual performance were compared with policies that distributed members based on how well they worked together. Results revealed that dividing skilled workers equally across teams ("spreading the talent around") was less effective than allowing good performers to maintain most of their relationships and disrupting the relationships of poor performers. Thus, Millhiser and colleagues (2011) recommended that managers respect prior member interdependencies (e.g., how supportive members are to each other) in forming teams to maximize performance across teams.

DISCUSSION

Implications for Research

Although many theoretically derived variables have been hypothesized and investigated as important contributors to team effectiveness, few studies have been conducted to validate the predictive power of these attributes in a selection context. Moreover, studies that assess the combinatorial contributions of individual- and team-level factors are required in order to optimize the prediction of effective teamwork. Because many aspects of team functioning cannot be easily measured via surveys, efforts to develop behaviorally based assessment tools to capture observed team actions objectively and reliably are also sorely needed. New technologies have emerged as candidates for simulating team environments realistically, including role players, video-based systems, and virtual world technologies (Cannon-Bowers et al., 2007), but they must be validated for team selection.

Although meta-analytic results have been straightforward regarding mean-aggregated characteristics (e.g., Bell, 2007; Stewart, 2006), findings have been far less conclusive regarding how to improve the mix of competencies in a team or how to select new team members while considering existing team member KSAOs. Criticized as being "conceptually scattered" (McGrath, 1984, p. 256) and "atheoretical" (Levine & Moreland, 1990, p. 594), well-developed models adopting a contingency and multilevel perspective are needed to help clarify the complex patterns of variables that are deemed important in the team composition literature. A comprehensive "meso" approach to team staffing involves not only multiple levels but also cross-level interactions (Ployhart, 2004).

Team boundaries are becoming more dynamic, permeable, and difficult to identify because many employees are members of multiple teams simultaneously, work in multiple geographies and/or time zones, may join or leave teams at different times, and are expected to self-govern

(Tannenbaum et al., 2012). Given the increasing dynamism and complexity of many team contexts, the team composition literature needs to revisit many of its simplistic assumptions regarding membership stability and equal member contributions to team dynamics (as assumed by mean aggregation). Qualitative research, longitudinal designs, computational models, and network approaches can help achieve higher levels of sophistication theoretically, methodologically, and analytically (Mathieu et al., 2014).

Implications for Practice

Clearly, the starting point in selection for team membership should be a team-based task analysis that specifies the nature of the team and the purposes for which it exists. Based on the need to account for both individual member performance as well as team performance as a whole, we suggest that a multi-phase procedure be utilized for team selection. In the first stage, generic team and task competencies would be assessed, including cognitive ability, conscientiousness, agreeableness, preference for teamwork, and interpersonal KSAs. In the second stage, a contingency framework would be adopted to examine the synergy of several factors, including the type of team and the outcomes that are important, task-specific and team-specific competencies, and the capability and personality compatibility of members. Group-role analysis, which identifies the nature of group norms and group-specific task roles, maintenance roles and role interactions, should also be leveraged in the process of identifying the complementary and supplementary needs of the team (Werbel & Johnson, 2001).

Convergent meta-analytic results offer some guidance to practitioners in their quest to staff teams effectively in organizations. Both taskwork and teamwork competencies have been shown to contribute unique variance as predictors of team performance (Bell, 2007). Specifically, multiple meta-analyses have confirmed that teams with smart, conscientious, and agreeable members perform better (Bell, 2007; Peeters et al., 2006; Stewart, 2006). Individual meta-analyses have also found that higher mean levels of expertise (Stewart, 2006) and team collectivism (Bell, 2007) are also related to higher team performance. As compared to the range of predictors investigated by researchers (e.g., demographics, personality, attitudes, abilities, experience), it appears that practitioners formally consider a narrower subset of variables in team assignments (Donsbach et al., 2009). Although it is recommended that the heterogeneity/homogeneity of member characteristics be explored in team selection (McClough & Rogelberg, 2003), the inconsistency and complexity of current research findings disallow the kind of straightforward prescriptions that are appealing to practitioners. Whereas moderated results are attractive to researchers in specifying the conditions under which diversity will aid or hinder team performance, the number of contingencies to be considered significantly complicates the feasibility of interventions to compose teams. However, computer-based systems like CATME and TOPS are promising developments that can incorporate a wide range of individual and team-based factors when composing teams.

To summarize, Mathieu and colleagues (2013) recommend a seven-step process for composing teams, beginning with (1) describing the team (e.g., positions most critical for team success, interdependence levels, member strengths and weaknesses) and (2) clarifying position, team, and organizational requirements. Next, (3) the candidate pool is established, taking into account the eligibility, availability, and constraints of members. Candidates are then (4) assessed in terms of individual and team competencies and (5) tentatively assigned to teams. Finally, the proposed team composition is (6) assessed to ensure that important positions are staffed with high-quality candidates and (7) adjusted as needed.

The legal issues underlying selection for team membership must also be considered. Whereas the legal perspective emphasizes standardization and the importance of evaluating all applicants according to a common set of metrics, the team contingency perspective emphasizes customization and the value of member compatibility as well as skill heterogeneity. Is it legally defensible for an employer to reject a candidate who has the same competencies of other team members and select another candidate with different competencies? What are the legal ramifications when selection for team membership is seen as promotion or special placement? These questions have yet to be fully explored and will likely remain unresolved because significant legal concerns

about team placement are uncommon in practice. This is because organizations are generally choosing among employees who have already been selected into the organization as compared to the more scrutinized decisions regarding external candidate pools. Thus, organizations with many teams have considerable latitude to both ensure fairness according to legal standards as well as place individuals in collectives that maximize team effectiveness.[2]

CONCLUSIONS

Understanding how to form superior teams is the key to harnessing selection as a tool for improving team performance. Given the importance of teams in many modern organizations, it is surprising that the state of the science and practice in team selection has not advanced further. Although there is no shortage of variables that have been hypothesized to affect team performance, specific studies validating predictors of team effectiveness in a selection context are relatively rare. However, computer-based tools (e.g., CATME and TOPS) have begun to offer greater sophistication and precision in composing teams by considering a range of competencies, task features, and constraints (Donsbach et al., 2009; Layton et al., 2010; Millhiser et al., 2011). Nevertheless, more work is needed regarding the categories of attributes that are necessary to optimize team functioning—those that are held by individual members and those that transcend individual members and exist at the team level. Although the increasing complexity of modern-day teams makes conducting team research even more challenging than it already is, furthering our understanding of team selection practices may be one of the most fruitful directions for future research, with clear implications for practice.

NOTES

1. For the purpose of this chapter, teams are defined as "collectives who exist to perform organizationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies, maintain and manage boundaries, and are embedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity" (Kozlowski & Bell, 2003, p. 334).
2. The authors would like to thank Nancy Tippins and Doug Reynolds for this addition.

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