Lack of Consensus among Competency Ratings of the Same Occupation: Noise or Substance?

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Abstract

Although rating differences among incumbents of the same occupation have traditionally been viewed as error variance in the work analysis domain, such differences might often capture substantive discrepancies in how incumbents approach their work. This study draws from job crafting, creativity, and role theories to uncover situational factors (i.e., occupational activities, context, and complexity) related to differences among competency ratings of the same occupation. The sample consisted of 192 incumbents from 64 occupations. Results showed that 25% of the variance associated with differences in competency ratings of the same occupation was related to the complexity, the context, and, primarily the nature of the occupation's work activities. Consensus was highest for occupations involving equipment-related activities and direct contact with the public.

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Jobs are nowadays conceived of as broad roles, which bestow a great deal of latitude on incumbents to interpret and enact them in the manner that they deem appropriate (Cronshaw, 1998; Morgeson, Delaney-Klinger, & Hemingway, 2005; Sanchez, 1994). Therefore, a job is no longer viewed as an objective reality that can be strictly distinguished from any of the incumbents who perform it, because incumbents actively craft or sculpt their job, stretching or contracting its boundaries as they see it fits (Grant, 2007; Roberts, Dutton, Spreitzer, Heaphy, & Quinn, 2005; Sanchez & Levine, 2000; Wrzesniewski & Dutton, 2001).

As incumbents are thought to redefine their job in idiosyncratic ways, differences among incumbents' views of the same job might not necessarily capture error variance (Baranowski & Anderson, 2005; Sanchez & Levine, 2000). Instead, they might reflect legitimate differences in the unique manner in which each incumbent approaches his/her job. This process is both behavioral and perceptual; that is, job individuation probably begins when the incumbent starts to construe a mental map or interpretation of the key aspects of his/her job. However, little is known about the factors that shape the incumbent's interpretation and subsequent enactment of his/her job. So far, extant research is limited and fragmented as only a few factors have been examined in isolation (Dierdorff & Morgeson, 2007; Sanchez, Prager, Wilson, & Viswesvaran, 1998; Sanchez, Zamora, & Viswesvaran, 1997).

This study's objective is twofold. First, we drew from job crafting, creativity, and role theories to identify a set of situational factors subsumed in the broad categories of occupational complexity, context, and activities that are possibly related to lack of consensus[1] among incumbent ratings of the same occupation. Second, we test the relationship between lack of consensus and these situational factors across 64 occupations. Hereby we focus on competency

ratings for three reasons. First, competency modeling has made rapid inroads in practice -up to 75% of financial and insurance companies report the adoption of competency models (Loma, 2005). However, empirical research on competency ratings is sorely lagging practice. Second, competencies often cut across jobs, management layers, and even organizations (Sanchez & Levine, 2009; Werbel & DeMarie, 2005), thereby enabling a multi-occupation, multi-company investigation. Finally, competency modeling fits nicely with the notion of incumbents redefining their job, because they signal to incumbents the key themes of the organization which should be incorporated in the job (Sanchez & Levine, 2009).

Study Background

Over the last decade, the practice of competency modeling has generated a heated debate (Schippmann et al., 2000). Skepticism about competency modeling has been prompted by definitional issues (Barrett & Callahan, 1997; Barrett & Depinet, 1991; Lawler, 1996; Pearlman, 1997). In this study, we agree with those who view competencies as elements of the job performance space that are best seen as work-oriented descriptors (Tett, Guterman, Bleier, & Murphy, 2000). Along these lines, Bartram (2005, p. 1187) defined competencies as "sets of behaviors that are instrumental in the delivery of desired results or outcomes."

Attesting to the practice-research gap in this domain, we were able to locate only three studies that scrutinized the reliability and discriminant validity of competency ratings (Lievens, Sanchez, & De Corte, 2004; Lievens & Sanchez, 2007; Morgeson, Delaney-Klinger, Mayfield, Ferrara, & Campion, 2004). Morgeson et al. revealed that competency ratings were higher than task and ability ratings and, as a result, they were thought to be inflated. Lievens et al. explored the effects of rating source and task-related information on competency rating consensus. Consensus on competency ratings was highest among actual incumbents, especially when

competency ratings were informed by task information. Lievens and Sanchez investigated the impact of frame-of-reference training on differences in competency ratings, with trained consultants displaying higher inter-rater reliability and discriminant validity than untrained ones.

In short, prior research considered that lack of consensus in competency ratings signified the presence of bias, rather than being the by-product of factors fostering idiosyncratic approaches to the same job. In addition, prior studies focused on procedural factors (rating source and training) that might increase consensus. Yet, the substantial rater differences that remained in the results, even after controlling for such procedural factors, suggest that other variables should be investigated.

