Developing the 21st Century (and beyond) Workforce: A Review of Interpersonal Skills & Measurement Strategies

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Abstract

Interpersonal skills (IPS) are crucial in today's business environment. Corporations consistently rank IPS as one of the most important for success. Both science and practice must, therefore, continue efforts that lead to development and acquisition of these critical skills. However, as there are individual differences that influence effective interpersonal performance and role of learning is to maximize one's potential, students need to be educated in effective IPS before entering the workforce. This requires a complete understanding of the construct from a scientific perspective to enable practical development of targeted lesson plans designed to provide opportunities to learn about and develop interpersonal competence. This also requires methods to assess interpersonal skill levels to differentiate between what is effective and ineffective. In attempts to provide this scientific clarity, we provide a state of the science with regard to IPS measurement by focusing on (1) what dimensions constitute IPS, (2) how these dimensions are typically measured, and (3) issues with various IPS measurement techniques.

Developing the 21st Century (and beyond) Workforce:
A Review of Interpersonal Skills & Measurement Strategies

> "The most important single ingredient in the formula of success is knowing how to get along with people." ~ Theodore Roosevelt

> "There are three basic skills that students need if they want to thrive in a knowledge economy: the ability to do critical thinking and problem-solving; the ability to communicate effectively; and the ability to collaborate."
> ~ Dr. Tony Wagner

Despite the fact that work settings have changed dramatically in the past several decades, the ability to effectively communicate and get along with others, or *interpersonal skills* (IPS), remain crucial in today's business environment. Corporations have consistently ranked IPS as one of the most important requirements for success in positions with both international and non-international responsibilities (Beamish & Calof, 1989; Porter & McKibbin, 1988; Waner, 1995). IPS are critical to overcoming low perceived organizational support in measures of individual job performance (Hochwarter, Witt, Treadway, & Ferris, 2006) and have been suggested as a key distinguishing factor between a successful and unsuccessful manager (Hayes, 1994, 2002). In teams, interpersonal skills have been found to account for 32 percent of variance in peer ratings of performance (Neuman & Wright, 1999).

Virtually every industry has expressed a need for strong, effective IPS – beyond those typical professions like sales/entrepreneurship (Baron & Markman, 2000; Garavan, 1997), and management (Kilduff & Day, 1994; Wayne, Liden, Graf, & Ferris, 1997). Employees in accounting (Messmer, 2001), the military (DiGiambattista, 2003), and healthcare (Duffy, Gordon, Whelan, Cole-Kelly, & Frankel, 2004; McConnell, 2004) all require strong IPS as interaction with clients (accounting) and civilians (military) has increased dramatically. Much of the current research on IPS occurs in healthcare settings, as administrators and educators want doctors and nurses who can not only provide care, but do so with excellent bedside manner.

Multinational corporations who send employees on overseas assignments encourage IPS training and development initiatives as an estimated 40 percent of expatriates return early from international work assignments, often from an inability to effectively integrate into the new environment, which is extremely costly to organizations (Black & Mendenhall, 1990; Black, Mendenhall, & Oddou, 1991). As the importance of collaboration across the globe increases, IPS will become more and more crucial to organizations within all industries.

As the need for effective IPS increases, both science and practice must continue efforts that lead to development and acquisition of these critical skills. Yet, there is yet another issue critical in developing a workforce competent in IPS. Before science, technology, and business organizations can select individuals with these skills using appropriate measurement tools, or develop interpersonally competent employees through diagnostic performance appraisals and tailored training programs, ***students*** need to be educated in effective IPS before even entering the workforce. Again, this requires a complete understanding of the construct from a scientific perspective to enable practical development of targeted lesson plans designed to provide opportunities to learn about and develop interpersonal competence.

In attempts to provide this scientific clarity, we provide a state of the science with regard to IPS measurement. To achieve this goal, we first describe IPS, focusing on what dimensions comprise IPS. We present a framework and taxonomy (Klein, DeRouin, & Salas, 2006) of IPS, which will be used as the foundation for the remainder of the paper. Drawing upon the work of Klein and colleagues, we then expand on why IPS (with emphasis on IPS measurement) is so critical in today's global economy. We conclude with a presentation of some strategies for measuring IPS, including a discussion of some issues associated with IPS measurement.

What are Interpersonal Skills?

Social skills, social competence, people skills, soft skills, social self-efficacy, and social intelligence are just a few terms often used to describe IPS (Ferris, Witt, & Hochwarter, 2001; Hochwarter et al., 2006; Klein et al., 2006; Riggio, 1986; R. J. Schneider, Ackerman, & Kanfer, 1996; Sherer et al., 1982; Robert J. Sternberg, 1985; Thorndike, 1920). Historically, there have been two main perspectives guiding interpersonal skills research: a trait-based approach that considers IPS as a somewhat stable trait similar to personality characteristics (e.g., Friedman & Miller-Herringer, 1991) or the molecular model (e.g., Michael Argyle & Kendon, 1967)that position IPS as subject to both environmental and situational factors—thus, are situation-specific. Given research findings (e.g., Burgoon & Dunbar, 2000; Hochwarter et al., 2006) supporting both a situation-specific aspect and person-focus (i.e., interpersonal behaviors are partially learned and partially based on instinct), we focus on this molecular view throughout the remainder of this effort.

Generally, researchers agree that there is at least a behavioral component and a cognitive component to IPS. The behavioral component represents the expression of the cognitive component. Social perception (i.e., cognition) involves such processes as attention, decoding, and what some term as social intelligence, or the "knowledge of social customs and expectations, and problem solving," (McDonald, Flanagan, Rollins, & Kinch, 2003, p. 220). Drawing from the works of earlier social intelligence pioneers like Thorndike (1920), Marlowe (1986) suggests that social intelligence rests on the "ability to understand" behaviors, cognitions, and ***attitudes*** of individuals (including oneself) and to translate that understanding into appropriate behavior in any given social situation (p. 52). Argyle's (1969, 1979) frequently cited model of social skills suggest that individuals engage in continuous correction of social performance based on the reaction of others during social exchanges. This definition component implies that there exists a

feedback loop of sorts, in which socially competent individuals continually adapt their behaviors based on feedback (i.e., verbal and non-verbal cues) from others involved in the social exchange.

