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SITUATIONAL JUDGMENT AND TACIT KNOWLEDGE:

AN EXPLORATION OF CONSTRUCT SIMILARITY

By

Morell E. Mullins, Jr.

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ABSTRACT

SITUATIONAL JUDGMENT AND TACIT KNOWLEDGE: AN EXPLORATION OF CONSTRUCT SIMILARITY

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While situational judgment tests have gained popularity in recent years in both research and applied settings, it remains an open question as to what they are actually measuring. To answer this question, a study was conducted to examine the similarity of constructs underlying a situational judgment test and a measure of tacit knowledge. A situational judgment test, a measure of tacit knowledge, and a set of variables that were believed to inhabit the nomological networks of both measures were administered to a sample of 358 undergraduates at a large midwestern university. Results of correlational and structural equations analyses indicated that situational judgment and tacit knowledge are likely not isomorphic with respect to their underlying constructs.

For Cindy -- without you, kid, I wouldn't be here today

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LITERATURE REVIEW

In recent years, situational judgment tests have begun to gain popularity among industrial and organizational psychology practitioners, largely based on the work of Motowidlo (Motowidlo, Dunnette, & Carter, 1990; Motowidlo & Tippins, 1993). These instruments represent an advance in selection procedures through their focus on skills and abilities directly relevant to the job, measured in the form of a low-fidelity, low-cost simulation.

The use of situational judgment tests is not without precedent; assessment centers (see Gaugler, Rosenthal, Thornton, & Bentson, 1987, for a partial review of this topic), which also incorporate aspects of simulations, have been in use since the mid-1950's (Bray & Grant, 1966). More generally, Wernimont and Campbell (1968) made a strong call for the measurement of behavior, rather than simply "signs" of behavior, in making predictions about performance. It was inevitable, then, that a measure like the situational judgment test would become popular.

The cliche that the best predictor of behavior is behavior certainly holds in selection situations, and must be kept, at the very least, in the back of the mind when making selection decisions. However, it is difficult from a purely pragmatic standpoint to measure behavior via the traditional paper-and-pencil measures that

continue to dominate selection situations. The best we can often do is to gauge the behavioral intentions of applicants, and draw inferences about their likely behavior from these reports. In examining a test such as a situational judgment test, such intentions become all the more crucial since they are the criteria by which decisions are made.

Another consideration is that situational judgment tests possess something that traditional cognitive ability measures and other paper-and-pencil selection instruments may lack: face validity, whether a test "looks like" it measures what it purports to measure (Nunnally, 1959). This is important for several reasons, one of the foremost being applicant reactions. While they are not the focus of this paper, they bear note because practitioners must be aware of the effect their work will have on applicants (Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993). A robust finding in the literature is that applicants favor selection procedures that are strongly related to job content, usually in the form of work samples or high-fidelity simulations, to the more traditional written measures (Cascio & Phillips, 1979; Rynes, 1992; Schmidt, Greenthal, Hunter, Berner, & Seaton, 1977). The situational judgment test represents a method by which these same positive reactions may be obtained without going to the expense of developing a work sample measure or a full simulation of the job position to be filled.

The use of simulations, as well as work samples, has a well-documented history in the literature, with demonstrated utility. The situational judgment test may prove to be something of a boon to psychologists, but it remains unclear exactly what constructs are tapped by the behaviors sampled (Motowidlo et al., 1990). While a

simple "It works," may prove sufficient for the needs of clients, it is our responsibility as scientists to ask the natural question that follows such an assertion: "Why?"

One explanation arising from a review of the cognitive literature involves the notion of practical intelligence advanced by Sternberg and Wagner in their ongoing stream of research. Practical intelligence, they argue, is distinct from academic intelligence in the underlying mechanism by which it operates. Academic intelligence, that displayed in classroom situations, most generally taps formal knowledge about the world around us. An example of this is the ability to recall the date on which the United States entered World War II. The ability to recall such facts and to apply them in structured learning situations would be one of the hallmarks of academic intelligence.

Practical intelligence is far more dependent on tacit knowledge, which is not directly taught but is instead gleaned from our daily lives, from interactions with others and from the world around us (Sternberg & Wagner, unpublished manuscript). For example, knowing how to deal effectively with an authority figure is a skill which is not normally taught, but instead must be gained through experience. It therefore represents tacit knowledge, and acting to defuse a tense situation with an angry superior might be one example of practically intelligent behavior.

Because the situational judgment test requires job candidates to indicate the manner in which they would approach a potentially problematic situation, it seems reasonable to think that it might be tapping something akin to practical intelligence or tacit knowledge. Some proponents of situational judgment tests (e.g., Motowidlo), in

fact, maintain that their measures may constitute examples of practical intelligence in work situations. In this study, I will test the relationship between a situational judgment test and one of Wagner and Sternberg's measures of tacit knowledge, in an attempt to determine whether they measure the same underlying construct. This comparison of measures can occur only after the basis for the construction of such measures, their conceptual foundations, have been understood and compared as well. That will be one of the major undertakings of the introductory sections of this paper.

Information about the similarity of these two types of tests (as well as more traditional measures of intelligence or ability) is essential if we are to continue utilizing the situational judgment test, because we do both our science and our clients a disservice by not understanding the theoretical underpinnings of our measures. In addition, this would provide a real-world application of the practical intelligence construct, long a goal of researchers in that domain (see Wagner & Sternberg, 1985, 1986; Sternberg & Wagner, 1992).

A final consideration involves the important synthesis such research represents. Applied and theoretical concerns are often inconsistent, as has long been noted in the literature (Freedheim, 1969). As such, any research which seeks to explicate the relationship between theory and practice adds to the field. Moreover, these two literatures would both benefit from being drawn together in such a manner, with each receiving some measure of validation through its relationship with the other.

With that in mind, I will now turn to a more in-depth discussion of the relevant literatures. For first situational judgment, and then practical intelligence, both the conceptual and empirical work will be reviewed, so that qualitative and

quantitative comparisons may be made. Because I want to demonstrate empirically that the situational judgment test measures something closely related to tacit knowledge, one concern in each empirical section will involve determining the correlates of each measure. I will summarize the areas where such similarities may exist at the conclusion of my literature review, in the form of hypotheses. Then, using a methodology similar to that utilized in construct validation research, I will evaluate the similarity of the constructs underlying the situational judgment test and tacit knowledge test.

Situational Judgment Tests

Simulations, because of their direct relevance to the knowledge, skills, and abilities used on the job, have long been recognized as valuable in selection situations (Wernimont & Campbell, 1968). However, the process of developing, marketing, and implementing a large-scale, high-fidelity simulation can be a costly one, and it is a matter of guess-work on the part of the practitioner as to whether the costs will be outweighed by the benefits the simulation provides (Motowidlo et al., 1990).

As an alternative to these high-fidelity, financially risky simulations, the situational judgment test was developed. While the situational judgment test (hereafter, SJT) has its origins nearly four decades ago (see Bruce & Learner, 1958), only recently has it come to be discussed in the literature. These discussions have been few, however, and of varying quality, but they seem to be in agreement on two issues: first, that SJTs are valid measures in terms of concurrent validity (Motowidlo et al., 1990) and predictive validity (Dalessio, 1994); and second, that more research is needed to understand the constructs underlying performance on SJTs.

SJT Development

The procedure utilized by Motowidlo et al. (1990) in the development of their low-fidelity simulation is in many ways one with the potential to generalize beyond their content domain. More importantly an examination of their development procedure should prove helpful in determining what constructs their SJT is built to measure.

The first step of their development process involved a review of previous job analyses to determine the core skills necessary for the performance of the job in question. Such prior documentation is useful, but it is not necessary if time and money are available to conduct a job analysis for the express purpose of developing an SJT.

Once the core skill dimensions have been identified, the next step in the development process involves meeting with job incumbents and supervisors to collect critical incidents. In their initial work, Motowidlo et al. were concerned with managerial effectiveness, and so collected incidents from a sample of managers and their supervisors that reflected both effective and ineffective performance. These incidents encompassed multiple dimensions of managerial effectiveness, determined by the job analysis review from step one. Although their initial study included managers from various functional specialties (ranging from administration to programming), they saw three sets of skills as central to all areas: communication, problem-solving, and interpersonal. For the purposes of the simulation, they focused on the problem-solving and interpersonal areas as their primary targets. These were further broken down as follows.

Problem-solving was seen as made up of organization, thoroughness, drive, and resourcefulness. Interpersonal areas were defined in terms of leadership, assertiveness, flexibility, and sensitivity. These sub-components of the primary variables guided the collection of critical incidents and helped form the basis for later portions of the study. Hence, these seem to represent the core constructs measured by their SJT. I will return to these factors once I complete my discussion of the development procedure to attempt a more in-depth analysis of the personality factors associated with them. Because these constructs represent the most basic level at which most analyses of situational judgment tests can take place, a thorough understanding of their meaning and measurement is crucial.

With critical incidents collected, the next step in the development of a situational judgment test involves writing descriptions of task situations. These situations, based on the critical incidents, should reflect the behavioral categories determined by the job analysis. Because almost any job for which such a selection procedure is desired will involve more than a single task or type of task, it is unlikely that an SJT will measure only a single construct. More likely, several constructs, all related to different aspects of performance on the task, will be measured by different questions on the SJT. As I already mentioned, Motowidlo et al. (1990), attempted to measure interpersonal elements of management and problem-solving elements of management, in addition to more general measures of communication effectiveness and overall effectiveness. Specific operationalizations of these dimensions (i.e., items), since they are the result of the analysis of this specific job, will not necessarily be represented in situational judgment tests developed for other jobs within

a functional domain (e.g., managerial jobs). There is no single SJT, but the general constructs measured may be the same across jobs. In this study, I am arguing that an SJT is actually measuring practical intelligence, regardless of the job for which it is designed to select applicants.

Returning to the issue of SJT development, the situations developed by Motowidlo et al. were given to 150 job incumbents. These incumbents were asked to write a few sentences describing how they would handle each problem situation in the most effective manner. For each situation, several general strategies from the incumbents' responses were selected as response options.

After the response options have been selected, the next step in such an effort involves asking highly experienced, senior employees with a great deal of knowledge about the job in question, to evaluate the relative effectiveness of the alternate strategies for each task situation. The best and worst alternative strategies must be identified, and all options are rated as to their effectiveness. From these data the most and least effective response options are determined.

The scoring system is dualistic, in the sense that respondents are asked to rate the response option they would most likely choose as well as that which they would least likely choose. The option determined to be the "best" via the responses of the experienced managers is assigned a score of +1 if it is the "most likely" response for an individual, and a score of -1 if it is the "least likely" response. Similarly, the "worst" item is assigned a score of +1 if it is the "least likely" response, and -1 if it is the "most likely." All other responses are coded as zero, so the score on any given item ranges from -2 to +2.

The procedure and scoring system outlined above, while described in Motowidlo et al. (1990) can easily generalize to other situations. It is not content-driven, and as such has the potential for broad applicability.

Constructs Underlying the SJT

The foregoing discussion of the SJT included a certain amount of speculation on the nature of the constructs underlying the SJT. An understanding of these constructs is essential to our progress, since the crux of what I will want to eventually argue is that the constructs underlying the SJT are the same as those underlying a measure of tacit knowledge or practical intelligence. This section will continue the discussion of SJT constructs begun in the previous pages, and will attempt to expand on what has been said.

The fact that such a stringent development procedure is used to formulate any SJT virtually ensures that the measure will be highly face valid. It should also be highly related to the actual knowledge, skills, and abilities involved in performing the job for which persons are being selected (Cohen, Swerdlik, & Smith, 1992). A major question, however, and one which I have already discussed to some degree, is the following: Given this development procedure as an archetype, what constructs are being measured? The situations with which people are faced are highly job-relevant, the answers determined by experienced job incumbents. We want to determine how well people who may have never performed this job in the past can respond to the types of challenges that will face them, should they be hired. Whether these measures work or not is a question of predictive validity, and will be taken up in my review of the empirical findings on situational judgment tests. But if they do work,

what does it mean? Does it mean that high-scoring examinees possess practical intelligence? This is a question we will return to in the conceptual review of the practical intelligence literature. For now, the best we can do is a more in-depth look at the general constructs measured by the Motowidlo et al. (1990) version of the SJT.

The KSAs likely measured by the Motowidlo version of the SJT fall into the categories mentioned above -- problem-solving effectiveness, interpersonal effectiveness, communication effectiveness, and overall effectiveness. Problem-solving, interpersonal, and communication effectiveness all represent very broad, very vague factors. It is necessary, in order to measure them effectively, to break them down as Motowidlo et al. did, but it is reasonable to expect that as we move from more macro- to more micro-levels, we will move more toward specific factors associated with the job in question and away from anything general that may underlie the archetypal SJT. To help us understand what may constitute that archetype, we must look at the general factors, but eventually, since we are ultimately comparing two measures, we must examine the breakdown of the specific factors as well.

The problem-solving factor is interesting, and makes some conceptual sense *a priori* because we are asking people to indicate their likely responses to problem situations. However, I mentioned previously the fact that different jobs will require different problem-solving skills, or at the very least present different problems, due to the varying challenges involved in each. Although the literature does not support the importance of general problem solving ability as a determinant of test performance (Motowidlo et al., 1990; Motowidlo & Tippins, 1993), the fact that it is a conceptual piece of situational judgment means that we should consider which variables might be

most closely related to it. For instance, the level of an individual's work experience should have an impact on the skill he or she possesses at solving work-related problems. From a more personality-based standpoint, several variables suggest themselves: individuals who are more conscientious will stick with problems to the end, and therefore develop more problem solving skill; individuals who are open to experience will gain a broader base from which they can work to solve problems; and individuals who are tolerant of ambiguous situations will be better able to deal with the types of real-world problems they will face every day, in which critical pieces of information are impossible to obtain.

If, as the literature seems to suggest, factors SJTs have in common across content domains also include interpersonal effectiveness and communication effectiveness, then we must ask again what personality variables are likely to demonstrate or explain this relationship. In looking at interpersonal effectiveness/skills, we might consider such variables as sociability, or the somewhat broader extraversion construct (Baron & Byrne, 1991). The dimension of extraversion, as it is commonly considered, represents a measure of whether a person is more talkative, frank, sociable, and so forth, as opposed to being reclusive, cautious, and generally silent. It might be expected that extraversion, since it will partially determine the amount and quality of interaction an individual has with others, will have an impact on performance on an SJT.