Indeed, variation in competency ratings within the same occupational title might be due to a number of processes. Some of that variation might be explained by administrative factors such as heterogeneity in occupational classification. In addition, the source of at least some of that variation can be traced to what Wrzesniewski and Dutton (2001) termed job crafting, which they defined as "the physical and cognitive changes individuals make in the task or relational boundaries of their work" (p. 179). Other theories, including role theory, share this view of incumbents as active agents who customize and/or change their job to fit their role identity, past experience, motivation, and personal and professional goals (see also Dierdorff, Rubin, & Morgeson, 2009; Grant, 2007; Jackson, 1981; Roberts et al., 2005). The key implication for our study is that, under this new prism, differences among incumbents of the same job, which traditional job analysis deemed to be the by-product of biases and carelessness, may instead capture legitimate differences in the unique way in which incumbents define and shape their job (Sanchez & Levine, 2000).

Wrzesniewski and Dutton's job crafting model proposed that individual motivations (e.g.,

self-image) might lead to job crafting. Their model further specified that the perceived situational opportunity to engage in job crafting moderates the relationship between individual motivations and job crafting behavior. Whereas prior research has mainly focused on individual differences related to the motivation to engage in job crafting (e.g., Lyons, 2008; Parker, 2007), research has remained silent about the factors related to the situational opportunity for job crafting in a given occupation.

Our study focuses precisely on the situational opportunity for job crafting, which we argue is primarily explained by opportunities to exercise discretion when performing the occupation. We posit that opportunity to exercise discretion occurs as a result of three occupational factors: (a) occupational complexity, (b) occupational context, and (c) the nature of occupational activities. These three categories have a parallel in similar windows included in the O*NET taxonomy (Peterson, Mumford, Borman, Jeanneret, & Fleishman, 1999).

Occupational Complexity

Occupational complexity is defined here as the extent to which an occupation requires processing, integrating, and choosing among multiple and sometimes ambiguous and divergent data or information. Our expectation is that the more information processing involved and the more elements involved in decision-making, the more alternatives one has and thus the higher the chances of idiosyncratic role definitions occurring. Indeed, occupational complexity has been found to be related to flexibility, experimentation, and creativity in the manner in which incumbents approach their job (Amabile, 1988; Oldham & Cummings, 1996). Complex occupations require more intricate thought processes (Farr, 1990), involve more new experiences (Kohn & Schooler, 1983), and are more multifaceted and flexible (Gottfredson, 2002; Landy & Vasey, 1991; Scott & Bruce, 1994; Shalley et al, 2000, 2009; Tierney & Farmer, 2002) than

simple occupations. In support of this argument, Sanchez et al., (1997) found that complexity as gauged by the Dictionary of Occupational Titles' Data scale moderated the degree of consensus of occupational characteristic ratings, with consensus being highest for occupations involving simple data operations. We hypothesize that occupational complexity will be also related to the extent to which incumbents of the same occupation make unique choices of bundles of work behaviors. Thus,

Hypothesis 1: Occupational complexity will be negatively related to the degree of consensus among competency ratings.

Occupational Context

Dierdorff and Morgeson (2007) noted that, according to role theory, the context wherein employees work might promote or restrict idiosyncratic role enactment. They found that three elements of occupational context (i.e., interdependence, autonomy, and routinization) were related to differences in O*NET ratings among raters of the same occupation. They expected interdependence to increase rating consensus in responsibility ratings because responsibilities are general descriptors that apply to all types of role enactment. Second, they predicted that autonomy would reduce rating consensus because autonomy promotes exploring new tasks (see also Parker, Wall, & Jackson, 1997; Parker, 2007), and that routinization would suppress individuation in role enactment and therefore increase rating consensus. One of our aims was to test the generalizability of Dierdorff and Morgeson's findings concerning occupational context albeit in a different domain (i.e., competency modeling).

Hypothesis 2: Occupational context (i.e., low autonomy, high interdependence, high routinization) will be positively related to the degree of consensus among competency ratings.

Occupational Activities

Regardless of occupational complexity and occupational context, some occupations are, by virtue of their activities, more likely to induce job crafting in their incumbents, thereby affecting the extent to which they differ in their competency ratings. A central premise of our study is that the nature of certain activities triggers an individuated approach to one's job or job crafting, over and above the aforementioned factors. In fact, Wrzesniewski and Dutton (2001) theorized that perceived opportunities to craft a job are tied to the actual work design, which sparks unique ways of enacting the job among incumbents. As pointed out by others (Barrick & Mount, 1993), some occupations constrain the incumbents' opportunity to craft their job and, instead, limit them to exhibit a narrow range of activities in a predetermined sequence. By contrast, other occupations provide incumbents with a wide range of behavioral options and, as a result, the incumbent plays a larger role in choosing a specific course of action. These factors resemble what Mischel (1968) termed "strong" and "weak" situations, respectively.