Based on a thorough review of the IPS literature, Klein and colleagues (2006) define IPS as an umbrella term that refers to "goal-directed behaviors, including communication and relationship-building competencies, employed in interpersonal interaction episodes characterized by complex perceptual and cognitive processes, dynamic verbal and nonverbal interaction exchanges, diverse roles, motivations, and expectancies" (p. 81). This definition provides necessary clarity for measurement purposes as it notes these skills are displayed in *goal-directed behaviors*, which are based on *competencies*. These competencies are driven by both attitudinal and cognitive *processes*. By focusing on the behaviors that are motivated by cognitions and attitudes, this definition allows for measurement of specific actions. Additionally, the inclusion of cognitive and attitudinal aspects provide avenues for exploring antecedents to effective IPS, which can also be measured for incorporation into selection decisions, performance appraisal systems, and training and development initiatives.

Component Dimensions

Despite differences in terminology or views as to whether there are attitudinal, behavioral, *and* cognitive components, researchers agree that IPS is multidimensional (Analoui, Labbaf, & Noorbakhsh, 2000). Efforts have thus focused on identifying specific dimensions that comprise effective IPS. Hogan and Lock (1995) classified critical incidents from employees in a variety of domains into seven categories of social skills: (1) sensitivity to others' needs, (2) flexibility, (3) perceptiveness, (4) instilling trust in others, (5) consistency across interactions, (6) accountability, and (7) effective communication. In identifying characteristics of effective military leaders, Sternberg and colleagues (2000) categorized three specific types of knowledge

that distinguished between effective and ineffective military leaders: (1) intrapersonal skills, (2) interpersonal skills, and (3) teamwork and organizational behavior. IPS include the ability to motivate, influence the boss, develop subordinates, communicate, cooperate with others, and establish trust. Utilizing another military sample to collect critical incidents, Carpenter and Wisecarver (2004) identified four general dimensions (i.e., energizing others, directing others, exchanging information, and building relationships). These four dimensions were further subdivided into 16 sub-dimensions (e.g., influencing others, coordinating, managing perceptions, demonstrating courtesy, socializing, adapting to the social environment) in their model of interpersonal performance. More recently, Kantrowitz (2005) utilized subject matter experts from across five different organizations to organize "soft skill" critical incidents into ten categories that related to performance: (1) communication skills, (2) leadership skills, (3) decision making/problem solving skills, (4) self-management skills, (5) management skills, (6) organization skills, (7) interpersonal skills, (8) political skills, (9) analysis/creativity skills, and (10) selling skills.

Drawing on earlier work from researchers such as Libet and Lewinsohn (1973), Schumaker and Hazel (1984) differentiate between social ***skills*** and social ***competence***. Social skill is simply the active engagement of a cognitive (e.g., empathy, predicting/evaluating consequences of behavior) or behavioral (e.g., non-verbal such as eye contact, verbal such as speech) function when interacting with other individuals. Social competence is the effective enactment of these functions when interacting with others that result in positive outcomes. Competence, therefore, is considered a composite of four distinct social skills: (1) discriminating among social situations to determine whether social behavior is appropriate, (2) selecting the appropriate verbal and non-verbal social skills for the given situation, (3) enacting these social

skills effectively, and (4) perceiving verbal and non-verbal feedback cues from others and accurately adjusting behaviors accordingly. Essentially, social competence involves an evaluative component of whether one's social skills are indeed achieving desired outcomes. The feedback component is congruent with earlier work of Flavell and colleagues (1968) who suggested five steps in effective social interactions, which include recognition of the existence of other perspectives, the need to consider those other perspectives.

IPS Framework

Interpersonal competence as described above has been suggested as critical to effective performance for managers, leaders, and members of work teams (e.g., Hackman, 1987; Hayes, 2002). Research has provided evidence linking IPS to work-related outcomes such as job commitment, task performance, and overall performance (e.g., Ferris et al., 2001). Additionally, IPS have been empirically and theoretically linked to various individuals differences such as agreeableness (e.g., Morgeson, Reider, & Campion, 2005); conscientiousness (e.g., Dudley, Orvis, Lebiecki, & Cortina, 2006), extroversion (e.g., Kantrowitz, 2005), and self-efficacy (e.g., Gist, Stevens, & Bavetta, 1991). When considering various dimensions of IPS, some have argued for the importance of trust to the relationship-building component (Driskell, Goodwin, Salas, & O'Shea, 2006) and agreeableness to the communication and conflict resolution components (Neuman & Wright, 1999), for example. Yet, knowledge of specific outcome relationships is hampered by lack of agreement on a definition and corresponding dimensions. This holds true for antecedents of effective IPS as well.

In efforts to clarify existing confusion regarding IPS and provide a foundation for continued research, Klein, DeRouin, & Salas (2006) studied 58 existing IPS frameworks with over 400 component skills to develop their definition (noted above) and framework (see Figure

1). They suggest that interpersonal effectiveness actually requires competence in several key areas, including perceptions, nonverbal communication, self-presentation, and behavioral sequencing. These skills incorporate both learning from experience and instinct, yet rely on situation-specific knowledge for effective IPS. Thus, the authors provide a molecular-type framework that includes personal components (e.g., life experience and individual differences) as well as situational characteristics (e.g., environmental setting, task demands, and individual roles) as antecedents.

Insert Figure 1 about here

Integrating the multitude of existing literature on various component skills, Klein and colleagues (2006) developed a comprehensive taxonomy of IPS organized around two overarching dimensions: interpersonal communication and relationship-building. They further subdivided these two skill sets into 12 relevant IPS skills. Within the communication domain, the taxonomy includes active listening as well as oral, written, assertive, and nonverbal communication. Under the relationship-building domain, cooperation/coordination, trust, intercultural sensitivity, service orientation, self-presentation, social influence, and conflict resolution/negotiation are noted as the relevant skills. Table 1 describes each of these component dimensions in further detail, and provides related skills for each one as well.