Other personality characteristics might prove important, however, in understanding the factors underlying SJT performance. At the very least, a more complete conceptual framing of those factors related to SJTs will allow for a more

comprehensive nomological network to be constructed.

Take, for example, tolerance of ambiguity (Furnham, 1994). In many instances, the situations to which applicants must respond on SJTs will be unlike those with which they have had experience in the past. The problems may not be clearly defined, due to their real-world base, and the way to proceed in order to reach a solution may be ambiguous. As such, tolerance of ambiguity should be related to performance on SJTs.

In addition, conscientiousness may prove important. If we accept that communication and interpersonal skills are important variables, then it is reasonable to expect that they are most likely to be utilized by individuals who feel the greatest sense of responsibility for their work. That is, people who are more conscientious will be more willing to communicate with others and utilize their interpersonal skills than will those who do not exhibit this trait.

Another potentially related personality variable is openness to experience (see Borkenau, 1988; Costa & McCrae, 1995). It seems clear that some ambiguity and novelty will be characteristic of the situations described in SJTs, regardless of the job for which they are designed. As such, we might expect that individuals who are more open to new experiences will be better able to deal with such challenges, as opposed to those individuals who are more narrow in their experiential focus.

This is by no means a comprehensive list of all potential personality variables, but such a listing would make for a cumbersome text and an even more cumbersome set of measures. The personality variables outlined above represent a sampling of several potentially relevant domains, each of which is important individually, and all

of which may be the underlying factors involved in generalized SJT performance. These factors include experience, age, education, communication, sociability/ extraversion, tolerance of ambiguity, conscientiousness, and openness. In the interest of pragmatism, factors beyond those must be left for others to study.

In these two sections, I have reviewed the procedure used in developing SJTs in order to come to a better understanding of the constructs, and I have considered several potentially relevant personality variables. The nomological network surrounding SJTs is exceptionally broad. For a greater understanding of this breadth, I will now turn my attention to the empirical findings on SJTs.

Empirical Research

The previous section addressed the question of what SJTs measure from a conceptual standpoint; now, I hope to approach the same question from an empirical frame of reference. I will first look at the validity evidence from the two studies by Motowidlo, and then examine the intercorrelations of the SJTs with other potentially relevant variables. In this way, I hope to uncover the empirical "meaning" of situational judgment tests.

Motowidlo et al. (1990), as well as Motowidlo and Tippins (1993) demonstrated that the SJT could, in fact, predict performance as measured by supervisory ratings. The three general dimensions the SJT was designed to measure (i.e., interpersonal effectiveness, problem-solving effectiveness, and communication effectiveness) as well as overall effectiveness, all correlated significantly ($p < .01$) with supervisory ratings on those dimensions (Motowidlo et al., 1990). These results held for both job incumbents (technically a question of concurrent validity) as well as

applicants hired using the SJT (Motowidlo & Tippins, 1993). The first response one might have to this could be a complete lack of surprise; after all, the test was designed such that individuals who did well on it would have the skills needed to perform the job, and would therefore receive higher ratings on those aspects of performance tapped by the measure. But such a simplistic interpretation completely ignores the question of what allowed job applicants, whose experience with the job could be minimal at best, to do well on either the SJT or the later performance review.

The correlations of the SJT with other variables that might impact performance on the test will allow us to better answer this question. Fortunately, Motowidlo et al. (1990) present precisely this data for two situational judgment tests, a 58-item measure and a 30-item measure. Their data were collected from two samples of managers (externally hired and internally promoted) as well as job applicants. Each externally hired manager, as well as each applicant, was given an aptitude test consisting of items measuring quantitative, writing, reading, and direction-following skill, and each was asked for information about academic achievement (major GPA and class rank). Predictor data on the internally promoted managers consisted of assessment center ratings across several dimensions. In addition, interviews were conducted with all participants in which leadership experience, interpersonal skill, problem-solving skill, and communication skill were measured.

The results of the study are interesting, because the SJT had negligible correlations with all facets of the aptitude test score (r = .01 to .16, ns). This is not surprising, considering previous findings that success on simulations hinges more on

the ability to cope with the complexities of the situation than on verbally stated knowledge (Broadbent & Aston, 1978). In addition, the SJT was uncorrelated with academic achievement in all but the applicant sample, where major GPA correlated .30 ($p < .05$) with scores on both versions of the SJT. It is possible, however, that such a correlation may be an age or experience effect; the knowledge gained in a formal educational setting may be all that young applicants have to call upon when faced with a measure such as the SJT, while more experienced individuals have little or no need of formal knowledge to respond appropriately. To put the matter more succinctly, what you use may be a function of what you possess.

An interesting corollary to this is the possibility that the SJT measures job knowledge, and to some extent this may be the case. Individuals who have actually performed the job in question will undoubtedly do better on an SJT than will those who have not; however, if we conceive of the archetypal SJT as an entry-level selection instrument, it makes sense to think that the proportion of new applicants who will have direct experience with the job in question should be low. Thus, job knowledge should certainly aid performance on an SJT, but very few applicants should possess more than the most rudimentary version of such knowledge; therefore, other forms of knowledge and abilities must be utilized if applicants are to perform well.

In the interviews, several consistent findings emerged. In all three samples, communication skill (defined as the effectiveness of communication content and style, as well as nonverbal skills displayed during the interview) correlated significantly with at least one of the two SJT forms, and in the sample of internally promoted managers

several assessment center ratings, all of which lay conceptually close to communication skill, showed relationships to SJT score. Interpersonal skill was also related to SJT performance in the sample of externally hired managers, but was not so in either of the others. There may be a theoretical reason for this, or it may simply be a function of sampling error in the large number of correlations generated for this portion of the project.

One variable which should be correlated with performance on an SJT would be relevant experience. In Motowidlo et al.'s (1990) study of managers, performance on the SJT thus developed should be strongly related to either managerial experience or experience with managers, since in either case the individual would gain experience with examples of the right and wrong ways to perform managerial tasks. Performance on an SJT designed to assist in the selection of police officers should be strongly correlated with prior experience in the types of situations law enforcement officers face, or with experience with legal matters.

While academic variables have not been shown to consistently impact SJT performance, it is conceivable that there may be aspects of an individual's education that do have an effect. These will once again refer back to experience, however, particularly to the extent that educational experience accounts for a large proportion of an individual's total experience.

The amount or quality of education received by different people may differ (this is something of a truism, but bears stating nonetheless). When amount of education is viewed as a predictor variable (since it represents additional real world experience), and looked at not in terms of its outcome measures (such as GPA or

class rank), then it becomes reasonable to view it as potentially correlated with performance on a test of situational judgment. In-depth theoretical reasons for the effect of experience, in its various guises, will be discussed in the sections to follow.

A final potentially relevant construct is Machiavellianism. Based on the writings of Niccolo Machiavelli, the construct that bears his name is treated as a personality trait stressing self-interest, deception, and opportunism (Mudrack & Mason, 1995). Recall that one of the things supposedly measured by SJTs is interpersonal skill. Because the subcomponents of Machiavellianism reflect (albeit negative) interpersonal skills, performance on a measure of this construct may be related to the individual's ability to respond appropriately to a managerial SJT.

To understand a construct it is important to define to what it will relate, but it is also important to specify to what the construct will not relate. It has already been mentioned that SJTs should be unrelated to measures of cognitive ability (Motowidlo et al., 1990). There is also no reason to expect that they should be related to such demographic variables as gender, with the caveat that to the extent that gender (or other) differences result in experiential differences, there may be a slight impact on SJT performance.

Situational judgment tests, then, are low-fidelity simulations whose conceptual underpinnings are uncertain. Each measure is built around a different set of circumstances, but because of the consistency of the development procedure and the apparent consistency of the KSAs (particularly interpersonal and communication skills; see Motowidlo & Tippins, 1993, and Dalessio, 1994) practitioners have tried to measure using SJTs, we may expect that SJTs developed for different jobs assess

similar constructs. For instance, when faced with novel situations and asked to make judgments about the best and worst options, perhaps individuals tap into their general knowledge about that type of situation; we might even call this "common sense."

The few studies that have been reported on SJTs lend some direction in the search for answers to our conceptual difficulties, but to make worthwhile progress we must turn our attention to a domain suggested by Motowidlo et al. (1990), the literature on practical intelligence.

Practical Intelligence

Conceptual Underpinnings

The construct of practical intelligence was defined earlier as that which is gained from our experiences in the world around us, a definition which is only complete when it excludes formal, academic knowledge gained in a classroom environment (Wagner & Sternberg, 1985; Sternberg, Wagner, & Okagaki, 1993). While it is useful to define what practical intelligence is not, it is absolutely necessary to define what the construct is.

Neisser (1976) defined it as "responding appropriately in terms of one's long-range and short-range goals, given the actual facts of the situation" (p. 137). An individual confronted with a given situation (to return to our earlier example, dealing with an angry superior at work) first collects facts about the situation. This collection process may or may not occur consciously, since many of the cues as to important facets of the situation may not be obvious. For example, an individual may notice that whenever his supervisor is angry, the supervisor makes more trips than usual to the coffee machine. When the employee notices that his supervisor has made four

trips to the coffee machine in twenty minutes, and is snapping at other employees, he will be alerted to the potential anger.

Once the available facts about the situation are collected, the individual will then assess his goals relative to the situation. If he plans to advance through the company and will need the support of his supervisor to do so, or if he has a review that afternoon and needs to ensure the supervisor is in a good mood, he may act to defuse his supervisor's anger. If he has no such aspirations and only wishes to remain in his current position and "not make waves," then he would likely avoid the entire confrontation (assuming that it did not involve him personally). In either case, he would be performing a practically intelligent behavior based on his assessment of the facts of the situation relative to his goals. It is not necessary, however, for the rules to be so concrete, nor is it necessary for the individual to be able to verbalize them. Our employee might not even realize what his decision rule is for avoiding the supervisor, but would be able to follow that rule nonetheless if he possessed practical intelligence.

In order to truly understand, conceptually, what practical intelligence is, we must take another step back and ask about the processes that underlie it. When we do this, we find ourselves confronted with the notion of tacit knowledge (Polanyi, 1976). Here we must take care not to get overly engaged in the jargon; Sternberg and colleagues often seem to use "practical intelligence" and "tacit knowledge" interchangeably. However, I will endeavor to adhere to the following distinction, which seems implicit in the literature: Practical intelligence is behaviorally-linked, in the sense that for a person to be deemed practically intelligent, she or he must

perform a behavior (or behaviors) fitting the "practical intelligence" concept we hold in our minds. This definition is obviously a tautology, and requires us to take another step back. This step takes us to tacit knowledge, which is not so behaviorally-linked. Tacit knowledge is that knowledge base from which people draw, which enables them to perform in ways that are perceived as practically intelligent. I will do my best to remain true to this distinction, between practical intelligence and tacit knowledge, throughout the remainder of this paper.

As was discussed earlier, tacit knowledge is that which is not only not taught, but also is rarely expressed or stated. Instead, tacit knowledge is gleaned through experience (Sternberg et al., 1993). For the purposes of measurement, Sternberg and colleagues break it down into three sub-components, all of which can be tied to the workplace.

Managing oneself deals with knowledge about self-motivational and self-organizational aspects of performance at work. The self-regulatory aspects of performing as a manager, then, are important in Wagner and Sternberg's model.

Managing others deals with knowledge about work related interactions with subordinates, superiors, and peers. This is the type of tacit knowledge utilized by our employee, above, and may be reflected in a variety of ways; while a discussion of specific measurement options would likely be premature at this point, one might suspect that such constructs as Machiavellianism might prove relevant.

Finally, managing tasks deals with knowledge about how to perform specific work-related tasks well. All three of these dimensions are important for managers if they are to be deemed "practically intelligent" (Sternberg & Wagner, manuscript

under review).

The primary measures of tacit knowledge were developed (unsurprisingly) by Wagner and Sternberg (e.g., 1991). Their design reflects their tri-dimensional view of the construct of tacit knowledge, with items included to tap each of the three aspects -- managing self, managing others, and managing tasks.

The development of the tacit knowledge measures is very similar to that of a situational judgment test. As with the SJT, the tacit knowledge measures are job-specific and are based on the collection of detailed information from job experts about typical work-related situations and possible responses to them. Several examples from two different tacit knowledge scales are included in their research reports (see Wagner & Sternberg, 1985; 1986). The first scale includes items tapping the tacit knowledge of academic psychologists, the second tapping that of business managers (Wagner & Sternberg, 1991). For each item, a brief scenario is described and a number of response options (varying from six to twenty, with no apparent guidelines for a target number) are offered. Each response option is then rated by the respondents on a 7-point Likert-type scale, in terms of its importance "by its priority as a means of reaching your goals" (Sternberg, Wagner, Williams, and Horvath, 1995, Appendix A).

It should be apparent that in terms of tapping the universe of content associated with the target job, the SJT and Wagner and Sternberg's method of measuring tacit knowledge are very similar. Additionally, they ask for very similar discriminations in terms of potential responses to (presumably) novel situations. These similarities have been noted by Motowidlo (Motowidlo et al., 1990) as well as

other authors (Dalessio, 1994), and are important because they suggest that the same set or sets of skills are important for performing well on both types of tests.

It must be noted that while Wagner and Sternberg do not set up their measure as a simulation, almost any measure that seeks to investigate the manner in which people operate in everyday situations will, if content-valid, take on the characteristics of a low-fidelity simulation as described by Motowidlo and his colleagues.

This framing -- or, more aptly, re-framing -- is important, because it allows us to examine the work on practical intelligence and tacit knowledge in a more applied light. In spite of the work done to move the construct of tacit knowledge to the field (see esp. Sternberg et al., 1993; Sternberg & Wagner, 1992; Wagner & Sternberg, 1985, 1986), one might suggest that the framing of this work has forced it to remain on the "theory" side of the fence. While this is certainly speculative, it might be that the jargon used by Sternberg and Wagner tends too much toward the language of traditional experimental psychology, and speaks less in the language of modern applied psychology and its constituents. Whatever the reason, we must do at least this modicum of reframing in order to make a meaningful comparison between practical intelligence and the situational judgment test.