To better understand our argument that the nature of occupational activities explains job crafting above and beyond other factors like occupational context, consider the job of assistant public defender. Sanchez, Prager, Wilson, and Viswesvaran (1998) found that assistant public defenders, in spite of sharing the same context (i.e., they worked in the same jurisdiction, handled similar cases, and reported to the same public defender), made very different behavioral choices in regards to their job as a function of their prior experience and background. Indeed, the inexact nature of their job responsibilities led assistant public defenders to develop unique approaches to their job that in turn were correlated with their prior professional experience.

In essence, we argue here that some occupational activities are, by their nature, less prone to job crafting than others, and that differences in competency ratings are therefore less likely to

occur in occupations where such occupational activities are important. Note that this effect of the nature of work activities is likely to occur above that of occupational context which, according to O*NET, captures non-task factors -"*non-task related factors of work that affect intrapersonal, interpersonal, or work outcomes or activities"* (Strong, Jeanneret, McPhail, Blakley, & Egidio, 1999, p. 128). As we explain below, two types of occupational activities may restrict job crafting: those concerning equipment and those involving direct contact with the public, and a third type of activity, namely managerial work, may bolster job crafting.

First, equipment-related jobs tend to follow fixed protocols and standard operating procedures, which require unambiguous actions and standard procedures dictated by technical specifications. These responsibilities involve also tangible, physical activities that lend themselves to observation and, therefore, provide less room for variation in interpretation and performance (Ouchi, 1977).

Hypothesis 3a: There will be a positive association between the importance of equipment-related activities in occupations and the degree of consensus among competency ratings, above and beyond the association between consensus and both occupational complexity and occupational context.

Second, potential job crafting may also be limited for activities involving direct contact, service, or handling of others that are performed in public and therefore are highly visible. These activities tend to be increasingly scripted and closely monitored. In fact, direct customer service jobs are becoming quite scripted to ensure reliable customer service and customer satisfaction. In some cases, even the "emotional labor" or display rules that employees are supposed to show when reacting to customers are scripted (Ashforth & Humphrey, 1993; Morris & Feldman, 1996). Moreover, research in social psychology suggests that the presence of others induces

evaluation apprehension and social facilitation (Bond & Titus, 1983; Geen & Gange, 1977), both of which should lead to adherence to standard procedures in direct-contact occupations. As a result, these direct contact activities are less likely to be the target of job crafting. Hence,

Hypothesis 3b: There will be a positive association between the importance of direct contact activities in occupations and the degree of consensus among competency ratings, above and beyond the association between consensus and both occupational complexity and occupational context.

The two types of activities described above are posited to curtail job crafting, but the reverse might be true for occupations involving managerial activities such as leading others, organizing, planning, scheduling, and prioritizing. Indeed, there is no clean-cut, fixed protocol or standard operating procedure to perform managerial activities. House, Shane, and Herold (1996) noted that many situations in which managers are involved (e.g., managing role expectations, reorganizations, competing pressures to cut costs while satisfying customers) are characteristic of weak or ambiguous situations. In addition, managerial work appears to be a prime candidate for job crafting because it involves limited standardization across industries, systemic and diffuse tasks, and the semiautonomous capacity to decide on resource combination and use (Whitley, 1989). Some have even argued that the management process is better described as a crafting rather than an analytical exercise (Kotter, 1982; Mintzberg, 1987; 2004). Thus,

Hypothesis 3c: There will be a negative association between the importance of managerial activities in occupations and consensus among competency ratings, above and beyond the association between consensus and both occupational complexity and occupational context.

Method

Sample and Procedure

We started by selecting a random set of occupations from the various O*NET occupational families. Only two of O*NET's occupational families (military-specific occupations and Farming, Fishing, and Forestry) were excluded. Thus, 21 of the 23 (91%) O*NET occupational families were included. This sampling process resulted in a sample of 83 occupations. Fifteen graduate students in Industrial and Organizational psychology (10 females and 5 males) then inspected available lists of organizations in a large metropolitan area (including approximately 13 million residents) to identify business units that were likely to employ people on the target occupations. Hereby a random set of business units were selected within the most commonly represented industries (finance, professional, engineering, science, manufacturing, technology, retail, hotel, leisure, public sector). Next, they solicited participation of incumbents holding one of the selected jobs (identified by its O*NET SOC). As organizations often did not employ multiple people for the same job, incumbents holding the same "benchmark" job across organizations were sought. In total, 267 job incumbents of 83 jobs agreed to participate in competency modeling sessions. After receiving a one-day competency modeling training, the graduate students held one-on-one sessions with job incumbents; they assisted them in making competency ratings by explaining the purpose of the session as well as the competency modeling instrument. On average, the competency ratings took about one and a half hours. Incumbents also indicated how well their job matched the O*NET task description on a 3-point scale (1= *only approximate match*, 2 = *reasonable match*, and 3 = *exact match*).