Insert Table 1 about here

Importance of IPS Measurement

As noted in the introduction, IPS is increasingly important in nearly every industry. Some suggest that interpersonal competence, such as self-presentation skills like emotional management, is twice as important to workplace success as general mental ability (GMA) or task expertise (Goleman, 1998). Returning to the quotes introducing this paper, a former President of the United States commented on his view of how critical interpersonal skills were to success. Dr. Wagner, a Harvard educated consultant to school districts across the world, suggests that interpersonal skills, such as communication and the ability to collaborate, are essential for students to acquire. Collaboration can be defined an "evolving process whereby two or more social entities actively and reciprocally engage in joint activities aimed at achieving at least one shared goal" (Bedwell et al., in press). Similar to Klein et al. (2006), Bedwell and colleagues argue that individual differences drive collaborative performance, which is comprised of various emergent states and collaborative behaviors. Coordination and cooperation, two key skill competencies included in the Klein framework also play important roles in successful collaboration. Interpersonal competence, therefore, can easily affect collaborative performance.

Given the increase of collaborative efforts across industries and the globe (Bedwell et al., in press), related skills are important for students to acquire as early as possible, and high levels of both interpersonal and collaborative performance are critical for managers to achieve with their employees and work teams. However, as noted by Sink and Tuttle (1989), it is impossible to effectively manage something that cannot be measured, which could be a reason why efforts at fostering successful collaborations have proven difficult for managers (Thomsom, 2001; Thomsom & Perry, 1998). This has created both a scientific and practical need to find effective ways to measure IPS. Both science and practice can contribute meaningfully to this endeavor. Practice can recognize the importance of measurement for critical human resource management.

Based on the Klein and colleague (2006) framework and taxonomy, there are some individual differences that lend themselves to selection (e.g., personal experiences, emotional intelligence) and there are skill-based competencies that can be trained (e.g., active listening, assertive communication, cooperation and coordination, conflict resolution/negotiation). Human resource (HR) managers must understand how to measure individual differences and IPS-related competencies in order to make these decisions. A clear understanding of the IPS construct helps inform where to place emphasis (i.e., selection or training). This is the role of science—to provide that understanding. To illustrate the importance of both science and practice working together towards effective measurement of IPS, we briefly discuss three HR functions below: selection, performance appraisal, and training/development. We emphasize issues surrounding measurement of IPS within these domains.

Selection

As suggested above, one HR purpose of IPS measurement is to use the data for selection decisions. When using measurement for this purpose, there are several considerations. We discuss two. First, measures must be sensitive. In other words, they must be able to distinguish among those who have high levels of a skill or ability and those who have lower levels. This requires a degree of specificity, and depending on the exact purpose, the required level of specificity may increase. Second, the selection criteria must be legally defensible. IPS measures cannot have adverse impact. There are protected classes under existing US employment laws and if any selection instrument is found to adversely impact a protected class, it cannot be used.

Performance Appraisal

Another common HR strategy is performance appraisal in terms of employee evaluation. Performance appraisal generally consists of a yearly or quarterly (or some other timeframe that

suits product development schedules) and are used to compare individuals and or teams within an organization. Results are often used as the basis for merit pay increases or promotions (Rynes, Gerhart, & Parks, 2005). As IPS continues to increase in importance in today's global economy, measurement of IPS within the performance appraisal system should accordingly increase. According to motivation theory, if you want to encourage a behavior, you need to measure it, and reward it (Pritchard & Ashwood, 2008).

Training & Development

Finally, HR managers can use IPS measurement to inform decisions regarding training and development initiatives. By determining specific areas of weakness in employees, training and development professionals can strategically develop targeted training programs to develop those identified skills requiring improvement. In fact, performance measurement is a crucial first step to development of effective training. In other words, training systems should be designed to meet the needs of employees so information obtained from performance appraisals can and should be utilized to identify deficiencies in required knowledge, skills, and attitudes. Once specific competencies have been identified, measurement plays a crucial role in determining whether the training program is effective. Such training evaluation informs strategic HRM decisions regarding selection, modification, and adoption of training programs (Goldstein & Ford, 2002). Essentially, training evaluations determine whether training objectives have been met, whether the post-training changes in knowledge, skills, and attitudes are a result of the actual training program, and the degree to which the training program is contributing to organizational goals. Systematic evaluation that combines all three purposes helps identify potential modifications that can help make each component of the overall training program more

effective in meeting those organizational goals (Goldstein & Ford, 2002; Sackett & Mullen, 1993).

In summary, to utilize IPS in selection decisions or to diagnose deficiencies in the existing workforce to develop targeted training programs, managers must be able to *measure* IPS accurately. This entails not only effective measurement techniques, but a clear understanding of what actually constitutes IPS. However, many current scientific models of performance fail to adequately consider IPS at a level that allows for effective HRM decisions (Carpenter, Wisecarver, Deagle, & Mendini, 2005) perhaps due to a lack of agreement as to what IPS really are. This makes systematic efforts at measurement difficult, at best. Therefore, by drawing on existing comprehensive frameworks, such as that by Klein and colleagues (2006), both science and practice can move forward in a meaningful manner with regard to IPS measurement.

Assessment of IPS

As with any type of measurement, the appropriate technique depends upon the purpose. Drawing upon Klein and colleagues (2006), we will discuss measurement strategies for the individual differences and previous life experiences which Klein and colleagues suggest are critical for effective IPS. Then, we will focus on assessment of various skills presented in their taxonomy. Throughout, we discuss issues and challenges to measurement by focusing on collaborative initiatives within both educational and organizational settings.

Individual Differences

Individual differences describe basic dimensions in which people can vary significantly such as dispositions or capabilities that ultimately influence their behavior (Motowildo, Borman, & Schmit, 1997). Individual differences are considered important in collaboration (Bedwell et al., in press) as many skills included in the IPS framework and taxonomy (Klein et al., 2006) are

important to effective collaboration. Organizations understand the importance of individual differences and thus, consider these constructs during selection. Public learning institutions also consider individual differences, and in some cases use them as a basis for selection (e.g., scores on the SAT for entry into college). However, all educational institutions focus on maximizing one's potential with regard to individual differences.