Another interesting aspect of tacit knowledge, and more generally practical intelligence, is the fact that it is defined by what it is <u>not</u> (Wagner, 1994). Because of the entrenchment of traditional notions of intelligence as so tightly tied to academics and classroom performance, such a definition is necessary. Wagner maintains that the types of problems, and therefore the mental competencies needed to deal with the problems, are very different in the work and academic environments. However, since

the popular conception of intelligence has to do with IQ, any definition of practical intelligence must differentiate itself from that conceptualization and define what it is not in order to better explain what it is. Perhaps the chart (see Table 1) from Wagner (1994), adapted from the work of Neisser (1976) and Wagner and Sternberg (1985) demonstrates the differences between the two domains of intelligence best. In addition, it shows several of the ways in which practical problems are defined by exclusion.

Tacit knowledge would then be that knowledge which helps the individual to define and formulate the problem, determine what information is required, and sort through the multiple correct answers and the multiple potential solutions to a problem embedded in everyday experience. This form of knowledge is primarily gained through direct experience or through interactions with an experienced person, such as a mentor (Wagner, 1994).

A further implication of the information contained in this chart is that practical problems are more ambiguous. This leads us back to our earlier discussion of personality characteristics likely associated with SJT performance. Obviously, if this chart is accurate, individuals with a higher tolerance of ambiguity should perform better on tests of tacit knowledge because of the ambiguous nature of the problems presented. Closely related to this, and also discussed earlier, is an individual's openness to experience. Since the tacit knowledge measure, like the SJT, often involves hypothetical and potentially unfamiliar situations, individuals who are open to new experiences will likely be able to cope more effectively with the challenges presented therein.

Table 1: Characteristics that differentiate academic and practical kinds of problems

Academic Problems		**Practical Problems**	
1.	Well defined	1.	Ill defined
2.	Formulated by others	2.	Unformulated
3.	Necessary information provided	3.	Additional information required
4.	One correct answer	4.	Multiple correct answers
5.	One method to obtain answer	5.	Multiple methods to obtain answers
6.	Disembedded from everyday experience	6.	Embedded in everyday experience

Source: Wagner (1994)

Two other personality variables were mentioned in my discussion of SJTs, and I will reintroduce them at this point. Tacit knowledge, since it is experience-based, will be dependent on the type and quality of interactions an individual has with others. Hence, individuals who are more extraverted or sociable will have more opportunities for potentially relevant experiences, and should do better on the tacit knowledge measure. They should, in other words, communicate more and have better interpersonal skills. Similarly, conscientious individuals will likely engage in more information-seeking strategies in order to increase their knowledge base; this information seeking, while increasing their formal knowledge, will also (potentially unavoidably) increase their tacit knowledge as well, by providing them with information they had not requested and did not attend to when it was received. For instance, recall the example from the beginning of our discussion of tacit knowledge. Imagine that our employee, in his early, naive days with the company, approached his supervisor with a question while the supervisor was on the way back from the coffee machine. If the question were answered in a more curt manner than that to which the employee was accustomed, our employee would have received not only the answer to his question, but also information about when not to approach his supervisor. However, the relationship between the coffee machine and the supervisor's curtness might not be noticed at that time; it would be noted, on some level, and over time this tacit knowledge could lead to changes in the employee's behavior to correspond with the supervisor's coffee-drinking habits.

A final parallel can also be drawn between SJTs and Sternberg and Wagner's measure of Tacit Knowledge. We noted earlier that because the SJT is believed to

measure interpersonal skills, Machiavellianism may be related to performance on it. Similarly, one of the dimensions of the tacit knowledge measure is "Managing Others." Self-interest, deception, and opportunism, three characteristics of the Machiavellian personality type, seem to be quite relevant when we consider individuals who manage others, so we would expect some relationship to exist between Machiavellianism and performance on a measure of tacit knowledge.

The personality correlates of SJTs, then, should reasonably be expected to correlate with tacit knowledge measures as well. Some aspects of the tacit knowledge measure, however, should be less parallel to SJTs. These differences center around the Managing Self dimension specified by Sternberg and Wagner.

Managing Self, as it was discussed earlier, deals with knowledge about self-motivational and self-organizational aspects of performance at work (Sternberg & Wagner, manuscript under review). To some extent, this parallels the SJT's concern with problem solving, when problem solving is conceived of as consisting of the four elements noted by Motowidlo et al (1990) -- organization, thoroughness, drive, and resourcefulness. In particular, organization and drive seem to reflect Managing Self's concerns with self-motivation and self-organization. However, our tools to measure problem solving are less useful when we start talking about something so conceptually distant (at least in common thought) as the ability to manage oneself. Two distinct indicators for Managing Self seem clear, which should be related to indicators for problem-solving ability. These are self-regulatory skill and learning style.

Self-regulation has long been a topic of interest to educational psychologists, as well as others concerned with learning, but only recently has it gained much

attention in the I/O literature (see Kanfer & Ackerman, 1989, for the most prominent example of its application). A review of this literature indicates that, with respect to management science, only a few recent articles have dealt with this area. One of the primary theorists on self-regulation, Albert Bandura (1991), defines it as having three primary components. Self-observation, or self-monitoring, includes observations on both the performance dimensions and the quality of the monitoring itself. Self-judgments involve one's behavior with respect to personal standards, referential performances, valuation of activities, and the various performance determinants. Finally, affective self-reactions can be either evaluative or tangible, but they are also a part of the self-regulatory process.

The self-organizational and self-motivational aspects of Managing Self should be related to self-regulatory activities. However, self-regulation is a broad concept, and we must narrow it somewhat to make it useful for the purposes of this study.

Ashford and Tsui (1991; Tsui & Ashford, 1994) note that one of the self-regulatory behaviors many successful managers engage in (where "success" is measured in terms of ratings of effectiveness by superiors, subordinates, and peers) is negative feedback-seeking. This makes a great deal of sense when you consider that, in many organizational contexts, specific information about performance is not made explicit all the time; hence, if a manager wants to know how she is performing, she will have to attempt to obtain feedback independent of the annual or semi-annual review process. Negative feedback should be more diagnostic than positive, if the ultimate goal is performance improvement, so we can thus understand why Ashford and Tsui (1991) saw negative feedback-seeking as such a crucial part of managerial

self-regulation. Hence, while it has not been tested in the literature, if Sternberg and Wagner are correct in their definition of the Managing Self dimension, items that purport to measure that dimension should be related to the individual's ability to self-regulate, and more specifically to seek negative feedback as part of the self-regulatory process.

The second indicator to be discussed with respect to the Managing Self dimension, but not the remainder of the TK dimensions, is learning style. Much of the important work on learning style, particularly as it is measured, has been done by Kolb (1985). This work, based on Kolb's (1976) experiential learning theory in which learning proceeds from concrete experience, to reflective observation, to abstract conceptualization, and finally to active experimentation, sought to test and validate this model of learning (Romero, Tepper, & Tetrault, 1992). However, the measures developed by Kolb have come under considerable scrutiny, and much work has been done to improve them or to devise new measures of the construct (Romero et al., 1992; Veres, Sims, & Shake, 1987; Carraher, 1993; Geiger, Boyle, & Pinto, 1993).

Two primary dimensions on which people differ, under the conception of learning style held by Kolb and many of his fellow researchers, are concreteness/abstractness and reflection/action. The style of learning people prefer, if it cannot be said to dictate career choice, has at least been shown to correlate with one's chosen field; for instance, from a sample of college students those individuals whose learning styles tended to be more concrete than abstract and more reflective than active have been shown to prefer such majors as sociology or foreign languages,

while those who were more abstract than concrete and more active than reflective preferred majors such as engineering and computer science (Romero et al., 1992). Hence, learning style does appear to be measuring something real.

Because the two dimensions of learning style exist, and because we must assume that, if Sternberg and Wagner are correct and tacit knowledge does indeed correlate with managerial performance, we may make the following statement: individuals who have learning styles that are consonant with those of managers will likely do better at a tacit knowledge measure of managerial effectiveness. It is through the Managing Self dimension that this will occur, since learning styles originate within the individual.

While the preceding discussion may be slightly longer than that provided for SJTs, the above still does not represent a comprehensive list of all the potentially relevant constructs underlying practical intelligence. Rather, it should serve as a basis for further development in later, potentially broader, research projects.

The conceptual basis of practical intelligence must be traced even farther back, since by themselves practical intelligence and tacit knowledge offer little if any mechanism by which such knowledge or intelligence might be gained. One such explanation, which is largely concordant with the assumptions underlying the work of Sternberg, Wagner, and their colleagues, is to be found in the literature on implicit learning.

Implicit Learning

Implicit learning (Reber, Walkenfeld, & Hernstadt, 1991) is "the process whereby a complex, rule-governed knowledge base is acquired largely independently

of awareness of both the process and the product of the acquisition" (p. 888). It is, to put it in common parlance, primarily unconscious (Lewicki, Czyzewska, & Hoffman, 1987), or at the very least nonconscious (Reber & Lewis, 1977). Its foil is explicit learning, the mechanisms of which are somewhat similar to what we normally think of as problem solving (Mathews, Buss, Stanley, Blanchard-Fields, Cho, & Druhan, 1989). Thus, the difference between the two is just what their names suggest; implicit learning happens somewhere beyond (or beneath) our awareness, while explicit learning is that which we notice and control.

The task that really helped define the field of implicit learning involves artificial grammars. In experiments with artificial grammars, subjects are exposed to 15-25 letter strings, constructed using an artificial grammar first used by Reber (1965; cited in Reber, 1989). After repeated exposures to these strings (either in the form of memorization to criterion or simple observation), subjects are then asked whether novel strings, constructed using the same artificial grammar, are grammatical (Seger, 1994). Performance levels of 60-80% are common on such tasks (Reber, 1989), but subjects cannot completely verbalize the rules by which they made these judgments, lending credence to the notion that their knowledge of the grammars is implicit, or unconscious (Mathews et al., 1989).

Other procedures have been used to test for implicit learning, and an excellent review of these is provided by Seger (1994). The work on artificial grammars is sufficient, however, for the reader to come to an understanding of the logic and to a lesser extent the methodology underlying research on this topic.

The relationship between implicit learning and tacit knowledge should be

obvious, and in fact it has been noted by Reber (1989), who concluded that implicit learning allows for the construction of a tacit knowledge base. A summary of the likely mechanisms behind practically intelligent behavior is useful at this point.

Every minute of the day, we take in information from the world around us. This occurs independently of conscious efforts to learn, and once such information is taken into the mind, we may say that implicit learning has occurred. We have learned something about the world around us, about its patterns and the ways in which it functions, without necessarily wanting to learn or even knowing we were engaged in the learning process (Lewicki et al., 1987). Once this learning has occurred, it is abstracted into a mental representation of our environment. This structure is the foundation for our tacit knowledge, and allows us to solve problems and make judgments based on novel stimuli by comparison with the tacit knowledge framework developed via implicit learning. Such ability, as we saw above, is the hallmark of practically intelligent behavior.

Implicit learning, then, provides one plausible mechanism by which tacit knowledge, and therefore practical intelligence, may be understood. While this study will not test the linkage between tacit knowledge (as measured by Wagner and Sternberg) and the more deeply cognitive notion of implicit learning, the relationship between these areas was important to establish in order to fully understand the conceptual foundations on which this study is built. With this conceptual framework in mind, we should now turn our attention to the empirical literature on practical intelligence.

Empirical Research

As with my review of the empirical research on SJTs, I have a pair of goals for my review of the empirical literature on practical intelligence. First, I hope to demonstrate the broad range of empirical studies that have investigated practical intelligence, many of which sought to assist in the definition of the construct as distinct from academic intelligence. Then I will parallel my discussion of SJTs by examining the correlates of measures of practical intelligence/tacit knowledge.

Empirical studies of practically intelligent behavior abound in the literature. For instance, Lave, Murtaugh, and de la Rocha (1984) studied women who did the grocery shopping for their families. The authors found that these women, who were incapable of completing a paper-and-pencil arithmetic test, were able to perform the exact same computations in their heads when computing prices in the supermarket.

Ceci and Liker (1986) studied men who handicapped horse races as a hobby, and found that men with low Iqs could show considerable expertise and cognitive complexity in their handicapping efforts. They concluded that something other than the traditional, IQ-based notion of intelligence was at work in these men, and this has been interpreted by later authors as evidence of practical intelligence (Sternberg et al., 1993).

Scribner (1986) studied men working in a milk-processing plant, and showed that in spite of what are often low IQs, they can find new and creative ways to speed up their work without sacrificing quality. Parallel to this is the example, given by Sternberg et al. (1995) of garbage collectors in Tallahassee. In spite of having a job low in intellectual challenges, these individuals still show innovative behavior that assists them in accomplishing their goals in the most expedient manner.

Sternberg claims that all of these examples have an underlying mechanism in common. The employee with the angry superior, the women in the supermarket, the handicappers at the race track, the men in the milk-processing plant, and the garbage men, are all accessing tacit knowledge (Wagner & Sternberg, 1986; Polanyi, 1976). This tacit knowledge, in all likelihood, arose from implicit learning that occurred while they were engaged in their respective tasks.

As with the SJT, in looking at practical intelligence and tacit knowledge the conceptual underpinnings of the construct are only the beginning. Empirically, what is it? What does it do? With what variables does it correlate? In order to answer these questions, we must make the same examination of practical intelligence/tacit knowledge that we made of the SJT.

It should be obvious from the examples cited above (e.g., Ceci & Liker, 1986) that the literature on practical intelligence has done all that it can to distinguish practical intelligence from what we normally think of as "intelligence," up to and including defining one as what the other is not. The reports very carefully state such things as, "women who can compute effectively in a supermarket price-comparison situation may not be able to compute effectively in a paper-and-pencil arithmetic test of isomorphic operations" (Sternberg et al., 1993, p. 205), or, "tacit knowledge was not highly related to verbal intelligence as measured by a standard psychometric test" (Wagner & Sternberg, 1985, p. 450). Measures of cognitive ability sometimes seem meticulously chosen by Wagner and Sternberg, and may measure only a single aspect of ability, such as verbal intelligence from the example above.

Some measure of methodological skepticism is understandable; however,

researchers other than Sternberg and Wagner have replicated the finding that tacit knowledge is unrelated to measures of ability such as the ASVAB (Armed Services Vocational Aptitude Battery; Eddy, 1988, cited in Sternberg et al., 1995). Our criticisms, then, must be tempered with the knowledge that a fairly robust finding with regard to practical intelligence is that it is relatively unrelated to other measures of intellectual ability.