To be retained in the final sample of occupations, three criteria had to be satisfied. First, only incumbents who rated their job as an exact match to the corresponding O*NET task description were included. Second, at least three incumbents of the same occupation had to

provide usable data. Third, incumbents had to hold their job for at least six months[2]. These three inclusion criteria reduced the sample of occupations from 83 to 64 (see Table 1). However, all O*NET occupational families initially targeted were still represented. The demographics of the final sample (N = 192) were as follows. There were almost equal numbers of male and female incumbents (55% males and 45% females). In terms of race, 73% were White and 12% were Asian. Most incumbents (27.6%) were between 25 and 30 yrs. old. The average number of years on the job was 6.6 yrs. (SD = 6.7).

Competency Modeling Instrument

The specific competency modeling framework used in this study was the Universal Competency Framework (UCF) (Bartram, 2005; SHL, 2006). This job performance taxonomy distinguishes among 112 competency components at the finest level of detail. These competency components are classified under 20 broader competency dimensions. An example of a competency dimension is "Leading and Supervising," which has eight competency components (e.g., coaching, delegating). The competency modeling instrument itself consists of 132 cards, reflecting the 20 competency dimensions plus the 112 competency components. Each UCF card describes a competency dimension or component along behaviorally-anchored definitions. A Q-sort method (without forced rating distribution) was used to sort the UCF Competency Cards in different piles. Next, each competency was rated as follows: (0) *not at all relevant: This competency is not relevant for success in the job*; (1) *less relevant: This competency, while relevant, is not very important for success in the job*; (2) *desirable: This is a competency that makes success more likely*; (3) *essential/critical: Without this competency success is not achievable*. As outlined in the UCF Manual (SHL, 2006), the 20 competency dimensions were sorted first, followed by the 112 competency components.

Other Measures

Occupational complexity. Occupational complexity ratings were obtained through the DOT code associated per occupation. The occupational DOT code consists of 9 digits. To operationalize an occupation's complexity in terms of information processing and decision making, we used the measure embedded within the DOT code referring to the degree to which a worker functions in relation to data (4th digit: 7 levels). We recoded DOT ratings so that lower levels imply lower levels of complexity.

Occupational context. We used the three occupational context scales developed by Dierdorff and Morgeson (2007), consisting of items included in the O*NET work context domain. They were routinization (e.g., degree of automation), interdependence (e.g., work with group or team), and autonomy (e.g., freedom to make decisions). Alphas ranged from .70 to .71.

Occupational activities. The following procedure was used to construct these scales. The first two authors started by independently reviewing the O*NET content model for Generalized Work Activity items possibly related to each one of the three occupational activities: equipment-related, direct-contact, and managerial activities. Next, the authors compared their choices. Disagreements were discussed until a decision could be made regarding whether or not the item should be kept. The equipment-related activity scale was an average of three O*NET items ("controlling machines and processes", "operating vehicles mechanized devices or equipment", and "performing general physical activities"), with an internal consistency of .81. The direct contact activity scale was the average of two O*NET items ("performing for or working directly with the public" and "assisting and caring for others"), with an internal consistency of .68. Finally, the managerial activity scale consisted of four O*NET ratings ("coordinating the work and activities of others", "performing administrative activities", "organizing, planning, and

prioritizing work", and "scheduling work and activities") and its internal consistency was .77.

Control variable. We controlled for occupational breadth because a characteristic of O*NET is that it provides broader occupational descriptions than the DOT. Hence, O*NET occupations differ in the number of DOT jobs subsumed within the same O*NET occupation. We calculated the number of DOT occupations within each O*NET occupation as a reasonable proxy of occupational breadth. Given the skewness of the data, a log transformation was applied.

Analyses and Results

We used generalizability analysis (Brennan, 1992; Cronbach, Gleser, Nanda, & Rajaratnam, 1972) to gather evidence about the degree of consensus among incumbents of the same job. Given that participants were naturally nested in occupations in our design, we conducted within-occupation generalizability analyses. Generalizability analyses assume a linear, additive, continuous-valued metric for the dependent variables. Similar to prior studies of competency ratings (e.g., Lievens et al., 2004), we assumed that the four levels of the competency rating scale produced such interval-level data. Table 1 presents the results of the generalizability analyses within each occupation. The Rater variance component gauges the degree to which raters provided higher or lower ratings than other raters. The variance component due to Competencies represents a desirable source of variance because it indicates discriminant validity across competencies. The Raters x Competencies interaction variance component indicates whether raters differ in their rank ordering of the competencies. Finally, Table 1 also presents the generalizability coefficients that reflect the level of inter-rater reliability across occupations. Given that for six (of the 64) occupations the generalizability analysis produced negative variance components resulting from estimation problems, generalizability coefficients could not be computed for these occupations. Across the occupations, the mean

generalizability coefficients were .67 (*SD* = .18) for competency dimensions and .63 (*SD* = .17) for competency components. Table 1 also shows that the variability across occupations was remarkable. For example, the generalizability coefficients ranged from .18 to .95 for competency dimensions.