Although some may still debate the relative influence of genetics versus the environment in shaping these tendencies in early life, individual differences are generally considered stable in adulthood. Much research has focused on the strong influence of individual differences on interpersonal relationships within work environments (cf. Baron, 1996). Consider, as an example, cognitive ability, or *g*, which has long been established as a key predictor of performance. Arguably, in nearly every job, a general measure of cognitive ability will be a significant predictor of job performance. In fact, research has shown cognitive ability to correlate beyond .50 with performance in some cases (Schmidt & Hunter, 1998). Chernyshenko and colleagues (2010) note that with regard to selection, criterion correlations translate to effect sizes as they directly indicate an expected performance increase. In other words, a correlation of .50 between a measure of *g* and a measure of job performance indicates that if an employer selects an individual who is 1 SD higher on a measure of *g*, there would be a corresponding .50 improvement in performance (Chernyshenko et al., 2010). Various individual differences have shown correlations of .35 and above with performance (e.g., measures of g; Schmidt & Hunter, 1998). Research has also shown that individual differences exert influence on performance both directly and indirectly (see Chernyshenko et al., 2010 for a review). In light of these findings, the Klein and colleagues (2006) framework highlights the importance of individual differences in the performance of effective IPS. Within the framework, emotional intelligence (among other types

of intelligence), various personality traits, and team/collective orientation (i.e., one's focus on the team or collective goals above one's own goals) are specifically mentioned. Below we discuss measurement issues related to these various constructs.

Emotional Intelligence

As social intelligence has often been used synonymously with IPS and Klein and colleagues discuss this construct in the context of their framework, we use this construct to describe various measurement approaches for this individual difference variable that is critical to effective IPS. There have been difficulties separating social intelligence from general intelligence. One particular approach, the Social Skills Inventory (Riggio, 1986) attempted to bridge this gap in research by assessing typical, rather than maximum, social skill performance. In line with the Klein and colleagues (2006) definition of IPS as an umbrella term that encompasses many individual skills, the Social Skills Inventory measures six basic skills: emotional expressivity, emotional sensitivity, social expressivity, social sensitivity, emotional control, and social control. Although this instrument has high internal consistency and test-retest reliability, and held up under exploratory factor analysis, some of the subscales have shown large correlations with scales of measures of personality (e.g., the 16 Personality Factor Questionnaire, Cattell, Eber, & Tatsuoka, 1980) suggesting that perhaps it is not measuring anything beyond personality. Similar findings have been reported for measures of emotional intelligence (Davies, Stankov, & Roberts, 1998).

Previous Social Interaction Experience

Another individual difference that Klein and colleagues (2006) postulate is relevant to IPS is previous life experience. Essentially, the more opportunities an individual has to engage in social interactions, the more adept he or she will become in IPS. Situational judgment tests

(SJTs) provide an opportunity to measure previous experiences that could influence IPS competence on the job. SJTs present a series of "real life" scenarios (often based on critical incidents, and thus, are considered face valid by both job applicants and existing employees; e.g., Richman-Hirsch, Olson-Buchanan, & Drasgow, 2000; Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993). SJTs have been found predictive of job performance. In a meta-analysis, McDaniel and colleagues (2001) were able to develop SJTs that had both high and low correlations with measures of *g* yet were sill predictive of performance. For example, video-based SJTs have shown very low correlations to *g* (Olson-Buchanan et al., 1998) and component measures of *g* such as reading comprehension (Chan & Schmitt, 1997), which some suggest may represent a more pure measure of social skills (Drasgow, 2003; Olson-Buchanan et al., 1998). Drasgow (2003) argues that low-*g* SJTs may actually have stronger correlations with contextual performance because of the "fundamental social nature" of that construct (p. 126) and thus, provide an acceptable measure of social competence.

Behavioral narratives, which some classify as an individual difference variable (Roberts, 2006), also provide valuable information regarding personal social experiences and are either self-report (e.g., personal statements, biodata) or provided from others (e.g., letters of recommendation). However, these measures can contain other related individual difference constructs such as abilities and personality, so it is currently unclear exactly how much incremental validity these strategies provide. For example, biodata was shown to provide little incremental validity above and beyond cognitive ability by Schmidt and Hunter (1998); however others have found significant incremental predictive power above both cognitive ability and personality (e.g., Mount, Witt, & Barrick, 2000). Also, narratives are, by definition, historical, so current views or intentions cannot be considered as related to that domain (Mael, 1991).

Regardless of the incremental validity issue, research has provided evidence of the usefulness of narratives for selection purposes as biodata measures have validities ranging from .25 to .40 (Chernyshenko et al., 2010). Given that behavioral narratives are focused specifically on interactions, they could provide useful information with regard to IPS.

Within the business realm, another common technique used to measure IPS are assessment centers, as they draw on previous experience and tap traits in order to determine skill sets. In a meta-analysis of assessment center ratings, researchers collapsed 168 dimension labels into six overarching dimensions including consideration and/or awareness of others, communication, and influencing others (Arthur, Day, McNelly, & Edens, 2003), which have all been included in various conceptualizations of IPS (Klein et al., 2006). Through these dimensions, researchers were able to explain more variance in performance than previous researchers who had used a composite assessment center rating and the IPS-related skill of influencing others, resulted in one of the highest estimated true validity ratings (Arthur et al., 2003). Thus, some assessment center exercises can be effective at measuring interpersonal competence.

Personality

Finally, as noted above, personality is another individual difference factor considered important to effective IPS. Although a complete review of personality measures is beyond the scope of this effort, we want to call attention to the two main taxonomic structures: a broad global level (e.g., the Big Five, McCrae & Costa, 1987) and a more narrow facet level (e.g., the component factors of each of the Big Five such as the components of neuroticism). Historically, personality measures were not regarded highly in terms of predictive power with regards to job performance. Researchers such as Guion and Gottier (1965) sealed the fate of much personality

research, noting in their review a complete lack of evidence linking personality to job performance. Others suggested that individual behavior was too variable across time and situations to allow for any predictive power of personality measures (and Mischel 1968, 1969, & 1973). While many have suggested reasons for the lack of findings during this early period of research (see Barrick, Mount, & Judge, 2001), development of the Big Five has led to consensus that these constructs adequately describe normal dimensions of personality (Chernyshenko et al., 2010). Although debate continues as to whether there are additional dimensions that are required beyond the Big Five (e.g., Almagor, Tellegen, & Waller, 1995; Saucier, 2003), these five dimensions of personality are generally considered the gold standard criterion for all personality tests as most manuals contain a section describing how their scales or composite scales relate to the Big Five (Chernyshenko et al., 2010).