A more detailed examination of the distinctiveness of practical intelligence from IQ and more general measures of cognitive ability will be taken up in the next section, but for now we can only say that measures of practical intelligence are unrelated to some measures of cognitive ability. Possibly the most critical fact about the relationship between these two variables is to be found in Sternberg et al.'s (1995) article.

Using the technique of hierarchical regression, Sternberg et al. first entered IQ (as measured by the Shipley, an intelligence test), followed by tacit knowledge in order to predict behavioral-assessment-data ratings in small-group managerial simulations. The increment in R^2 resulting from the addition of tacit knowledge was a highly significant .32, bringing the R^2 for the total model to .46. In other words, with the addition of tacit knowledge as a predictor, 32% more variance in the criterion variable was explained. Sternberg et al. (1996) do not, unfortunately, provide some pieces of information that might allow us to approach this study with a more critical eye; no information is provided with respect to the size of the sample employed, nor do they provide information about the incremental contribution of IQ when tacit knowledge is entered first. Taken at face value, though, the literature

seems to suggest that tacit knowledge and cognitive ability are unrelated constructs. If Sternberg et al. are correct, their example demonstrates empirically that tacit knowledge explains a significant portion of variance not accounted for by this traditional measure of cognitive ability. However, it is clear that further research must be undertaken to bear this claim out.

In addition to cognitive ability, the literature indicates that tacit knowledge, like SJTs, should be unrelated to demographic variables such as gender or race (Eddy, 1988, in Sternberg et al., 1995). However relevant experience has been shown repeatedly to be related to performance on the tacit knowledge measure (e.g., Sternberg et al., 1995).

An area that has received a fair amount of attention in the literature not only on practical intelligence but also in the conceptually-related domain of practical problem-solving involves age and education level. This is more likely due to the tight linkage of age and education to the opportunities an individual has to develop a broad experiential base.

Because a portion of their research has included in its sample psychology graduate students, Wagner and Sternberg (1985, 1986) have had an opportunity to examine tacit knowledge at different levels of graduate education. Their results indicate a significant relationship between total tacit knowledge test score and the number of years of graduate school completed. The more years of graduate school psychology students in their sample completed, on the average, the better they did on a tacit knowledge measure designed for academic psychologists. This brings up an apparent contradiction, since the definition of practical intelligence that has been

stressed from the outset of this paper is that it is not academic intelligence -- yet here we find a link between educational level and tacit knowledge, our indicator of practical intelligence. The resolution, fortunately, is fairly simple; the tacit knowledge measure is not tapping academic knowledge, it is tapping the experiential base accumulated by the graduate students, which allows them to better perform as academic psychologists. Hence, it is not the formal knowledge gained from courses that is tapped, it is the experiences that provide insights into the world of academia and its characteristic problems.

The results from Wagner and Sternberg (1985, 1986) are mirrored by the findings of Klaczynski, Laipple, and Jurden (1992), who found that in a sample of high school students, sophomores and seniors had different interpretations and solutions to practical problems. The difference, according to the authors, lay in the fact that sophomores sought social solutions to practical problems. Seniors, being more concerned with issues of planning, put forth solutions that tended to be more goal-directed. If we recall Neisser's (1976, p. 137) discussion of practical intelligence as "responding appropriately in terms of one's long-range and short-range goals," we can then see that seniors, when compared to sophomores, showed more practically intelligent behavior.

The problem when interpreting such data lies in teasing out the effects of educational experience from more general age effects. Closely related to (and potentially confounded with) educational issues is a set of findings regarding age and practical intelligence/problem solving ability. Cornelius and Caspi (1987) found that everyday problem-solving performance (their measure of practical intelligence),

increased linearly with age. Other measures of practical problem-solving ability have also been shown to be related to age, though the form of the relationship sometimes differs; Denney and Palmer (1981), for instance, found a quadratic relationship in which middle-aged individuals demonstrated maximal practical intelligence. It is uncertain at this point whether such differences across studies are a function of the specific measures used. The fact that two scales purport to measure the same construct is no guarantee that they in fact do so.

The importance of whether or not a drop-off occurs in practical intelligence following middle-age is minimal for the purposes of this study, however, due to the relatively young nature of the proposed sample. The critical fact is that, at the very least, practical intelligence continues to rise until the 40s or 50s (Denney & Palmer, 1982). Thus, we would expect age differences to be visible in measures of practical intelligence such as Wagner and Sternberg's tacit knowledge. Again, though, as with SJTs, it is unclear whether age, education, and experience are truly distinct in their effects on SJT and tacit knowledge performance. This question, while beyond the scope of this research, must certainly be addressed in future work.

One area of study which has been under-researched, if not ignored completely, involves the relationship between practical intelligence and interpersonal factors. If our conceptual understanding of practical intelligence as deriving from implicit learning mechanisms is accurate, then it would make sense to think that individuals who interact more with others will have a greater potential for such learning. More directly, we would expect that those individuals who are able to communicate most effectively with others would gain the most information. Both of these predictions, it

should be noted, parallel findings from Motowidlo et al.'s (1990) study of SJTs. Unfortunately, we have no empirical data relating practical intelligence to the various personality measures; that will be one of the potentially interesting pieces of information provided by this study.

The literature on practical intelligence, while broad, has yet to delve deeply. This problem is not unique to the practical intelligence literature, however, and is to be found just as markedly in the more general literature on intelligence (Neisser, Boodoo, Bouchard, Boykin, Brody, Ceci, Halpern, Loehlin, Perloff, Sternberg, & Urbina, 1996). A great deal can be gained from this literature that can inform our discussion. One major issue remains to be dealt with, however, before we can move on to the hypotheses for this study -- the distinctiveness of practical intelligence from traditional intelligence and general cognitive ability. In the next section, the literature on these two topics is reviewed, and conceptual arguments are presented.

Intelligence and *g*

The research trail on intelligence leads back to Francis Galton's studies of eugenics (Hothersall, 1995), during the time in which psychology was developing into a legitimate science. Because of the lengthy time frame and the breadth of research done over the last century, any attempt at a comprehensive review of this literature would fall far beyond the scope of this thesis. What I will do in the next few pages is review recent research regarding the dimensionality of human intelligence, as well as the theory of *g*, Spearman's single, general factor in cognitive ability. It has been established that general cognitive ability is predictive of job performance (e.g., Hunter, 1986). If the situational judgment test is to possess theoretical or practical

Table 2: Relationships between relevant constructs and conceptual and empirical notions of the situational judgment test and practical intelligence

Construct	SJT Concept	SJT Empirical	PI Concept	PI Empirical
Experience	Yes	$\underline{r}$ = .08[ab]	Yes	ns[b]
Age	Yes	NR[c]	Yes	$\underline{r}$ > 0.0[f]
Education	Yes[d]	--[d]	Yes	$\underline{r}$ = .40
Cognitive Ability	No		No	
Communication	Yes	$\underline{r}$ = .16	Yes[e]	--
Sociability	Yes	$\underline{r}$ = .15	Yes[e]	--
Tol. of Ambiguity	Yes		Yes	
Conscientiousness	Yes		Yes	
Openness	Yes		Yes	
Gender	No		No	

a: where correlations are reported, they are the weighted average of correlations available from the literature

b: the studies described by Motowidlo et al. (1990) and Sternberg et al. (1995) used only a narrow definition of experience, which likely accounts for the low effect size

c: NR = Not Reported

d: in the Motowidlo et al. (1990) study, the only measures of education dealt with achievement and as such are inappropriate to include as summary information

e: these responses were extrapolated from the literature, and are reflected in the hypotheses for this study

f: Denney & Palmer (1981) showed that practical problem solving ability increased until age 40-50, then dropped off

significance beyond the standard measures of cognitive ability used in the workplace today, it must first be demonstrated that it measures something beyond other cognitive ability measures. Portions of this argument have been made earlier in this paper; now I hope to draw them all together, to present a cogent argument for the importance of SJTs and, more generally, the concept of practical intelligence.

Neisser et al. (1996) provide an excellent review of what is known about intelligence. One of the things that they note from the outset is the lack of consensus as to what is meant by "intelligence," an historical problem with the construct. Spearman (1927) argued for *g*, a single, general factor of cognitive ability that underlies all measures of intelligence. His position was contested by Thurstone (1938), as well as others who held that intelligence was made up of several different abilities that could not accurately be lumped into a single category without losing a great deal of information about each individually.

Because this debate still rages, and because it bears so directly on the concerns of this research topic, it is worthy of discussion. I'll begin with *g*, examine its characteristics and the support for its existence, and then move to opposing views.

To say that *g* is ubiquitous in the literature on cognitive ability might be an understatement. The construct, along with its explanations and its defenses, has been the topic of hundreds of articles and has been the subject of entire issues of various journals (Gottfredson, 1986). But what do we know about it? Or, a more appropriate question may be, what do we <u>think</u> we know?

We know, mathematically, that it is the primary factor when ability tests are factor analyzed. Utilizing oblique rotations, which move common variance in

correlated factors to successively higher-order factors, *g* is the final factor derived and sits at the pinnacle of the factor analytic pyramid (Jensen, 1986). It represents that quantity which accounts for the variance common to all the correlated ability factors. Moreover, this factor falls out of virtually all cognitive ability tests, and these measures show moderate to high correlations with one another. This allows for the formation of a "positive manifold," meaning that all these tests measure one factor -- the *g* factor (Neisser et al., 1996). Moreover, because they are all assumed to measure the same underlying factor, it may be that the tests all provide equally valid estimates of *g* (Larson & Wolfe, 1995).

Conceptually, the most important thing that we seem to "know" about *g* is that it is the single factor underlying what is normally perceived as intelligence, with some authors going so far as to equate *g* with intelligence (Hunter, 1986). It is treated as the "key to a comprehensive account of the nature of mental abilities" (Undheim, 1981, p. 263), yet even the most astute researchers have problems defining precisely what *g*, as a construct, means. The following passage from Jensen (1986) perhaps best exemplifies the fullness to which definitions of *g* can be taken. He says that *g*

> reflects some property or processes of the human brain that are manifested in many forms of adaptive behavior, and in which people differ, and that increase from birth to maturity, and decline in old age, and show physiological as well as behavior correlates, and have a hereditary component, and have been subject to natural selection as a fitness character in the course of human evolution, and have important educational, occupational, economic, and social correlates in all industrialized societies, and have behavior correlates that

accord with popular and commonsense notions of "intelligence" (p. 329). The breadth of this definition is amazing, as it takes in virtually all aspects of cognition and attempts to explain them all with a single concept. Such a mechanism is a common goal in all the sciences, be it a unified field theory in physics or a theory of general cognitive ability, and there can be no argument that such a search is an admirable one. The development of a unified theory of cognitive ability would be something of a blessing to psychology, but we have to ask ourselves if *g* is that theory.

The answer, unfortunately, is not a simple yes or no. For instance, I have mentioned several times that cognitive ability (*g*) is the best single predictor of job performance (Hunter, 1986; Hunter & Hunter, 1984). However, the work of Sternberg et al. (1995), particularly the Center for Creative Leadership study discussed earlier, demonstrated that the addition of tacit knowledge to a traditional measure of cognitive ability resulted in a substantial increase in predictive capacity. The two in combination did not completely explain performance, though they did account for almost half of its variance; the study is most important in that it points out the existence of something that measures of *g* do not approach.

One of the major problems seems to be that the definition and operationalization of *g* may or may not match. If we accept Jensen's conceptualization of *g* as one of the most comprehensive then we must ask ourselves if the measures of cognitive ability that are taken to be indicative of *g* measure the construct accurately. To be sure, they all correlate highly with one another (Neisser et al., 1996; Jensen, 1986). This kind of consistency would allow us to say that, to

the extent that a general factor might exist, we have some measure of evidence for it. However, if predictions based on *g*-centered measures can be improved, then we may be led to doubt the accuracy of Jensen's seemingly all-inclusive definition of the components of *g*.

To put it more bluntly, we may define *g* in whatever terms we want, but so long as it can only be operationalized as the general factor (often of the third level) that can be extracted from a test specifically designed to measure cognitive ability, problems will arise (Neisser, 1979). The fact that a test such as Wagner and Sternberg's tacit knowledge measure, which would seem to fall under the domain of Jensen's definition, adds explanatory power to a more traditional measure of cognitive ability, indicates one of two things.

The first possibility is that *g* is distinct from the ability measured by the tacit knowledge test, since it accounts for outcome variance independent of that accounted for by *g*. If this is the case, it may be that general cognitive ability is not so general. A second possibility is that measures of *g* are incomplete, and need to take tacit knowledge and related constructs into account. This, as was alluded to earlier, would indicate a disconnect between the conceptualization and operationalization of *g*, and would suggest that the nomological network of theorists in that area needs reworking (Neisser et al., 1996). Whatever the case, it seems clear that something about *g* is amiss -- possibly that our conception of cognitive ability is overly narrow (Frederiksen, 1986b).

In order to determine which of the two options above is more likely correct, other literatures must be consulted. The physiological literature, particularly as it

relates to implicit learning, is one such area.

A fairly robust finding in this literature is that, even in situations under which the normal cognitive functions of the mind are impaired (or "insulted," as Reber et al. (1991) put it), such as Korsakoff's syndrome, Alzheimer's disease, various psychiatric disorders or even chronic alcoholism, individuals still display implicit learning. Traditional measures of *g* are useless in such situations. Because of the functions that remain along with the capacity for implicit learning, researchers theorize that different portions of the brain may be responsible for implicit learning than for the more explicit learning normally tapped by measures of *g* (see Seger, 1994, for a thorough review of this topic). If we are correct in making the connection from implicit learning to tacit knowledge (a connection supported by the cognitive literature), and Sternberg and his colleagues are correct in moving from tacit knowledge to practical intelligence, then we can make the following statement with some degree of confidence. Because implicit learning and other cognitive functions are localized in different areas of the brain, and because practical intelligence is the external manifestation of implicit learning, practical intelligence may be separate from general cognitive ability.

The debate between *g*-theorists and their opponents is a difficult one to fully grasp, and more difficult still to grasp and summarize. However, even from this brief overview it should be clear that, at the very least, practical intelligence has something to add to notions of *g* in terms of prediction. It may represent an extension of the construct of *g*, or it may be something completely separate. Given this review of the literature, I will now turn my attention to the specific hypotheses of

my study.