Next, we linked the results of our within-occupation generalizability analyses to the three sets of situational factors. Table 2 presents the correlations among these variables. To test our hypotheses, we used a mixed (also referred to as split-plot) repeated measures regression design. In this regression analysis, the generalizability coefficients, which captured SME reliability across competency dimensions and competency components, served as the dependent variable. Thus, occupation (not SME) was the unit of analysis. The generalizability coefficients were transformed to *z* scores using Fisher's *r* to *z* transformation. The independent variables included the control variable (i.e., occupational breadth), the situational factors: occupational complexity, occupational context (i.e., autonomy, interdependence, and routinization), the nature of the occupation's work activities (i.e., equipment, direct contact, and managerial activities), and the type of competency, which was the repeated measures variable involving two observations for each occupation (i.e., one for the generalizability coefficient corresponding to competency dimensions and the other for the generalizability coefficient corresponding to competency components). Note that criterion scaling was used to control for variance due to repeated measures in the within-subjects variable. Criterion scaling involves computing a vector containing the sum of all ratings for each case (thus for each occupation in our study) on the dependent variable to code participants in repeated measures regression designs (see Pedhazur, 1982, pp. 559-562).

As shown in Table 3, occupational breadth (step 1) did not account for a statistically

significant proportion of variance. Entering occupational complexity resulted in a statistically significant effect at step 2. Occupational complexity was negatively associated with differences among raters (b =-.21, p < .05), providing support for Hypothesis 1. Occupational context scales did not explain additional variance at step 3, thereby failing to support Hypothesis 2. However, entering the three scales representing the nature of work activities at step 4 resulted in a statistically significant $?R^2$ of .18, p < .01. Equipment and direct contact activities were positively associated with consensus among competency ratings (b = .32, p < .01, and b = .29, p < .01, respectively). Managerial activities had a negative association with consensus, as expected, but this scale did not reach conventional levels of statistical significance (b = -.18, ns). These results supported Hypotheses 3a and 3b.

We then compared the results obtained for competency dimensions *versus* competency components. After partialing out the criterion scaling vector representing the repeated measures at step 5, the vector representing type of competency did not account for a significant amount of variance in step 6. Similarly, entering the two-way interactions between type of competency and the three activity scales did not account for a significant increment in variance at step 7.

Discussion

Besides administrative factors such as heterogeneity in occupational classifications, little is known about other factors explaining substantive disagreement among incumbent ratings of the same occupation. This study identified a set of factors (i.e., occupational complexity, context, and activities) that might promote situational opportunities to exercise discretion and hence induce idiosyncratic approaches to the job. To this end, we linked the degree of consensus in competency ratings to factors at the occupational level as measured by an external occupational classification system instead of incumbents' impressions, thereby ruling out common method

variance. This study indicated that up to 25% of the variance in competency ratings formulated by incumbents of the same occupation was related to these occupational factors. Thus, our results support the notion that rating differences among incumbents of the same occupation capture not solely random error variance, but also substantive factors (Dierdorff & Morgeson, 2007; Sanchez et al., 1998; Sanchez & Levine, 2000).

This study is also the first to illuminate the *relative* contribution of the various occupational factors contributing to rating disagreement. First, our results reinforce prior findings regarding the fact that less consensus occurs when occupations are complex in terms of information processing and decision-making (Sanchez et al., 1997). A possible explanation is that tasks involving processing data are by nature intangible and difficult to observe and, therefore, they are typically monitored indirectly through output control rather than directly through behavior observation (Ouchi, 1977). As incumbents completing such information processing activities do not work in close range or are "out of the limelight" of management, there is probably less pressure to conform to standardized norms. Next, of the three categories of factors hypothesized, occupational activities involving equipment, direct contact, and management were the most important factors related to the degree of consensus in competency ratings. That is, these occupational activities explained up to 18% of unique variance in inter-incumbent variability above and beyond the other factors. These findings strengthen our central premise, namely that the nature of certain work activities triggers idiosyncratic role definitions, over and above complexity and context. Consistent with our hypotheses, we found that there was *more* agreement or consensus among incumbents when their occupations involved work activities concerning equipment and direct contact with the public.

The three occupational context scales proposed by Dierdorff and Morgeson (2007) did not influence the degree of consensus in competency ratings. A possible explanation is that the O*NET work context items that Dierdorff and Morgeson used to form their scales can be said to ask "holistic" questions about the entire job such as "How automated is your current job?" It is possible that routinization, autonomy, and interdependence may be better captured by decomposing the job into more specific work activities such as the ones we used to form our activity scales than by the holistic ratings of the entire work context. Alternatively, the behavioral-nature of the competencies employed here might have made them less prone to idiosyncratic role definitions than O*NET traits and similar worker-oriented descriptors are. Future research on other aspects of occupational context is warranted. At the very least, organizational context should affect competency ratings, because variability in organizational cultures should explain the relative weight assigned to competencies (Werbel & DeMarie, 2005).