Recent research has focused on investigating the predictive power of the more narrow taxonomic structure of personality: facets. Roberts (Roberts, 2006) considers facets as more contextualized expressions of the broad, general dimensions. For example, conscientiousness includes various elements such as industriousness, responsibility, self-control, and the ability to follow rules (Roberts, Chernyshenko, Stark, & Goldberg, 2005). Each of these facets represents different aspects of the global construct. Research into facets is important because many work behaviors occur in specific contexts that might require a specific component(s) of the more global construct and if the facets have differential relationships with the criterion, aggregation of the facets can reduce observed validities. Researchers who have specifically investigated the aggregation of facets into the underlying personality dimensions argue that this does indeed result in reduced predictive power due to a loss of trait-specific yet criterion-valid variance (e.g., Ashton, 1998; Mershon & Gorsuch, 1988; Paunonen, 1998). For example, the “order” facet of

conscientiousness was found as the strongest predictor or new employee performance while the "industriousness" facet was most predictive of long-term performance (Moon, 2001). Another important reason to utilize facets is the inconsistencies among factor definitions across measures. Warmth, a facet of extroversion in the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1994) includes emotionally supportive behaviors characteristic of IPS. However, in the abridged Big Five dimensional circumplex (AB5C; Hofstee, De Raad, & Goldberg, 1992), this facet is located within the agreeableness personality dimension.

There are a number of available narrow facet taxonomies (e.g., 30-facet NEO-PI, Costa, McCrae, & Dye, 1991; 45-facet AB5C; Hofstee et al., 1992; 22-facet Tailored Adaptive Personality Assessment System – TAPAS, Stark, Drasgow, & Chernyshenko, 2008). Many of these questionnaires were developed using classical test theory methods; yet, they were generally *not* designed for application in what has been termed "high stakes" selection – or selection decisions with significant monetary rewards for applicants (Chernyshenko et al., 2010). Thus, research indicates that current measures may require significant change to be effective in making selection decisions (White, Young, Hunter, & Rumsey, 2008). Research is beginning to investigate newer models of test construction (ideal point models rather than dominance models – see Chernyshenko et al., 2010 for a description of the distinction) to aid in this effort. However, the use of personality measures in selection decisions has shown little impact against protected classes (Foldes, Duehr, & Ones, 2008); thus, given their relationship to various elements of IPS (discussed previously), personality measures provide an empirically-valid and legally-acceptable method for assessing certain IPS, especially if organizations take the time to tailor the measures to meet specific needs (Chernyshenko et al., 2010).

Relationship-Building Skills & Communication Skills

The Klein et al. (2006) framework includes two main categories of IPS competencies: communication and relationship-building. Each one has specific skills included as subdimensions that, when taken together, represent critical aspects of interpersonal competence. These competencies are critical to collaborative contexts as noted above (Bedwell et al., in press). Unlike individual differences, which are more suited for selection, these skills can be addressed during training or learning initiatives. Below we highlight a few measurement strategies for assessing these skills, both within business settings and educational/training initiatives.

Questionnaires

Not surprisingly, much of the research and development of IPS competence measures began in clinical psychology. Psychologists were interested in predicting adult mental illness from childhood social deficiency. Yet, work has also considered the importance of interpersonal skills in organizational effectiveness, particularly with regard to collaboration and teamwork (e.g., Cannon-Bowers & Salas, 1998; Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995; Galegher, Kraut, & Egido, 1990; Eduardo Salas, Burke, & Cannon-Bowers, 2000; Stevens & Campion, 1994). As such, a number of "interpersonal competence" questionnaires have emerged throughout the years. Considering the taxonomy of IPS (Klein et al., 2006), there are even more surveys that can be utilized to measure some of the key competencies.

Likert-type Scales. Kantrowitz (2005) conducted a series of studies to develop a 107-item self-report "soft skills" performance measure that was intended for use with students. Respondents were asked to rate themselves according to two scales: (1) performance standards for each behavior and (2) comparison of performance to others in their working groups. The

included skill dimensions covered communication, leadership, performance management, self-management, interpersonal, political/cultural, and counterproductive skills.

Another likert-style instrument that measures team member effectiveness from the perspective of peers is the Comprehensive Assessment of Team Member Effectiveness or CATME (Loughry, Ohland, & Moore, 2007). The complete instrument is an 87-item measure that assesses 29 types of contributions with three items each. There are five general categories of team member contribution: (1) contributing to the team's work, (2) interacting with teammates, (3) keeping the team on track, (4) expecting quality, and (5) having relevant KSAs. The authors have also developed a short form (33-items). Many of the items tap skills outlined in the Klein and colleagues (2006) taxonomy.

Situational Judgment Tests. The Teamwork Test (Stevens & Campion, 1999) was based on a taxonomy developed by Stevens and Campion (1994) includes such IPS as conflict resolution, communication, and coordination. This situational judgment test requires responses to 35 multiple-choice hypothetical teamwork situations. multiple-choice Criterion-validation efforts showed the test was related to both peer and supervisory ratings of teamwork and to job performance, yet was also highly correlated to employee aptitude tests, suggesting it is also measuring GMA.

Behavioral Observation Scales

Others have focused on the need to observe these skills occurring in teams rather than relying on self- (or other) report measures. Behavioral observation scales (BOS) have been shown to have high test-retest reliability, observer reliability, and construct validity (Latham, Fay, & Saari, 1979; Latham & Wexley, 1977; Latham, Wexley, & Rand, 1975). Behavioral referents, the foundation of BOS, are under the control of the rate and are observable, which

focuses the rater's attention to relevant behaviors. Taggar and Brown (2001) developed a BOS to measure both interpersonal skills and self-management (the two overarching constructs). Interpersonal skills consisted of (1) conflict resolution, (2) collaborative problem solving, and (3) communication. Using confirmatory factor analysis, they derived BOS from critical incidents, a technique designed to provide context relevant examples. The resulting instrument mapped to Stevens and Campion's (1994) taxonomy of teamwork behaviors.