Hypotheses

In formulating hypotheses that will facilitate a comparison of an SJT with a measure of tacit knowledge, an approach similar to that used in construct validation research is appropriate. One such method is suggested by Frederiksen (1986a), and is of particular interest as it deals with the issues of construct similarity that must necessarily lie at the heart of this study, since I seek to compare measures of tacit knowledge and situational judgment in order to determine whether they represent distinct constructs.

The primary concern of this paper is a determination of the degree of similarity of the constructs underlying tacit knowledge and situational judgment measures. As such, the first hypothesis I will state is central to all further analyses. If the situational judgment test and the measure of tacit knowledge are in fact measuring the same things, then they will correlate strongly with one another.

Hypothesis 1: A strong positive correlation will exist between the tacit knowledge measure and the situational judgment test.

My literature review focused on areas in which similarities might arise; following Frederiksen's (1986a) lead, I propose to compare the SJT and the measure of tacit knowledge to the same set of constructs, and observe whether they correlate similarly with such external variables. To the extent that they do so, we may infer that they measure the same underlying construct. Such external correlates are not chosen randomly, but rather with consideration of the conceptual and empirical literature as summarized above. A complete breakdown of the two measures, in

terms of their subdimensions and those constructs that should be related to each subdimension, can also be drawn from the earlier review of the literature. This information is summarized in Figure 1 and is discussed in greater detail below.

In examining the breakdown of constructs underlying the practical intelligence and situational judgment test headings, two clusters become evident. The first cluster involves the Managing Others dimension from practical intelligence and the Communication Skill and Interpersonal Skill dimensions from the SJT. We will refer to this as the Interactive Cluster, because of its focus on other people and our interactions with them. The second grouping of constructs includes the Managing Self and Managing Tasks dimensions from practical intelligence and the Problem Solving Skill dimension from the SJT; this one, we will refer to as the Active Cluster, because of its focus on accomplishing various task-related and personal goals.

The differences between the Interactive and Active clusters become apparent as we examine the indicators that will likely inform us about the elements of each. For instance, the Interactive Cluster will likely include such indicators as extraversion, communication competence, and Machiavellianism, which are found nowhere in the Active Cluster. Similarly, the Active Cluster should include indicators such as conscientiousness, openness, tolerance of ambiguity, learning style, and self-regulation, none of which are treated as indicators of the Interactive Cluster.

A problem variable exists, though, in the form of experience. Of the six constructs underlying the two tests, only Managing Self should be relatively unrelated to experience. There exists, then, some overlap between the Active and Interactive

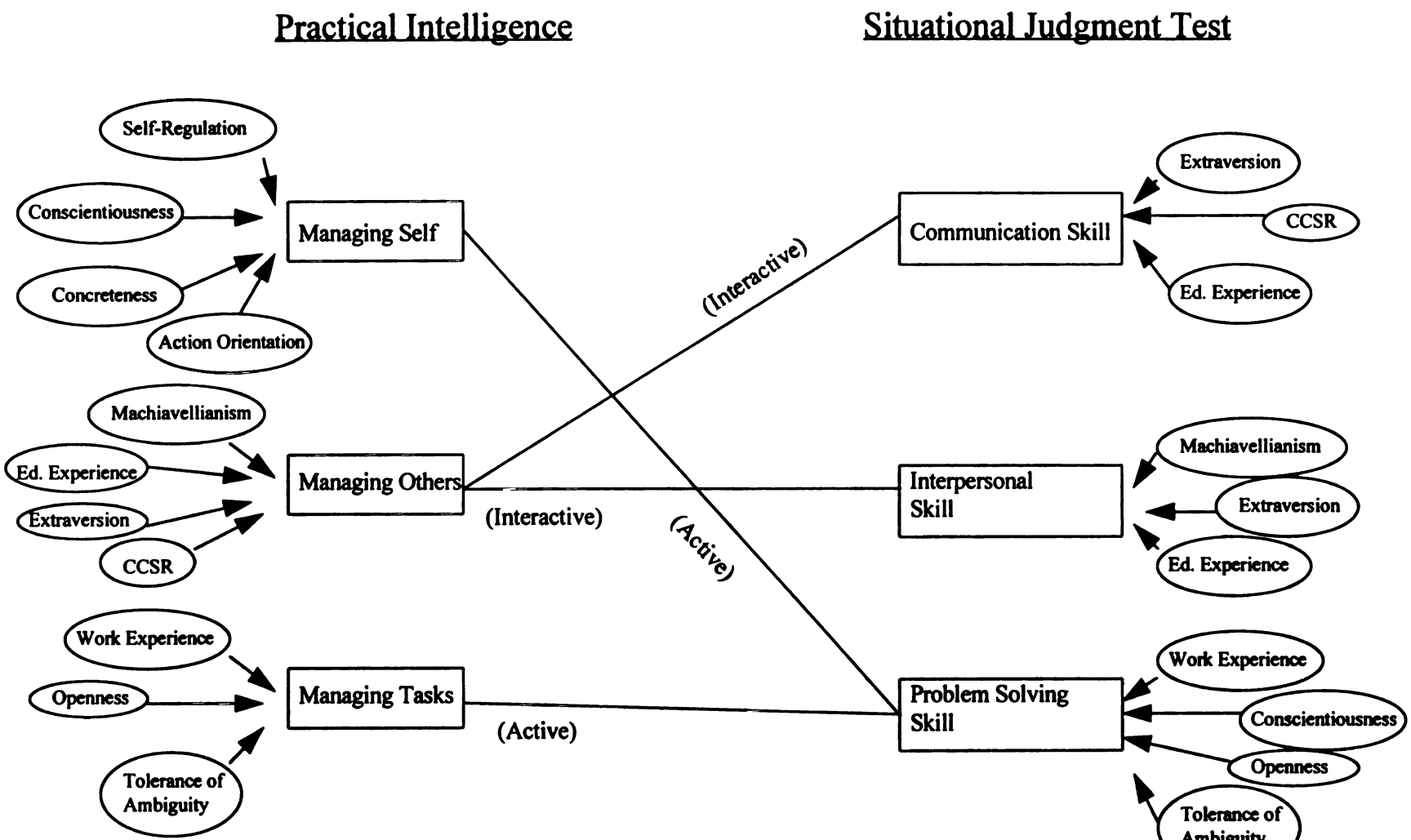

Figure 1: Relations among SJT and PI measure subcomponents and the network of constructs around them

clusters, in the form of experience. The solution to this problem is to break experience down.

My original discussion of experience indicated that several facets of it will be relevant to performance on these measures, and the test of experience I designed reflects these dimensions. Two of the most important are educational experience and work experience.

One of the competencies stressed in formal education, from the time we enter pre-school until the time we finish graduate school, is the ability to interact well with others. Early on we are taught the value of sharing and working together, and toward the end of our student careers it is increasingly stressed that we must be competent to discuss our chosen field in front of large groups of people, and to defend our beliefs and assertions in that regard. As such, it seems reasonable to expect that educational experience should be related to the Interactive Cluster, while work experience should be less so.

However, work experience should be much more related to the Active Cluster, since no amount of schooling can fully prepare an individual for the challenges of daily work. The ability to motivate and organize yourself (Managing Self), to perform work-related tasks effectively (Managing Tasks), and to be thorough, driven, and resourceful in your problem-solving efforts are all aspects of the Active Cluster, and are all skills that are more likely to be gained from actually working than they are to be gained from simply talking about work (as in early education). Applications of the model in Figure 1 will be made throughout the remainder of the hypotheses.

First, consider a managerially-targeted SJT (as in Motowidlo et al., 1990) and

a tacit knowledge measure targeting the same group (as discussed in Sternberg et al., 1995). Since both are so closely related to the content of the job for which they are to be used relevant work experience should be related positively to both.

Hypothesis 2: The correlation of tacit knowledge with work experience will be nonsignificantly different from the correlation of situational judgment with work experience.

However, as is reflected in Figure 1, such experience should be primarily related to the elements of the Active Cluster, particularly Managing Tasks and Problem Solving Skill, rather than to the elements of the Interactive Cluster. I would then put forth hypothesis 2a.

Hypothesis 2a: Relevant work experience should correlate directly only with the Managing Tasks dimension of the tacit knowledge measure, and the Problem Solving dimension of the SJT. These correlations should be nonsignificantly different from one another.

Similar to Hypothesis 2, positive relationships have been demonstrated between educational experience and SJT performance (Motowidlo et al., 1990) and tacit knowledge (Sternberg et al., 1995; Klaczynski, Laipple, and Jurden 1992), which should be consistent across measures if they in fact tap the same underlying construct. As with Hypothesis 2, a caveat must be added to this hypothesis. There is little reason to expect that Educational Experience, with its emphasis on self-motivation and self-organization, should be related to Active Cluster elements, but it should be much more related to Interactive Cluster elements. Hence,

Hypothesis 3: The correlation of the tacit knowledge measure as a whole with Educational Experience will be nonsignificantly different from the correlation of situational judgment with Educational Experience.

Hypothesis 3a: Relevant educational experiences should correlate directly only with the Managing Others dimension of the tacit knowledge measure, and the Communication and Interpersonal Skill dimensions of the SJT. These correlations should be nonsignificantly different from one another.

A great deal of attention has been paid to the difference between cognitive ability and the skills tapped by both the SJT and the tacit knowledge measure. While Motowidlo et al. (1990) did find some relationship between self-report measures of academic achievement and SJT performance, they also concluded that cognitive ability did not covary significantly with performance on the SJT. Similarly, Wagner and Sternberg (1985) and Sternberg et al. (1993) have shown that individuals can perform complex cognitive tasks even when traditional measures of cognitive ability would predict that they would be incapable of doing so. Additionally, tacit knowledge adds significant variance beyond that of cognitive ability when predicting performance in a simulation (Sternberg et al., 1995). Based on this, I present Hypothesis Four.

Hypothesis 4: The correlation of tacit knowledge with cognitive ability will be nonsignificantly different from the correlation of situational judgment with cognitive ability. Both correlations will be nonsignificantly different from zero.

While the literature on SJTs is silent on the effects of age, the literature on practical problem solving shows marked effects, with ability increasing until age 40-50 and declining thereafter. If the two measures tap the same construct, then both practical intelligence and situational judgment should correlate positively with age.

Hypothesis 5: The correlation of tacit knowledge with age will be nonsignificantly different from the correlation of situational judgment with age.

There is no reason to expect that demographic variables such as gender will have any differential effect on either an SJT or a measure of tacit knowledge. While subgroup differences may exist, they should be constant across measures if they tap the same construct. The critical hypothesis, for our purposes, is this:

Hypothesis 6: The correlation of tacit knowledge with demographic variables (e.g., gender) will be nonsignificantly different from the correlation of situational judgment with demographic variables.

Motowidlo et al. (1990) demonstrated that both communication skill and interpersonal skill were related to SJT performance in one or more of their samples. Because of the manner in which tacit knowledge is likely gained, via implicit learning, it is possible that both communication and interpersonal factors influence the acquisition of tacit knowledge. The best way to compare these may be by examining personality constructs such as extraversion and their relationship to SJT and tacit knowledge measures. In addition, personality constructs such as tolerance for ambiguity, conscientiousness, and openness to experience have been discussed with regard to both situational judgment and tacit knowledge measures. More specific information about the subdimensions where each external correlate is relevant are contained in Figure 1, and are reflected as follow. Hypotheses seven through twelve first present equality hypotheses with respect to the correlations tested, then specify subhypotheses based on the breakdown of Active and Interactive Clusters, which are reflected in Figure 1.

Hypothesis 7: The correlation of tacit knowledge with sociability, as measured by extraversion, will be nonsignificantly different from the correlation of situational judgment with extraversion.

Hypothesis 7a: Extraversion should correlate directly only with the dimension of Managing Others from the tacit knowledge measure, and with the Interpersonal Skill and Communication Skill dimensions of situational judgment. These correlations should be nonsignificantly different from one another.

Hypothesis 8: The correlation of tacit knowledge with communication competence will be nonsignificantly different from the correlation of situational judgment with communication competence.

Hypothesis 8a: Communication competence should correlate directly with only the Managing Others dimension of the tacit knowledge measure, and with the dimension of Communication Skill from the situational judgment test. These correlations should be nonsignificantly different from one another.

Hypothesis 9: The correlation of tacit knowledge with tolerance of ambiguity will be nonsignificantly different from the correlation of situational judgment with tolerance of ambiguity.

Hypothesis 9a: Tolerance of ambiguity should correlate directly with only the Managing Tasks dimension of the tacit knowledge measure and with the Problem Solving Skill dimension of the situational judgment test. These correlations should be nonsignificantly different from one another.

Hypothesis 10: The correlation of tacit knowledge with openness to experience will be nonsignificantly different from the correlation of situational judgment with openness to experience.

Hypothesis 10a: Openness to experience should correlate directly only with the Managing Tasks dimension of the tacit knowledge measure and with the Problem Solving Skill dimension of the situational judgment test. These correlations should be nonsignificantly different from one another.

Hypothesis 11: The correlation of tacit knowledge with conscientiousness will be nonsignificantly different from the correlation of situational judgment with conscientiousness.

Hypothesis 11a: Conscientiousness should correlate directly only with the tacit knowledge dimension of Managing Self and the situational judgment dimension of Problem Solving Skill. These correlations should be nonsignificantly different from one another.

Hypothesis 12: The correlation of tacit knowledge with Machiavellianism will be nonsignificantly different from the correlation of situational judgment with Machiavellianism.

Hypothesis 12a: Machiavellianism should correlate directly only with the tacit knowledge dimension of Managing Others and the situational judgment dimension of Interpersonal Skill. These correlations should be nonsignificantly different from one another.

The Managing Self dimension, as was noted earlier, reflects something which seems to be absent in SJTs with its focus on self-motivation and self-organization. As such, the next two hypotheses regarding this dimension will take a somewhat different form from the preceding hypotheses.

Hypothesis 13: The correlation of the tacit knowledge dimension of Managing Self with self-regulation will be significantly higher than the correlation of the situational judgment test with self-regulation.