From a practical perspective, our results question the utility of interventions intended to increase the degree of consensus in incumbents' ratings of the same occupation such as rater training. As noted above, such a practice is reminiscent of a traditional view of the job as being independent of the people who perform it. In this respect, it has been argued that competency modeling and traditional job analysis have different objectives (Sanchez & Levine, 2009). Competency modeling intends to influence employee behavior along certain strategic lines, whereas job analysis is concerned with describing work (requirements). Thus, one may argue that, in regards to competency ratings, organizations should not necessarily try to *reduce* individuals' job crafting efforts. Instead, organizations may aim to *direct* incumbents' to interpret and enact their job in ways consistent with the organization's strategy.

This study is not without limitations. First, we focused on benchmark occupational

families included in O*NET as our sampling frame, allowing us to link our results to occupational ratings made by independent O*NET samples. Yet, a drawback associated with O*NET occupations is that they are relatively broad. Therefore, we retained occupations only when incumbents' jobs matched the O*NET benchmark description. Additionally, we controlled for the breadth of the O*NET occupation. Second, incumbents were not working in the same organization because there was no organization wherein all occupations were represented by a sufficient number of incumbents. Thus, the organization's size, culture, geographical region, and type of industry might influence our results (Childs, Peterson, & Mumford, 1999). In addition, differences in how organizations index job level might be also an influence. In any event, our random sampling of organizations might have helped in canceling out these extraneous-variable effects. Third, our conclusions are limited to competency ratings, and do not generalize to ratings of other job-analytic descriptors such as task and KSAO ratings.

In conclusion, this study showed that 25% of the variance in competency ratings of the same occupation might be related to situational opportunities to exert discretion stemming from the complexity, the context, and especially the work activities of the occupation. Thus, rather than assuming that disagreement is a definite sign of rating inaccuracy, our study builds on an emerging stream of work analytic research that illustrates how further considering the roots of such disagreement provides fruitful information regarding the manner in which incumbents perceive and construe their jobs (Dierdorff & Morgeson, 2007; Sanchez et al., 1997, 1998; Sanchez & Levine, 2000).

Footnotes

1 When investigating consensus, a distinction should be drawn between consistency and consensus among SME ratings (Kozlowski & Hattrup, 1992). Whereas consistency in terms of the relative standing or rank-order of the competencies is captured by coefficients of inter-rater reliability, consensus or absolute agreement on competency ratings is captured by coefficients of inter-rater agreement. Although we examined both inter-rater reliability and agreement, our results were virtually identical and, therefore, we report only reliability results here. Inter-rater agreement results are available from the first author.

2 As prior job analytic research found that job experience might influence inter-rater reliability (e.g., Landy & Vasey, 1991), we examined whether incumbents' experience affected our results. Job experience did not significantly impact on our results.

3 A multiple regression analysis approach to this mixed design was preferred because, unlike ANOVA, multiple regression analysis allows an examination of the combined and separate effects of continuous and categorical variables (Edwards, 1984, pp. 130-142; Hollenbeck, Ilgen, & Sego, 1994). In addition, the use of repeated measures doubled the statistical power (59 occupations x two observations for occupation –one for competency dimensions and one for competency components = 118 observations).

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Table 1
Results of Within-occupation Generalizability Analyses for Competency Dimensions and Competency Components.

			Competency dimensions				Competency components			
	Occupational title	SOC code	Rater	Competency	Rater x Competency	G coefficient	Rater	Competency	Rater x Competency	G coefficient
1.	Industrial Truck and Tractor Operators	53-7051.00	1%	54%	46%	.78	1%	38%	61%	.65
2.	Photographic Processing Machine Operators	51-9132.00	2%	61%	37%	.83	8%	49%	43%	.77
3.	Welder-Fitters	51-4121.03	14%	32%	55%	.63	17%	29%	54%	.62
4.	First-Line Supervisors/Managers of Production and Operating Workers	51-1011.00	0%	56%	44%	.80	0%	51%	49%	.76
5.	Bicycle Repairers	49-3091.00	0%	61%	39%	.82	1%	55%	44%	.79
6.	Painters, Construction and Maintenance	47-2141.00	1%	74%	25%	.90	2%	59%	39%	.82
7.	Word Processors and Typists	43-9022.00	5%	35%	60%	.64	8%	32%	60%	.62
8.	Secretaries, Except Legal, Medical, and Executive	43-6014.00	39%	4%	56%	.18	32%	3%	64%	.13
9.	Executive Secretaries and Administrative Assistants	43-6011.00	0%	25%	75%	.50	4%	30%	66%	.58
10.	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	43-5111.00	0%	26%	74%	.51	13%	19%	68%	.46
11.	Reservation and Transportation Ticket Agents	43-4181.02	2%	67%	32%	.86	10%	56%	34%	.83
12.	Payroll and Timekeeping Clerks	43-3051.00	0%	37%	63%	.64	0%	46%	54%	.72
13.	Real Estate Sales Agents	41-9022.00	1%	39%	60%	.66	6%	27%	67%	.55
14.	Advertising Sales Agents	41-3011.00	--	--	--	--	23%	21%	56%	.53
15.	Retail Salespersons	41-2031.00	35%	10%	56%	.34	11%	21%	68%	.48
16.	First-Line Supervisors/Managers of Retail Sales Workers	41-1011.00	--	--	--	--	10%	7%	83%	.19
17.	Hairdressers, Hairstylists, and Cosmetologists	39-5012.00	0%	68%	32%	.86	5%	42%	54%	.70
18.	Landscaping and Groundskeeping Workers	37-3011.00	0%	26%	74%	.52	5%	31%	64%	.59
19.	Janitorial Supervisors	37-1011.02	0%	28%	72%	.54	1%	21%	78%	.45
20.	Dishwashers	35-9021.00	4%	69%	27%	.89	5%	69%	27%	.89
21.	Bartenders	35-3011.00	--	--	--	--	--	--	--	--
22.	Cooks, Institution and Cafeteria	35-2012.00	0%	48%	52%	.73	0%	53%	47%	.77
23.	Chefs and Head Cooks	35-1011.00	3%	74%	23%	.91	2%	53%	45%	.78