Social Network Analysis

Social network analysis (SNA) involves mapping the structure among individuals, teams, and/or organizations, which can aid in understanding attitudes, behaviors, and relevant outcomes (Hatala, 2006). SNA can be utilized to analyze IPS by focusing on communication patterns interpersonal relationships, and power relationships. Moreno, considered the developer of SNA, suggests that the internal group structure is rarely equivalent to the surface structure as evident though observable social interactions (1953). Although this technique has been around for decades, this is a relatively new methodology within the social sciences, particularly with regard to analysis of collaborative activity. However, some studies have found it useful in investigating various IPS constructs like conflict and relevant IPS outcomes like cohesion (e.g., Yang & Tang, 2004). A complete review of the SNA technique is beyond the scope of this review; however, we do not this is a technique that promises to provide valuable insight regarding interpersonal skills in collaborative contexts.

IPS Measurement Issues

There are a number of issues that can influence the effectiveness of IPS measurement. Below we discuss rating source issues and considerations when evaluating the effectiveness of any training or learning initiative designed to improve IPS.

Rating Sources

The source of the ratings can influence the outcome of measurement. There are a number of issues with regard to rating source. Two traditional rating sources in business environments are supervisors and a 360-degree rating that involves supervisors, peers, subordinates, among others. There are noted issues with both sources that should be considered when measuring IPS.

Self-Report Ratings

Much has been written about the validity (or lack thereof) of self-report data. Criticisms focus more on the use of these ratings as indicators of objective environmental variables rather than affective constructs like job satisfaction (e.g., Frese & Zapf, 1988; Spector, 1992). Essentially, there are three components to the variance in any measure: trait— the theoretical operationalization of the construct of interest, method—all other systematic influences on the measured construct, and error—nonsystematic influences or random error associated with measurement (Spector & Brannick, 1995). With regard to self-report, there are a number of method issues, or systematic influences, that affect ratings. Although a comprehensive discussion of this is not warranted in this effort, Podsakoff, MacKenzie, Lee, & Podsakoff (2003) provide a more detailed review, focusing on common method biases that occur when all measures of interest are assessed using the same method (i.e., all self-report measures). With regard to self-report measures, four particular biases, discussed below, can influence ratings: consistency motif, social desirability, acquiescence biases, and the individual difference of positive/negative affectivity (PANA).

Both theory and empirical evidence suggest that individuals try to remain consistent in their thoughts and feelings (McGuire, 1966; Osgood & Tannenbaum, 1955). This tendency has been labeled the *consistency motif* or *effect* (Johns, 1994; Podsakoff & Organ, 1986; Salancik &

Pfeffer, 1977; Schmitt, 1994). This most often influences rating when respondents are asked to recall behaviors or attitudes (Podsakoff et al., 2003). *Social desirability*, or "the need for social approval and acceptance [through] culturally acceptable and appropriate behaviors" (Crowne & Marlowe, 1964, p. 109). Hence, individuals try to present themselves in a favorable manner, regardless of their true feelings or tendencies to behave in certain ways. This can change the mean level of responses, which can produce spurious relationships, mask true relationships (i.e., act as a suppressor), or change the nature of relationships (i.e., act as a moderator), which is problematic in both research and practice as it makes it difficult to determine how two variables are related (Ganster, Hennessey, & Luthans, 1983). When respondents generally agree (or disagree) with questionnaires, regardless of the content, this is referred to as *acquiescence bias* (Winkler, Kanouse, & Ware, 1982). This is problematic because it may make some of the dimensions of IPS seem related, when in fact, the are not. For example, consider assertive communication, a communication skill within the Klein and colleagues (2006) taxonomy theoretically should not be related to trust (relationship-building) but one would expect it to be related to conflict resolution skills (relationship building). However, if respondents engaged in acquiescence bias, these constructs would appear to be related. Finally, *positive and negative affectivity or PANA* (Watson & Clark, 1984) can influence self-report ratings (Burke, Brief, & George, 1993; Williams & Anderson, 1994). Essentially, a predisposition towards viewing one's self and the world in a negative light is indicative of negative affectivity. Alternatively, a positive view is considered positive affectivity.

Supervisory Ratings

Supervisory ratings are the most traditional form of performance appraisal in businesses. This refers to the process whereby a supervisor completes some kind of report (on a regular

basis) regarding an employee's performance based on their observation (Aldakhilallah & Parente, 2002; Fletcher, 2001). Within the education realm, teacher ratings are the closest proxy. Generally, there are a few questions specifically related to desired skills. For example, when measuring IPS, there might be specific questions related to some skills mentioned in the Klein and colleagues (2006) taxonomy, like written communication, oral communication, cooperation and coordination, and assertive communication. Most often, there is just one question related to each skill and supervisors rate each employee on a Likert-type scale ranging from 1-3 or 1-5. The supervisor then has a meeting with the employee to go over the results of the performance evaluation. Teachers often provide more qualitative ratings of these skills, noting specific examples of when a student exhibited a particular skill.