Learning style is not a continuous variable as it will be measured for this study. It exists along two dimensions, concrete versus abstract and reflection versus

action, and the results for an individual are reported in terms of which aspects of the two dimensions describe them best. Repeated research (Romero et al, 1992; Wolfe & Kolb, 1984) has demonstrated that business majors are more concrete and more action-oriented. Since business majors and those with similar personalities might reasonably be expected to perform best on a test in the managerial domain (as both the SJT and TK measure for this study are), we can move to the following hypothesis. Again, though, note that there is little reason to expect a specific relationship of learning style to any of the subdimensions of either measure other than Managing Self.

Hypothesis 14: Individuals who score highly on the tacit knowledge dimension of Managing Self are significantly more likely than those who score low on it to demonstrate an "accommodator" learning style, high in concreteness and action orientation.

A final comparison is also possible, and is enabled through the application of the principles of structural equations modelling. Hypotheses 2-14 deal with the relationships among situational judgment, tacit knowledge, and various external measures. Each of these individual comparisons is a relatively low-power test, but a comparison of the general nomological networks surrounding situational judgment and tacit knowledge, taken as a whole, is also possible. To do this, we can compare the structural model for tacit knowledge and the external variables with the structural model for situational judgment and the external variables using LISREL 8 (Jöreskog & Sörbom, 1993). As such, my final hypothesis is as follows.

Hypothesis 15: The structural models of tacit knowledge and situational judgment will exhibit nomological invariance; that is, they will be nonsignificantly different.

With my hypotheses stated, it is now time to turn our attention to the methods used to carry out this study.

Chapter 2

METHOD

Participants

Because of the nature of the hypotheses tested in this study, it was important that a sufficiently large sample be obtained to accurately reflect differences among observed correlations. To this end, 358 undergraduates from a large midwestern university participated in this study. The logic underlying this choice of sample size was based on a preliminary power analysis, the logic of which follows.

Cohen (1992) provides much of the information for the computation of this figure. Power was assessed against the alternative hypothesis that differences between Fisher Z transformations of correlations was .30. (In Fisher Z terms, this is a medium effect size as defined by Cohen (1992)). I wanted to be able to detect if Fisher z-values that differed as little as .30 were significantly different. Assuming that the correlations would cluster around Cohen's (1992) medium effect size, I used $r_{12} = .435$ and $r_{13} = .165$ as estimates of correlations for the purposes of this power analysis. Cohen (1992) provides power estimates for the test of differences in z computed on independent samples, but not for correlations based on the same sample as is true in the proposed study. Hence, two approaches to power could have been utilized.

First, the power tables Cohen provides offered estimates for the difference between independent rs. The test of difference between independent rs is less powerful than the test of difference between dependent rs, as was done in this study, so Cohen's estimate of power for a medium effect size (a difference in Fisher's z-scores of .30) should serve as a lower bound for our estimate of power for this study. Cohen's (1992) recommendation for an n sufficient to detect such a medium effect size at Power = .80 is 177 subjects.

A second method of approaching power, which was technically an extension and reapplication of Cohen's methodology, involved an examination of Steiger's (1980) paper in which he directly addressed the issue of dependent correlations and the significance of their difference. The first step in applying Steiger's work was to determine the standard error for our formula, which would ultimately be a comparison of Fisher z-scores. Based on the use of Steiger's formulas 3, 10, and 14, I found that the standard error was

$$[1/\sqrt{(N-3)}](1.039)$$

For an N of 177, our standard error would be equal to .0788. Based on this standard error value, we can then apply Cohen's methodology to determine the power for this test, the probability that we would correctly reject the null hypothesis. I found that the dependent test of differences was, as expected, much more powerful than the independent test of differences. The power estimate based on this standard error is actually .9645, a substantial increase in power over the other methodology.

In the interest of making this test as powerful as possible, however, I also tested a second, less conventional effect size. Utilizing the same method I applied in

the previous paragraph, I tested the level of power the study could obtain if I increased the sample size to n = 350 and decreased the effect size to be tested to a z-difference of .20. While this was not one of Cohen's (1992) tabulated effect sizes, it provided a more stringent test of whether a true difference between the correlations to be compared actually existed. The power computations indicated that this test (assuming rs of approximately .39 and .21) would have a power of .9474 to detect the difference between the z-transformed correlations. Because my tests of significance all involve acceptance of the null, a high degree of power was deemed desirable. In this way, the decision to recruit a minimum of 350 participants for this study was made.

Ten participants were excluded from all analyses due to either incomplete data or the presence of a distinct pattern (e.g., 180 straight 4's on the response sheet) in their responses. Of the 348 remaining, 134 were freshmen, 75 were sophomores, 67 juniors and 72 seniors. 304 of the participants were Caucasian, 20 were African-American, and the remainder were divided among several other groups, none of which made up a significant portion of the sample. The participants were primarily between the ages of 17 and 22, and 59% (204 of 348) were female.

Procedure

Participants were recruited from the introductory psychology subject pool and by visiting classes. Groups of 10-60 students took part at the same time. Upon arrival at the room in which the experiment took place, participants were given a packet containing all the tests and forms for the study. They were then asked to have a seat, put the packet beneath their chairs, and wait until everyone had arrived. No

later than five minutes past the scheduled start time, they were instructed to remove the UCRIHS-approved consent form (see Appendix A) from their packet, read it, sign and date it, and return it to the rear of their folders.

Once all students read and signed the consent form, the Wonderlic Personnel Test was administered. This test was administered first due to its timed nature, which would have made it logistically difficult to administer at any other time. After the twelve-minute Wonderlic session, they were then instructed to complete the NEO-FFI. Pilot testing indicated that eight minutes was sufficient for most participants to complete the NEO-FFI; hence, after eight minutes of working on the test, participants were given the final set of instructions for the major packet, which contained all of the remaining test materials for the experiment. It was emphasized at all points during the presentation that the tests the participants were taking were the same types of tests that were used to hire individuals in the "real world," and that they should treat the tests as they would actual selection instruments.

Measures

Cognitive Ability. The Wonderlic Personnel Test, a measure of general cognitive ability, was chosen because of its wide application in business and industry as well as its demonstrated psychometric adequacy. The user's manual for the Wonderlic (1992) offers predictive validities ranging as high as .63, with reliability estimates ranging from .73 to .95, depending on the specific type of reliability being estimated. The test reflects multiple dimensions of cognitive functioning, including verbal, quantitative, and other skills, and as such represents a thorough test of the domain of cognitive ability. The test was distributed face-down. The instructions for

the completion of the Wonderlic were read, and students were given twelve minutes to complete as much of the test as they could, per the test publisher's specifications.

At the conclusion of the twelve minutes allotted for the Wonderlic, participants were instructed to return it to the rear of their packet. The mean score on the Wonderlic was 23.48 (out of a possible 50), with a standard deviation of five points. Means and standard deviations for all scales are provided in Table 3.

Personality. The NEO-PI (Costa & McCrae, 1995; McCrae & Costa, 1987), a measure of the Big 5 personality factors, was used to measure several of the personality correlates (extraversion, conscientiousness, and openness to experience) hypothesized to be related to tacit knowledge and situational judgment test performance. The factors measured by this scale (neuroticism and agreeableness round out the "Big 5") had been noted in the literature even prior to Norman's (1963) attempt to taxonomize personality attributes. Their ubiquity over time, in addition to the evidence collected by Costa, McCrae, and others for their validity, allowed confidence in the NEO-PI as a measure.

Tolerance of ambiguity also has a long research history underlying its use (Frenkel-Brunswick, 1948). However, no single best scale presented itself here, since many such measures produce validity data that may be classified as passable at their best, and as poor with an unfortunate frequency (Furnham, 1994). Because of this, I reviewed some of the recent literature in I/O and discovered a tolerance of ambiguity measure that dealt with the kinds of work-related issues that dominated the selection of other measures, such as the Tacit Knowledge and Situational Judgment tests that will be discussed shortly. This seven-item scale, from Major (1990), has

Table 3: Descriptive Statistics for the Scales

Scale	Mean	SD
Wonderlic	23.48	5.00
Extraversion	32.05	6.07
Conscientiousness	32.29	7.04
Openness to Experience	29.74	6.46
Tacit Knowledge (positive)	62.43	8.31
Managing Self (positive)	38.19	5.57
Managing Career (positive)	13.88	2.70
Managing Others (positive)	10.36	1.94
Tolerance of Ambiguity	23.47	7.53
Communication Skill	2.42	2.04
Machiavellianism	17.45	2.27
Situational Judgment	24.36	10.58
Work Experience	46.82	10.09
Educational Experience	32.47	10.20
Community Experience	24.19	13.76
Self-regulation	22.68	3.46
Concreteness	22.59	6.01
Action Orientation	25.83	5.56

demonstrated a reliability of .77 in previous research. In this study, α = .74. The intercorrelations of all the scales, as well as the α values for each (where applicable) can be found in Table 4. All unpublished and/or non-proprietary scales are included in the appendices to this report; the tolerance of ambiguity measure is included in Appendix D.

The assessment of communication skill within the context of a battery of tests is difficult, because the measure will necessarily be a self-report and therefore be subject to potential response bias in the form of positive self-presentation. Few such measures seem to exist, and most focus on public speaking (e.g., McCroskey, 1970). One of the better measures available, which focuses on general communication skills in addition to public speaking, seems to be Rubin's (1986) Communication Competence Self-Report (CCSR). The CCSR is a 19-item scale in which subjects are asked to respond to each item on a five-point scale ranging from "Always" to "Never." Evidence for the validity of this scale has been provided by its high positive correlation with instructors' ratings of the student respondents' communication skills (Rubin, 1986). Previous research indicated that the scale had a coefficient α reliability of .87. In this sample α was .81, still an acceptable level of reliability. This scale is included in Appendix E.

The primary measure of Machiavellianism available currently, and the standard by which many others are gauged, is the Mach IV (Zook, 1985). However, one problem that has been noted in the literature is that results based on this scale are often confounded by its relationship to locus of control (specifically external) (Mudrack & Mason, 1995). Recent work has produced a brief, ten-item research

Table 4: Raw Correlations Among Study Variables

Table 4: Raw Correlations Among Study Variables

	SJT	TK	TK+	Int.Skl.	C.Skl.	PS Skl.	M Self	M Car.	M Oth	Age	Sex	Race	TolAm	C.Cmp
Situational Judgment Test (SJT)	(.7003)													
Tacit Knowledge Test (TK)	.0844	(.3931)												
Tacit Knowledge (positive; TK+)	.0691	**-.1359**	(.7191)											
Interpersonal Skill (Int. Skl.)	***.6446***	.0304	-.0063	(.2601)										
Communication Skill (C. Skl.)	***.5747***	**.1056**	.0570	***.2159***	(.1988)									
Problem Solving Skill (PS Skl.)	***.5823***	.0466	-.0297	**.1333**	***.2629***	(.2782)								
Managing Self (pos; M Self)	.0252	**-.1220**	***.9285***	-.0305	.0122	-.0561	(.7152)							
Managing Career (pos; M Self)	.0336	***-.1721***	***.7036***	.0023	.0049	-.0258	***.4630***	(.5934)						
Managing Others (pos; M Oth)	***.1565***	.0326	***.6310***	.0373	***.1758***	.0707	***.4539***	***.2863***	(.7023)					
Age	***.1412***	***.1457***	-.0110	.0673	.0424	***.2119***	-.0575	-.0201	***.1422***	(-----)				
Sex	**.1117**	-.0511	.0907	***.1877***	-.0573	-.0946	.0961	.1049	-.0485	-.0651	(-----)			
Race	-.0321	**.1243**	**-.1384**	-.0899	.0539	.0156	***-.1445***	**-.1159**	-.0026	**-.1052**	**-.1150**	(-----)		
Tolerance of Ambiguity	.0313	.0346	**-.1204**	-.0341	**.1182**	**.1224**	**-.1106**	***-.1981***	.0833	***.1532***	***-.2678***	.0742	(.7417)	
Communication Comp (C Cmp)	***.2574***	-.0477	***.1635***	***.1680***	***.1700***	***.1552***	***.1390***	.1039	***.1519***	.0240	-.0068	.0324	***.2007***	(.8113)
Machiavellianism (Mach)	***.1911***	***.2109***	-.0762	***.1383***	**.1089**	.0741	-.0956	-.0017	-.0600	.0735	***.2596***	-.0444	-.0576	-.0218

(table continues)

Note: Correlations in **bold** type are significant at the .05 level; correlations in ***bold and italics*** are significant at the .01 level; values in the diagonal are coefficient alpha reliabilities for the scales.