24.	Security Guards	33-9032.00	29%	34%	37%	.73	15%	28%	57%	.59
25.	Police Patrol Officers	33-3051.01	2%	68%	30%	.87	4%	67%	30%	.87
26.	Dental Assistants	31-9091.00	0%	53%	47%	.77	3%	37%	60%	.65
27.	Home Health Aides	31-1011.00	0%	53%	47%	.77	1%	55%	44%	.79
28.	Registered Nurses	29-1111.00	0%	47%	53%	.73	1%	49%	50%	.75
29.	Internists, General	29-1063.00	12%	67%	21%	.91	7%	60%	33%	.84
30.	Dentists, General	29-1021.00	1%	39%	60%	.66	0%	39%	61%	.66
31.	Sound Engineering Technicians	27-4014.00	6%	60%	34%	.84	12%	46%	42%	.76
32.	Public Relations Specialists	27-3031.00	0%	27%	73%	.52	2%	19%	79%	.42
33.	Singers	27-2042.01	0%	86%	14%	.95	1%	48%	51%	.74
34.	Producers	27-2012.01	0%	39%	61%	.66	2%	37%	62%	.64
35.	Painters and Illustrators	27-1013.01	0%	40%	60%	.66	6%	33%	61%	.62
36.	Teacher Assistants	25-9041.00	9%	23%	68%	.50	8%	31%	61%	.61
37.	Librarians	25-4021.00	8%	29%	63%	.58	1%	12%	87%	.30
38.	Secondary School Teachers, Except Special and Vocational Education	25-2031.00	17%	39%	44%	.73	15%	35%	50%	.68
39.	Kindergarten Teachers, Except Special Education	25-2012.00	5%	37%	58%	.66	5%	49%	47%	.76
40.	Foreign Language and Literature Teachers, Postsecondary	25-1124.00	4%	28%	68%	.56	16%	42%	42%	.75
41.	Economics Teachers, Postsecondary	25-1063.00	0%	46%	54%	.72	1%	49%	50%	.74
42.	Paralegals and Legal Assistants	23-2011.00	20%	31%	49%	.65	17%	29%	54%	.62
43.	Judges, Magistrate Judges, and Magistrates	23-1023.00	12%	54%	34%	.83	8%	51%	40%	.79
44.	Lawyers	23-1011.00	4%	21%	75%	.45	2%	35%	63%	.62
45.	Directors, Religious Activities and Education	21-2021.00	5%	39%	56%	.68	4%	32%	65%	.60
46.	Social and Human Service Assistants	21-1093.00	19%	41%	41%	.75	19%	28%	53%	.61
47.	Medical and Public Health Social Workers	21-1022.00	0%	65%	35%	.85	1%	52%	47%	.77
48.	Biological Technicians	19-4021.00	8%	56%	36%	.82	16%	43%	41%	.76
49.	Occupational Psychologists	19-3032.00	0%	27%	73%	.53	3%	19%	79%	.42
50.	Physicists	19-2012.00	6%	30%	64%	.58	15%	31%	54%	.63
51.	Medical Scientists, Except Epidemiologists	19-1042.00	19%	9%	72%	.27	28%	13%	59%	.40