There are, however, noted problems with such ratings and research into these problems within workplaces abounds. Many biases discussed above are also applicable to supervisors (e.g., acquiescence biases, PANA). Additionally, supervisory only-based rating systems (i.e., the *only* ratings are supervisory), are often costly and have historically demonstrated little value (Nickols, 2007). This is likely due to the fact that the system is solely based on the opinion of the supervisor. In such cases, implicit personality theory (IPT) can play a major role in supervisory ratings. IPT refers to personal beliefs in the ability of individuals to change various personal aspects, such as personality and abilities (Dweck, 1986). Entity theorists tend to believe that these attributes are not malleable, whereas incrementalists believe that they are. Thus, supervisors who belong to the entity camp are likely to believe these are stable traits and thus, supervisory ratings will be influenced by initial impressions of employees with regard to observed individual differences (e.g., Heslin, Latham, & Don, 2005). In essence, if entity theorist supervisor initially observes what he believes are poor IPS on one occasion, he will likely rate

the person poorly on IPS in a performance appraisal, regardless of the presence of any future (and more frequent) examples of improved IPS (e.g., Manzoni & Barsoux, 1998). Importantly, Heslin and colleagues (2005) discovered that entity theorists who were subject to self-persuasion training developed more of an incremental IPT, which led to increased awareness of improvements in employee performance. Therefore, managers who wish to improve supervisory ratings of IPS performance should consider providing such training to supervisors who tend to believe that IPS are largely driven by stable traits, and are therefore not malleable. This is critical when ratings are as limited as those Likert-type scales with just one question per IPS.

Multisource Ratings

When evaluations are based on information from two or more ratings sources, including self, supervisor, peers, subordinates, customers, and/or suppliers, that is considered multisource, or "360-degree feedback" (Dalessio, 1998). Although this retains the subjective rating format (and thus potential issues such as the influence of IPT as described above), it provides different perspectives rather than relying on the supervisor alone. This can help reduce chances for unfair evaluations (Waldman, Atwater, & Antonioni, 1998) and is intended to be anonymous, which theoretically allows for more accurate and honest feedback (Ghorpade, 2000). 360-degree performance appraisals allow for feedback from multiple sources as well, including managerial performance, which is often best evaluated from subordinates and customers (Morgeson, Mumford, & Campion, 2005).

Yet, there are noted problems with this type of system as well. Peer ratings are subject to more halo error than supervisory ratings (Viswesvaran, Ones, & Schmidt, 1996). Others have suggested that the bidirectional nature of the 360-degree (i.e., supervisors rate subordinates and subordinates rate supervisors) could led to deliberate sabotage whereby supervisors promise to

rate employees highly if the employees in turn rate the supervisor highly. Regardless of the issues, 360-Degree instruments have been successfully implemented in the medical field to rate IPS. Using evaluation data from self (e.g., residents), faculty, and patients ratings, researchers have found that this particular measurement approach, using fairly simple Likert-type rating scales, is effective in capturing interpersonal skills and is useful in providing feedback (e.g., Joshi, Ling, & Jaeger, 2004; Wood et al., 2004).

Evaluation of Learning/Training

The purpose of the evaluation drives the entire measurement process (E. Salas, Burke, & Fowlkes, 2006) including the required level of specificity, which in turn, dictates the type of measurement needed. Generally, there are numerous purposes for performance assessment within a work setting. We focus on performance evaluation and feedback development as one use and organizational planning as a second use in this section. When assessing performance for the purpose of ranking students or employees and providing feedback regarding their performance, multiple measures are appropriate as they provide more detailed information and thus a more accurate picture of areas of excellence and areas needing improvement. On the other hand, composite measures are better for comparing across departments and organizational units that may not have the same type of work and therefore will have different areas of focus on more detailed assessments (Wildman, Bedwell, Salas, & Smith-Jentsch, 2010).

Much research has focused on establishing the link between feedback and performance improvement (e.g., Pritchard, Harrell, DiazGranados, & Guzman, 2008; Pritchard, Youngcourt, Philo, McCMonagle, & David, 2007). Clearly, measurement plays a critical role in feedback as performance on desired competencies and skills must be measured in order to provide developmental feedback, focused on strengths and weaknesses. This requires detailed

information regarding one's performance. Turning to the Klein and colleagues (2006) taxonomy, in order to provide detailed information regarding strengths and weaknesses regarding IPS performance, it is necessary to measure both communication skills and relationship-building skills. Utilizing this taxonomy, an assessment can be developed that measures competence on each particular skill within these two overarching domains to provide a high level of detail regarding IPS performance.

There are many taxonomies of training evaluation and discussion of those is beyond the scope of this effort. We instead focus on identification of relevant IPS within the Klein and colleagues (2006) framework that lend themselves to training and potential measurement techniques that can be utilized to effectively measure whether learning of IPS within the training context has occurred, as well as whether transfer of newly acquired IPS to the work environment has occurred.

Learning

Kirkpatrick (1959) identified the assessment of learning as a key component in any training evaluation. Kraiger, Ford, and Salas (1993) proposed a multidimensional view of this particular component. Specifically, they suggest that learning can be further divided into cognitive, affective, and/or skill-based outcomes, which each contain a number of subdimensions. Their work provides a foundation for aligning evaluation methods with specific learning outcomes. Below we focus on measurement implications of the cognitive and skill-based domains, which are highly relevant to a discussion of IPS performance.

Cognitive. With IPS, there is clearly a declarative knowledge component and that is often assessed through multiple choice, true-false, or free-recall questions – all of which are appropriate techniques for measuring increases in declarative knowledge. The type of measure

should also be considered as speed versus power tests measure different things (Kraiger et al., 1993). Speed tests measure how quickly individuals can recall stored information whereas power tests measure the accuracy of the acquired information. Thus, as noted previously, the purpose drives the selection of a measurement technique. For IPS, either type may be appropriate, depending on which skill components within the Klein and colleague framework are being trained. For example, knowledge of some related skills to cooperation and coordination, such as communication might be best suited for a power test as it is critical that individuals understand the components of effective communication. However, performance monitoring and adaptability often rely on the ability of an individual to see something that requires immediate attention and to provide assistance or quickly chance a course of action. This might be measured more appropriately with a speed test in which individuals are timed to determine how quickly they respond to an environmental cue.

Skill. With regard to IPS, there is an inherent skill component beyond the declarative knowledge. Kraiger and colleagues outline several methods for assessing skills. They divide skill-based outcomes into two categories: compilation and automaticity. Drawing on the work of Anderson (1982), Kraiger and colleagues suggest measurement implications based on two interrelated processes: proceduralization and composition. Essentially, proceduralization refers to the process by which trainees develop routines from small, discrete behaviors. Composition involves the grouping of steps into more complex models of behavior. Thus, with regard to IPS, accurate measurement of these two levels of outcomes requires a transition of measurement methods from observation of discrete behaviors (proceduralization) into behavioral categories more characteristic of experts (composition). Depending on the level of the trainee, measurement techniques should be altered accordingly. However, during this stage, observation is critical as

experts can help pinpoint deficiencies in the enactment of a skill and provide corrective feedback during the process of proceduralization and composition.