Table 4 (continued)

	SJT	TK	TK+	Int.Skl.	C.Skl.	PS Skl.	M Self	M Car.	M Oth	Age	Sex	Race	TolAm	C.Cmp
Work Experience (W. Exp)	.0956	**-.1121**	.0943	.0628	.0064	.0816	.0929	.0405	.0845	.0445	.0411	.0525	.0386	***.2063***
Educational Experience (Ed Exp)	.1023	**-.1345**	.0875	.0843	**.1117**	.0812	**.1312**	-.0233	.0453	-.0370	.0721	.0265	**.1256**	***.2118***
Community Experience (C. Exp)	-.0795	.0087	.0329	.0235	**-.1127**	-.0701	.0681	-.0478	.0192	-.0283	.1027	**-.1267**	-.0020	**.1167**
Self-Regulation (S. Reg)	***.2613***	-.0104	***.1565***	***.1942***	***.1980***	***.1600***	**.1141**	**.1246**	***.1512***	-.0321	.0176	-.0275	.0934	***.3923***
Learning Style (L. Style)	.0654	.0712	**.1235**	.0723	.0014	.0777	.1001	.1001	.0991	.0577	***-.1943***	.0204	-.0843	***.1862***
Concreteness (Conc.)	.0439	.0927	.0669	.0204	-.0077	.0937	.0316	**.1092**	.0512	.0555	***-.2171***	-.0020	***-.1676***	.0137
Action Orientation (Action)	.0669	.0243	***.1449***	.1044	.0108	.0346	***.1412***	.0578	**.1180**	.0410	-.1051	.0379	.0336	***.3108***
Cognitive Ability (CogAb)	-.0167	-.0290	-.0908	.0328	-.0238	-.0180	**-.1162**	-.0849	.0507	-.0293	***-.2122***	***.2371***	***.1902***	.0734
Neuroticism (Neur)	***-.1667***	-.0265	.0712	**-.1252**	-.0648	***-.1863***	.0649	.0711	.0022	-.0136	***.2454***	.0129	***-.3300***	***-.4565***
Extraversion (Extrav)	***.2009***	**-.1080**	**.1124**	***.1915***	.0959	.0721	.0842	**.1101**	.1032	-.0725	***.1984***	**.1069**	.0431	***.4175***
Openness to Exper. (Open.)	**.1106**	-.0791	-.0506	.1026	.0804	.0669	-.0670	**-.1061**	.0924	.0579	.0566	**.1138**	***.3639***	***.1574***
Agreeableness (Agree)	***.2234***	**.1210**	-.0830	***.1694***	**.1311**	.0639	-.1022	.0192	-.0703	-.0654	***.2164***	.0776	-.0114	***.1492***
Conscientiousness (Consc.)	***.2639***	.0875	***.2215***	***.1658***	***.1515***	***.1550***	***.1911***	***.1629***	***.1705***	.0489	-.0128	-.0333	-.0216	***.3847***

(table continues)

Table 4 (continued)

Table 4 (continued)

	Mach	W.Exp	Ed.Exp	C.Exp	S.Reg	L.Style	Conc.	Action	CogAb	Neur	Extrav	Open.	Agree	Consc.
Machiavellianism	(.7623)													
Work Experience	-.1085	(.8193)												
Educational Experience	-.0688	*.2569*	(.7997)											
Community Experience	.0303	*.1513*	*.2810*	(.9052)										
Self-Regulation	.0583	*.2759*	.1369	.1320	(.7432)									
Learning Style	*-.2037*	.0931	.1036	-.0068	*.1912*	(.7832)								
Concreteness	*-.1872*	-.0248	.0146	-.0394	.0921	*.8534*	(.7669)							
Action Orientation	*-.1536*	*.1895*	*.1654*	.0306	*.2348*	*.8262*	*.4113*	(.6608)						
Cognitive Ability	-.1120	.0519	-.0359	-.0701	-.0666	.0716	.0486	.0727	(-----)					
Neuroticism	-.0606	-.0935	.1368	-.0137	*-.2707*	*-.2309*	-.0940	*-.3021*	-.0890	(-----)				
Extraversion	.1077	*.3138*	*.3109*	.1135	*.3094*	.0689	*-.1489*	*.2806*	-.0503	*-.3223*	(-----)			
Openness to Experience	.0518	.1182	.0713	.0433	*.1691*	*-.3307*	*-.3910*	*-.1567*	*.2239*	.0068	.0833	(-----)		
Agreeableness	*.5412*	.0075	.0838	.0872	*.1757*	*-.1878*	*-.2435*	-.0658	-.1146	*-.2535*	*.4215*	.0611	(-----)	
Conscientiousness	.0528	.1261	.1356	.0364	*.4427*	*.4988*	*.3815*	*.4604*	-.0466	*-.3858*	*.3014*	-.1006	*.1799*	(-----)

measure of Machiavellianism that lacks this potential confound. Coefficient α reliability estimates for this scale range from .68 to .84 (depending on the sample), but generally do fall within the acceptable range. For this study, α was .76, the midpoint of the range noted in the literature. This scale is included in Appendix F.

Demographic information. This includes information about years of educational experience, as well as more traditional demographic measures. This information was collected in order to determine whether the two target measures, tacit knowledge and situational judgment, correlated similarly with demographic data. Please see Appendix C for a copy of the items used to collect demographic data.

Tacit knowledge. Tacit knowledge was assessed using Wagner and Sternberg's (1985) measure of tacit knowledge for managers. This self-scoring measure required respondents to rate each of several response options to a situation in terms of its quality. A measure specific to managerial issues was chosen for several reasons, the primary one being that tacit knowledge, by its nature, is domain-specific. In reviewing the literature on this topic, it became clear that very few tacit knowledge measures were in existence, and after careful consideration of the content of those available, I decided that most people would have at least a modicum of experience with management in one form or another. Moreover, Wagner and Sternberg use their tacit knowledge measure to select managers from a pool of participants similar to the one recruited for this study.

The tacit knowledge measure of Wagner and Sternberg breaks tacit knowledge down into three subdomains, which were reviewed earlier. The full measure presents twelve scenarios, each followed by six to twenty options which respondents must rate

on a seven-point scale, with one representing an extremely poor response to the situation, and seven representing an extremely good response. Of the 166 ratings participants made, 35 of the items were scored as reflecting either Managing Self, Managing Tasks/Career, or Managing Others. Although the vast majority of the items (131) were not used in any analyses, all items were presented based on the developer's belief that only using the keyed items might result in the measurement of something other than tacit knowledge (Wagner, personal communication). Four items were noted in the test manual as distinguishing between good and poor performers on the test, but no theoretical reason existed for their inclusion and they were therefore not considered in any analyses. Of the 35 items used, 16 were keyed to the Managing Self scale, 15 to the Managing Tasks/Career scale, and 4 to the Managing Others scale.

Initial reliability estimates for the three subscales and for the overall tacit knowledge test were not encouraging. Coefficient α for the overall measure was .3931, for Managing Self .0731, for Managing Tasks/Career .5730, and for Managing Others -.1073. A factor analysis indicated that a substantial portion of the problem lay in the fact that some of the items within each scale were reverse-coded, and that some of the factors actually reflected coding differences. This phenomenon has been noted previously in the literature (Schmitt & Stults, 1985). In this instance, it appears that a lack of motivation on the part of participants may have led them to be lenient in their answers, giving every option they were presented a general positive response (something of a "Yeah, I guess that sounds good" phenomenon). In this way, when part of the items were reverse-coded, all of those items would cluster

together (as they would all be low scores, since everything was previously at the high end), and the items that were not reverse-scored would remain clustered together at the top of the scale.

Not surprisingly, when the positively-coded and negatively-coded items were split out from one another, more reasonable results were obtained. These results are summarized in Table 5. The reader will note that the alphas obtained for the six subscales were still widely disparate, but this variation correlates almost perfectly with the number of items in each scale. The last column of the table, labelled "New α," reflects the reliability coefficient that would have likely been obtained, had each of the six subscales contained the same number of items (12) as the largest subscale. These values were computed using the Spearman-Brown Prophecy Formula (Nunnally & Bernstein, 1994). Based on this analysis, it appears that the scales are roughly equivalent to one another, in terms of their internal consistency reliability. Unfortunately, in an operational sense all analyses will necessarily be based upon the number of items actually included in the scale, and this must be kept in mind when interpreting the number and quality of relationships found among variables.

Given the values for α that are reported above, it then became important to decide how to analyze the correlational hypotheses put forth in this study. Because of the problems that would be inherent in any attempt to use all of the tacit knowledge items (low or negative internal consistency reliabilities), I opted to use only the positively-scored items in later analyses, since these items most likely reflect the true intentions of study participants, where the negatively-scored items might not. The correlations between the overall TK scale and both subscales were significant, with

Table 5: Reliability coefficients for tacit knowledge scales

Scale	Original α	# of items	New α[1]
Tacit Knowledge (overall)	.3931	35	---
Tacit Knowledge (positive)	.7191	13	---
Tacit Knowledge (negative)	.8115	22	---
Managing Self (overall)	.0731	16	---
Managing Self (positive)	.6260	8	.7152
Managing Self (negative)	.6429	8	.7298
Managing Career (overall)	.5730	15	---
Managing Career (positive)	.2673	3	.5934
Managing Career (negative)	.7538	12	---
Managing Others (overall)	-.1073	4	---
Managing Others (positive)	.2822	2	.7023
Managing Others (negative)	.2303	2	.6422

[1] Values in the column labelled "New α" reflect the coefficient alpha reliability that subscale would have it were composed of twelve items.

the correlation between overall tacit knowledge and negative items being .8227, and that between overall and positive items being -.1359. The difference in these correlations, in terms of magnitude and direction, is explained by the fact that the bulk of the tacit knowledge items (22 of 35) were negatively-scored; hence, we would expect that the items scored in the predominant direction would correlate more highly with the overall measure than would the items scored in the less dominant direction. The fact that the negative items correlated -.6889 with the positive items would again seem to indicate that the sets of variables are relatively redundant, thereby justifying our use of only one of the two sets of items. In addition, alphas for the positive subscales were comparable to those for the negatively-scored scales. The full tacit knowledge measure is included in Appendix G.

Situational judgment. The situational judgment test utilized was developed as part of an effort to restructure the selection system for a large federal organization. It was developed utilizing the same stringent procedure outlined by Motowidlo et al. (1990), and a full reiteration of that procedure would be redundant at this point. Some information, though, bears repeating.

As in the earlier research, each question was of two parts: Following the presentation of a given situation, the respondent was asked to indicate first which response he or she would most likely make, and second which response he or she would least likely make. The maximum score an individual can get on a situational item is +2 (if they identify one of the "best" options as their "most likely" response, and one of the "worst" options as "least likely"), and the minimum score would be -2 (if they do the reverse).

The available pool of items constituted more than simply managerial effectiveness, so those items reflecting skills with apparent utility for success in management were selected based on a careful consideration of their content and grouped into a 30-item scale. Coefficient α reliability for this measure was .7003.

In addition, some of the hypotheses for this study made use of Motowidlo et al.'s (1990) trichotomization of situational judgment, in terms of Interpersonal Skills, Communication Skills, and Problem-Solving Skills. Because no a priori structure existed for the items included in this situational judgment test by which the items could be broken down into these categories, a group of local subject matter experts was recruited to rate the items. Copies of the situational judgment test were provided to twenty graduate students in Industrial/Organizational psychology, based on their presumed familiarity with the literature on jobs and the dimensionality of work skills. Sixteen SJTs were returned, and the data were analyzed. Any question for which two-thirds of the respondents agreed on the skill dimension tapped was retained for use in the hypothesis tests regarding the subscales of the SJT. A total of 16 questions were retained in this manner (6 Interpersonal, 3 Communication, and 7 Problem-Solving). Coefficient α reliabilities for these subscales are low (.2601, .1988, and .2782 for Interpersonal, Communication, and Problem-Solving, respectively), but as has been pointed out by previous authors (Clause, Mullins, Nee, Pulakos, & Schmitt, 1996), this is likely due to the fact that the items that make up a situational judgment test are multidimensional, and not likely to produce high estimates of internal consistency reliability. As such, coefficient α may be an inappropriate estimate of reliability for this measure (Cronbach, 1947, 1951). See Appendix H for the form of

the situational judgment test used in this study.

Experience. A measure was constructed to tap into those aspects of experience likely to influence performance on the situational judgment and tacit knowledge tests. Since the theoretical outline provided in the introduction to this paper postulated that implicit learning underlay tacit knowledge, and that tacit knowledge and situational judgment measured the same skill/knowledge base, careful consideration was given to those situations in which individuals might experience implicit learning that would better enable them to perform on management-related tacit knowledge and situational judgment tests. These content domains included work, school, and community experience with respect to leadership, as well as involvement in various activities and organizations. The full experience measure had a coefficient α of .8983, while the subscales of job experience, school experience, and community experience had α values of .8193, .7997, and .9052, respectively. Equally important, the intercorrelations among the experience scales were low (see Table 4), indicating that the three scales were measuring conceptually distinct facets of experience. Please see Appendix I for a copy of this measure.

Self-regulation. A self-regulation measure was adapted from the work of Ashford and Tsui (1991), to reflect both a somewhat traditional approach to self-regulation (attention to monitoring those cues the authors defined as crucial to performing managerial jobs well) as well as a recognition of the importance of negative feedback-seeking behaviors. Because Ashford and Tsui's measure reflected a more social approach to self-regulation than is common in much of the self-regulation literature, items were re-written to remove many of the social aspects while retaining

the same basic content that Ashford and Tsui (1991) emphasized. The resultant five-item measure had an internal consistency reliability of .7432. Please see Appendix J for a copy of this measure.

Learning Style. The reader may recall that learning style, as it is most commonly measured, exists along two dimensions. The first is concrete versus abstract; the second is reflection versus action. One version of this measure was published by Romero et al. (1992), and demonstrated coefficient α reliabilities around .80 for each dimension. Within the confines of this experiment, this learning style measure possessed an overall α of .7832, while α for the concreteness scale was .7669 and α for the action orientation scale was .6608. The reason for the drop in the internal consistency reliability for the action orientation subscale is unclear. The correlation between these two scales is .4113 (see Table 4), indicating that they represent fairly distinct dimensions of learning style. This measure is reproduced in Appendix K.

Chapter 3

RESULTS

Table 4 contains the intercorrelations of the primary variables examined in this study. This table formed the basis for many of the early hypothesis tests, particularly those that hypothesized differences (or lacks thereof) among correlations. My discussion of the hypotheses for this study will proceed in the order in which the hypotheses were presented; for the first hypothesis test dealing with the differences among correlations, I will specify all steps of the process used in comparing the correlations and testing for their difference. For all further hypotheses of this form, I will refer the reader to Table 6, where the specifics of the hypothesis tests are contained, while providing only the relevant details for each.