52.	Electronics Engineering Technicians	17-3023.01	2%	17%	81%	.39	3%	27%	70%	.53
53.	Electrical Engineers	17-2071.00	1%	18%	81%	.40	1%	46%	53%	.72
54.	Civil Engineers	17-2051.00	--	--	--	--	0%	53%	47%	.77
55.	Database Administrators	15-1061.00	0%	65%	35%	.85	1%	42%	57%	.69
56.	Computer Support Specialists	15-1041.00	3%	68%	29%	.88	11%	41%	48%	.72
57.	Financial Examiners	13-2061.00	0%	14%	86%	.32	16%	26%	59%	.57
58.	Employment Interviewers, Private or Public Employment Service	13-1071.01	0%	53%	47%	.77	10%	33%	57%	.64
59.	Property, Real Estate, and Community Association Managers	11-9141.00	5%	23%	71%	.49	13%	10%	77%	.27
60.	Food Service Managers	11-9051.00	3%	35%	62%	.63	8%	26%	66%	.54
61.	Education Administrators, Postsecondary	11-9033.00	0%	49%	51%	.74	9%	45%	46%	.74
62.	Computer and Information Systems Managers	11-3021.00	5%	32%	63%	.61	1%	54%	45%	.79
63.	Sales Managers	11-2022.00	--	--	--	--	23%	5%	71%	.18
64.	Private Sector Executives	11-1011.02	--	--	--	--	17%	12%	71%	.34
	M		5%	42%	52%	.67	8%	37%	56%	.63
	SD		9%	19%	17%	.18	8%	16%	13%	.17
	Min		0%	4%	14%	.18	0%	3%	27%	.13
	Max		39%	86%	86%	.95	32%	69%	87%	.89

Note. Dashes indicate that the object of measurement could not be estimated for these occupations due to estimation problems (negative variance component estimates).
Hence, it was not possible to compute generalizability coefficients. With the exception of the G coefficient, values in the table refer to the percentage of variance explained by the respective variance components.

Table 2

Descriptive Statistics for Study Variables and Generalizability Analysis Results.

	M	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	*M*	*SD*
Independent variables																
1. Occupational breadth	.78	.55		-.04	.06	.31	-.08	.35	-.25	-.05	.15	-.13	.17	-.20	.78	.55
2. Occupational complexity	3.97	1.63	-.04		.13	-.16	.54	-.33	.02	.37	-.14	-.22	-.21	-.17	3.97	1.63
3. Interdependence	68.39	14.36	.06	.13		.21	.32	-.11	.49	.55	.15	-.21	.01	-.25	68.39	14.36
4. Routinization	52.41	11.66	.31	-.16	.21		-.16	.04	.00	.27	.16	-.01	-.09	-.06	52.41	11.66
5. Autonomy	80.74	12.47	-.08	.54	.32	-.16		-.26	.18	.32	-.16	-.12	-.09	-.10	80.74	12.47
6. Equipment	29.87	16.79	.35	-.33	-.11	.04	-.26		.08	-.35	-.08	.28	.02	.24	29.87	16.79
7. Direct contact	50.97	19.15	-.25	.02	.49	.00	.18	.08		.32	-.02	.20	-.04	.13	50.97	19.15
8. Managerial	54.79	11.49	-.05	.37	.55	.27	.32	-.35	.32		.11	-.29	-.03	-.25	54.79	11.49
Dependent Variables																
9. Rater VC	.06	.10	.10	-.25	.05	.05	-.18	-.07	.09	-.13		-.18	.27	-.35	.08	.07
10. Competency VC	.44	.23	-.04	-.26	-.20	-.04	-.07	.35	.25	-.28	-.19		-.21	.89	.38	.19
11. Rater x Competency VC	.52	.20	.13	-.07	.03	-.11	-.14	-.05	-.18	.00	.11	-.22		-.52	.58	.18
12. G coefficient VC (*z* score)	.89	.35	-.10	-.17	-.23	-.04	-.07	.32	.25	-.22	-.21	.86	-.57		.78	.28

Note. VC= Variance component. Results for competency dimensions (N = 58) are placed below the diagonal, results for competency components (N = 63) are above the diagonal.

Given that occupation (instead of rater) served as unit of analysis, alpha (two-tailed) was set at .12 given a median effect size and N = 60 to obtain a power of .80.

Correlations higher or equal to |.20| are significant at this alpha level.

Table 3

Repeated Measures Regression of Consensus on Occupational Breadth, Occupational Complexity, Occupational Context, and Occupational Activities.

	Generalizability Coefficient (Inter-rater Reliability)				
	F-change	*df*[1]	*beta*	R^2	$?R^2$
Step 1	1.44	2, 59		.01	.01
Occupational breadth			-.09		
Step 2	4.83*	1, 59		.06	.05
Occupational complexity			-.21*		
Step 3	.26	3, 59		.07	.01
Interdependence			-.08		
Routinization			.03		
Autonomy			.07		
Step 4	8.40**	3, 59		.25	.18
Equipment (EQ)			.32**		
Direct Contact (DC)			.29*		
Managerial (MA)			-.18		
Step 5	na			.87	.62
Criterion scaling vector			na		
Step 6	3.03	1, 40		.88	.01
Type of competency (TC)			.10		
Step 7	1.21	3, 40		.89	.01
TC x EQ			.12		
TC x DC			.25		
TC x MA			-.21		

[1]degrees of freedom for the between and within contrasts were computed using the formulae provided by Pedhazur (1982, pp. 559-562). * $p < .05$, ** $p < .01$. na = not applicable