Transfer

As noted above, observation methods are frequently used to evaluate training acquisition of a skill. Kraiger and colleagues (1993) suggest that this may well be an appropriate technique as long as an assessment strategy is developed based on a theoretical conceptualization of the construct of interest. When determining whether a skill has appropriately transferred to the work environment, it is important to consider the stage of skill development. Theorists suggest three distinctive stages: (a) initial skill acquisition, (b) skill compilation, and (c) skill automaticity (Anderson, 1982; Fitts & Posner, 1967). Different measurement techniques may be appropriate for the various stages (Kraiger et al., 1993).

For example, observation during acquisition and compilation are appropriate methods as skills are being developed and practiced during these stages. However, the final subcategory is skill automaticity. This refers to the process of internalizing behaviors to the point where trainees develop automatic processing versus the more controlled processes characteristic of the initial stages of skill acquisition (W. Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977). Based on earlier work of cognitive psychologists, Kraiger et al. (1993) recommend effective assessment of automaticity can be accomplished through measurement of performance on secondary tasks. With regard to IPS, this requires a focus on secondary tasks that would occur during a social exchange. Essentially, the theory behind this technique rests on the belief that there is less cognitive attention to the primary act (in this case, effective IPS). Therefore, employees should be able to effectively multitask when IPS has become automated, and effectively attend to social interactions while engaging in other simultaneous tasks (Kraiger et al., 1993). Whatever the

method selected for assessment, it is clear that observation is critical for determining whether there have been skill-based improvements in areas such as IPS; however, as skills become more automatic, other methods are required.

Discussion

We have presented a framework and taxonomy of IPS, drawing on the integrative work of Klein and colleagues (Klein et al., 2006). Using this conceptualization, we discussed measurement techniques that are frequently used to assess IPS as well as some issues inherent in measurement of any kind. We demonstrated that IPS is a multifaceted construct, driven from individual differences and thus, there are elements that are more suited for selection measures (e.g., personality, previous life experience). However, given that it is a skill-based activity, there is always room for improvement, and thus other aspects such as the communication skills and relationship-building skills outlined by Klein and colleagues (2006) are suited for training/learning initiatives. During the formative years, students need to learn these critical skills so they are prepared for positions that will select based on IPS. Even this requires effective measurement techniques as instructors need to understand various levels of a skill in order to design instruction to improve it. However, there must be continued evaluation of the training programs as well to ensure that actual learning is taking place. Hence, we described some ways to incorporate measures into actual training initiatives.

The importance of IPS will continue to grow in all sectors of business. It is, therefore, important to examine, investigate, and improve interpersonal competence. This requires a clear understanding of the construct in order to determine exactly which measurement technique(s) will be most effective. Scientists and practitioners must continue to collaborative to enhance our knowledge of IPS and develop effective measures to effectively tap this important construct.

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Table 1.

Interpersonal Skills Taxonomy (adapted from Klein, DeRouin, & Salas, 2006)

Interpersonal Skill	Description	Related Skill(s)
	COMMUNICATION SKILLS	
Active listening	Paying close attention to what is being said, asking the other party to explain exactly what he or she means, and requesting that ambiguous ideas or statements are repeated	Listening with empathy and sympathy; listening for understanding
Oral communication	Sending verbal messages constructively	Enunciating; expressing yourself clearly; communicating emotion; interpersonal communication
Written communication	Writing clearly and appropriately	Clarity; communicating intended meaning
Assertive communication	Directly expressing one's feelings, preferences, needs, and opinions in a way that is neither threatening nor punishing to another person	Proposing ideas; social assertiveness; defense of rights; directive; asserting your needs
Nonverbal communication	Reinforcing or replacing spoken communication through the use of body language, gestures, voice, or artifacts	Expression of feelings; perception/recognition of feelings; facial regard
	RELATIONSHIP-BUILDING SKILLS	
Cooperation and coordination	Understanding and working with others in groups or teams; includes offering help to those who need it and pacing activities to fit the needs of the team	Adaptability; shared situational awareness; performance monitoring and feedback; interpersonal relations; communication; decision making; cohesion; group problem solving; being a team player
Trust	An individual's faith or belief in the integrity or reliability of another person or thing; willingness of a party to be vulnerable to the actions of another party based on the expectation that certain actions important to the trustor will be performed	Self-awareness; self-disclosure; swift trust
Intercultural sensitivity	Appreciating individual differences among people	Acceptance; openness to new ideas; sensitivity to others; cross-cultural relations
Service orientation	A set of basic individual predispositions and an inclination to provide service, to be courteous and helpful in dealing with customers, clients, and associates	Exceeding customer's expectations; customer satisfaction skills; ability to maintain positive client relationship; selling; building rapport; representing the organization to customers and the public

Interpersonal Skill	Description	Related Skill(s)
Self-presentation	Process by which individuals attempt to influence the reactions and images people have of them and their ideas; managing these impressions encompasses a wide range of behaviors designed to create a positive influence on work associates	Self-expression; face-saving and impression management; managing perceptions; self-promotion
Social influence	Guiding people toward the adoption of specific behaviors, beliefs, or attitudes; influencing the distribution of advantages and disadvantages within an organization through one's actions	Business etiquette; reasoning; friendliness; coalition building; bargaining; appeals to higher authority; imposing sanctions; networking; persuasion, positive political skills
Conflict resolution and negotiation	Advocating one's position with an open mind, not taking personally other members' disagreements, putting oneself in the other's shoes, following rational argument and avoiding premature evaluation, and trying to synthesize the best ideas from all viewpoints and perspectives	Conflict-handling style; conflict management; conflict prevention; compromising; problem solving; integrative bargaining; principled negotiation; cultural negotiation; mediation

Figure 1. Framework of Interpersonal Skill Performance *(Klein, DeRouin, & Salas, 2006)*