The first hypothesis suggested that a strong positive correlation would exist between scores on the tacit knowledge test and scores on the situational judgment test. Using only the positively-keyed tacit knowledge items, as was discussed above, the correlation between tacit knowledge and SJT was actually .0844, a nonsignificant result. Correcting for attenuation due to unreliability in both measures (which may not be wholly appropriate, given that both are multidimensional (Schmitt, Rogers, Mullins, & Clause, in progress), but is potentially informative here) gives us a correlation of .0974, which is only a slight improvement. The absolute size of both

Table 6: Test for differences among correlations of indicators with the Situational Judgment Test and positively-keyed Tacit Knowledge items

Indicator	r_{SJ}	r_{TK}	raw diff (r_{SJ} - r_{TK})	z_{SJ}	z_{TK}	Hyp. test	t
Age	**.1412** (.1687)	-.0110 (-.0130)	.1522	.1421	-.0110	H5	1.53
Sex	**.1117** (.1335)	.0907 (.1070)	.0210	.1249	.0909	H6	.34
Race	-.0321 (-.0384)	**-.1384** (-.1632)	.1063	-.0321	-.1393		1.07
SES	.0768 (.0918)	-.0731 (-.0862)	.1499	.0770	-.0732		1.49
Region	-.0201 (-.0240)	-.0245 (-.0289)	.0044	-.0201	-.0245		.04
Tol. Amb.	.0313 (.0434)	**-.1204** (-.1649)	.1517	.0313	-.1210	H9	1.52
Comm. Comp.	**.2574** (.3415)	**.1635** (.2141)	.0939	.2633	.1650	H8	1.02
Mach	**.1911** (.2616)	-.0762 (-.1029)	.2673	.1935	-.0763	H12	**2.77**
Work Exp.	.0956 (.1262)	.0943 (.1229)	.0013	.0959	.0946	H2	.01
Ed. Exp.	.1023 (.1367)	.0875 (.1154)	.0148	.1027	.0877	H3	.15
Comm. Exp.	-.0795 (-.0999)	.0329 (.0408)	.1124	-.0797	.0329		1.11
Self-Reg.	**.2613** (.3622)	**.1578** (.2159)	.1048	.2675	.1578		1.14
Learn. Style	.0778 (.1051)	**.1235** (.1646)	.0457	.0780	.1241		.46
Concrete	.0439 (.0599)	.0669 (.0901)	.0230	.0439	.0670		.23
Action	.0669 (.0983)	**.1449** (.2102)	.0780	.0670	.1459		.79
Cog. Ability	-.0167 (-.0200)	-.0908 (-.1071)	.0741	-.0167	-.0911	H4	.73
Neuroticism	**-.1667** (-.1992)	.0712 (.0840)	.2379	-.1683	.0713		**2.43**
Extraversion	**.2009** (.2401)	**.1124** (.1325)	.0885	.2037	.1129	H7	.92
Openness	**.1106** (.1322)	-.0506 (-.0597)	.1612	.1111	-.0506	H10	1.61
Agreeableness	**.2234** (.2670)	-.0830 (-.0979)	.3064	.2272	-.0832		**3.23**
Conscientious	**.2639** (.3152)	**.2215** (.2612)	.0424	.2703	.2252	H11	.47

Note: Results in **BOLD** type indicate $p < .05$; figures in parentheses are correlations corrected for unreliability; Comm. Comp. = Communication Competence; Tol. Amb. = Tolerance of Ambiguity; Mach = Machiavellianism; Work Exp. = Work Experience; Ed. Exp. = Educational Experience; Comm. Exp. = Community Experience; Self-Reg. = Self-regulation; Learn. Style = Learning Style; Concrete = Concreteness; Action = Action Orientation; Cog. Ability = Cognitive Ability

the observed and corrected correlations provides no support for the notion that these are measures of similar constructs. Hypothesis 1 was therefore not supported.

Hypotheses 2 and 2a dealt with the relation of the TK and SJT measures with the measure of work experience used in this study. Specifically, the correlation of tacit knowledge with work experience was hypothesized to be nonsignificantly different from the correlation of situational judgment with work experience (Hypothesis 2). To test this hypothesis, as well as the other hypotheses of this form, a two-step process was followed. First, the correlations to be compared were transformed to Fisher Z-scores. The Z-transformed correlations were then used in the following formula, from the work of Steiger (1980):

$$t = \frac{(r_{12} - r_{13})[(N - 1)(1 + r_{23})]^{.5}}{[2(n - 1/n - 3)|\mathbf{R}| + r_m^2(1 - r_{23})^3]^{.5}}$$

where $|\mathbf{R}| = (1 - r_{12}^2 - r_{13}^2 - r_{23}^2 + 2r_{12}r_{13}r_{23})$ and is the determinant of the correlation matrix of the coefficients being tested and $r_m = .5(r_{12} + r_{13})$. r_{12} and r_{13} are the Z-transformed correlations between the external variable (here, work experience) and the two focal tests, and r_{23} is the correlation between tacit knowledge and situational judgment. Plugging in the Z-transformed correlations ($r_{SJ.work}$ = .0959 (.1262), $r_{TK.work}$ = .0946 (.1229), $r_{SJ.TK}$ = .0691 (.0974)), we obtain a t value of .01, which is obviously non-significant. The correlations of the two focal measures with work experience, then, are not significantly different, so that the data do not support the rejection of Hypothesis 2. This phrasing, while awkward, is most correct and in line with the logic of null hypothesis testing. Results in accord with the hypotheses can only be "not rejected," they can never be "supported" in any true sense. An

additional note that bears mentioning is that statistical tests were conducted using raw correlations. But because this is essentially a construct validity study, correlations corrected for unreliability are also reported in parentheses following each raw correlation.

Raw correlations, the correlations corrected for attenuation due to unreliability, the raw difference between the correlations, the values of the Z-transformed correlations, and the final t-value for each test of significance are presented in Table 6. The reader will note that of the comparisons made between correlations, the significance test only detected a difference across measures for three of the twenty-one pairs of correlations tested: Machiavellianism, Neuroticism, and Agreeableness. Two of these were not the object of any specific hypotheses, so their difference is only remarked upon in the event that future researchers see the need to understand how personality characteristics such as neuroticism and agreeableness relate to performance on these types of measures. It should also be noted that three of the hypotheses postulated differences among correlations (either directly or indirectly) that failed to materialize for the self-regulation, concreteness, and action orientation variables.

Hypothesis 2a went a step further, by specifying which subscales of the two focal measures should be most strongly related to work experience. It was hypothesized that work experience should be relevant to the Managing Others and Managing Tasks/Career subscales of the TK test, and to the Interpersonal Skill and Problem Solving Skill dimensions of the SJT. A review of the correlation matrix in Table 4 demonstrates little support for this hypothesis. Work experience was not

significantly correlated with any of the subscales from either focal measure. Of the SJT subscales, in fact, it correlated most highly with the Managing Self scale (r = .0929 (.1214)), which it was not hypothesized to be related to, while correlating .0845 (.1114) and .0405 (.0581) with Managing Others and Managing Tasks/Career, respectively. Similarly, none of the SJT subscales correlated significantly with the Work Experience measure. However, the dimensions that were hypothesized to be related to the measure correlated with it more strongly than the one that was not hypothesized to do so (Interpersonal Skill and Problem-Solving Skill correlated .0628 (.1360) and .0816 (.1709), respectively, with Work Experience, while Communication Skill correlated .0064 (.0159) with the measure). Again, then, weak support was found for Hypothesis 2a.

Hypotheses 3 and 3a took the same form as did 2 and 2a, but here the focal variable switched from Work Experience to those Educational Experiences that might impact managerial ability (clubs, leadership positions, and so forth). The difference between the correlations again was non-significant (.1023 (.1367) compared to .0875 (.1154)), thus Hypothesis 3 could not be rejected. As with Hypothesis 2a, Hypothesis 3a had only weak support; it was hypothesized that Educational Experience should be primarily related to Managing Others, from the TK test (note that, from this point forward, references to the tacit knowledge test simply as "TK" refer to the positively-coded items chosen for inclusion in the analyses rather than the entire test), but instead it was most strongly related to Managing Self (r = .1312 (.1735), $p < .05$); the correlation of Educational Experience with Managing Others was .0453 (.0604; $p > .05$). This finding is not terribly surprising, given the college-student sample used

in this research. For such a sample, the impact of education would still be in proximal domains -- how to allocate time and get along with people -- rather than those distal outcomes, such as actually applying their educational experiences to manage others.

On the other side of the model, Educational Experience was hypothesized to be most strongly related to the Communication and Interpersonal Skill aspects of SJT performance. The strongest correlate of Educational Experience of the three was, in fact, Communication Skill (r = .1117 (.2801), $p < .05$), but its correlation with Interpersonal Skill was only .0843 (.1848), while the correlation with Problem-Solving Skill was similar (.0812 (.1721)). None of these correlations are significantly different from one another. Thus Hypothesis 3a, like Hypothesis 2a, received only weak support.

One of the important concerns with any study offering a new predictor measure is the distinctiveness of the predictor from traditional cognitive ability tests. In this study, the literature from both the tacit knowledge and situational judgment domains suggested that something other than cognitive ability, as it is traditionally measured, was being tapped. It was also hypothesized (Hypothesis 4) that due to underlying construct similarity, the correlation of the tacit knowledge measure with a test of cognitive ability would be nonsignificantly different from the correlation of the SJT with cognitive ability, and that both would be nonsignificantly different from zero. As Table 6 shows, this hypothesis was not rejected. The correlation of situational judgment with cognitive ability (as measured by the Wonderlic Personnel Test) was nonsignificant (r = -.0167 (-.0200)), as was the correlation of tacit

knowledge with Wonderlic score (r = -.0908 (-.1071)). The difference between these correlations was nonsignificant.

Part of the nomological network surrounding any test is the impact of demographic variables on test performance. Hypotheses 5 and 6 dealt with demographic variables, specifically age (Hypothesis 5) and gender (Hypothesis 6). Hypothesis 5 was not rejected, as a nonsignificant difference existed between the correlation of age with the SJT (r = .1412 (.1687)) and that of age with TK (r = -.0110 (-.0130)). Hypothesis 6 was also not rejected, as the correlation of gender with the SJT (r = .1117 (.1335)) was nonsignificantly different from that of gender with TK (r = .0907 (.1020)). Decent support, then, was found for that portion of the nomological network dealing with demographic variables.

The remainder of the correlational hypotheses took on the same form as Hypotheses 2 and 2a. For each, the similarity of the correlations between each of the focal measures and the external measures were examined, and then the model specifying the points within each measure where the external measures should be relevant was examined.

Hypotheses 7 through 12a dealt with personality variables. Hypothesis 7 put forth that no difference should exist between the correlation of Extraversion (as a proxy for sociability) with TK and its correlation with SJT performance. The data failed to support the rejection of this hypothesis. Hypothesis 7a specified that Extraversion should be most relevant to the Managing Others domain of the Tacit Knowledge test, and the Interpersonal and Communication Skill domains of Situational Judgment. Partial support was obtained for this hypothesis, as

Extraversion correlated most highly with the Interpersonal Skill and Communication Skill dimensions of the SJT (.1915 (.3574[1]) and .0959 (.2151), respectively, while its correlation with Problem Solving Skill was .0721 (.1367); again, though, none of the differences among these correlations were significantly different from one another at the .05 level). However, the differences among the correlations of Extraversion with the three Tacit Knowledge subscales were minimal ($r_{Task/Career}$ = .1101 (.1429), r_{Others} = .1032 (.1231), r_{Self} = .0842 (.0996)), indicating roughly equivalent importance of Extraversion to performance on all of the subtests. This may call into question the distinctiveness of the scales, as defined by their authors.

Hypothesis 8 dealt with the relationship of Communication Competence to both focal measures. Failure to reject this hypothesis resulted from the non-significant difference between these two correlations. While the correlation of the SJT with Communication Competence was slightly higher than that for TK (.2574 (.3415) as opposed to .1578 (.2141)), both are relatively strong positive correlations. Hypothesis 8a again found mixed support; it was hypothesized that Communication Competence would be most relevant to the Managing Others dimension of the Tacit Knowledge test and the Communication Skill dimension of the SJT. While the strongest correlations for each of the sets of subscales were for those subscales named in the hypothesis, there was not much variance across subscales within each test. That is, none of the correlations differed significantly from one another. For the SJT, correlations of the three subscales with the Communication Competence measure

[1] Corrected correlations involving the five NEO-FFI dimensions, age, sex, race, and cognitive ability are corrected using only one reliability estimate as only scale scores or single items were used for those variables.

ranged only from .1552 (.3267) up to .1700 (.4233), suggesting relatively equal importance of Communication Competence for all items within the SJT. While the range of correlations was a little broader for TK subscales (.1039 (.1497) to .1519 (.2012)), it again appears that Communication Competence may be one of the major factors underlying performance on the test.

Hypotheses 9 and 9a dealt with Tolerance of Ambiguity in the same manner as the hypotheses above. Hypothesis 9 (no difference between the correlations) was not rejected, though a moderate negative relationship (r = -.1204 (-.1649), $p < .05$) was found to exist between the Tolerance of Ambiguity measure and the TK test, while virtually no relationship (r = .0313 (.0434)) was found between Tolerance of Ambiguity and the SJT. Hypothesis 9a, while rejected, provided some potentially interesting insights and questions. It was believed that Tolerance of Ambiguity would be most strongly linked to the Managing Tasks/Career dimension of the TK test, and to the Problem Solving Skill dimension of the SJT. While this was the case, for the SJT, Tolerance of Ambiguity was almost as strongly related to Communication Skill as it was to Problem Solving Skill (.1182 (.3078) as opposed to .1224 (.2695)), while for the TK test Tolerance of Ambiguity correlated most strongly with the Managing Tasks/Career dimension, but the relationship was negative (r = -.1981 (-.2986), $p < .01$). It is curious that two tests, constructed in such similar manners (according to the literature) could have such disparate relationships to the extent to which individuals are tolerant of ambiguity in their lives. We will return to this issue later, in the discussion section.

Hypotheses 10 was not rejected, while 10a was. A nonsignificant difference

existed between the correlations of TK and SJT with Openness to Experience. The Openness construct did not allow for meaningful distinctions to be made among the three SJT dimensions (and certainly not in the hypothesized direction, since Problem Solving Skill, which was hypothesized to be most strongly related to Openness, was actually the weakest of the three), nor did it provide interpretable results with respect to the TK dimensions.

Hypothesis 11 was not rejected, while hypothesis 11a was. Hypothesis 11 dealt with the correlations of TK and SJT with Conscientiousness; these correlations were both strong and positive, and not significantly different from one another. The attempt to specify the subscales of each test to which Conscientiousness was relevant failed, however, as Conscientiousness correlated between .15 and .19 with all six of the subscales, with none of the correlations being significantly different from any other. With respect to this variable as well, then, we have potential evidence for the indistinguishability of the subscales.

Hypotheses 12 and 12a, dealing with the relationship of Machiavellianism to the SJT and TK measure, were rejected. A significant difference existed between the correlations of Machiavellianism and the focal measures (r_{SJ} = .1911 (.2616), p < .01), r_{TK} = -.0762 (-.1029), p > .05). Moreover, while Machiavellianism did correlate most highly (.1383 (.3106)) with the Interpersonal Skill dimension of the SJT (per Hypothesis 12a), that correlation was nonsignificantly higher than the correlation between Machiavellianism and Communication Skill (.1089 (.2797)). The negative correlations that existed between Machiavellianism and all the dimensions of the TK test may reflect an important difference between the two focal measures with

respect to the emphasis they place on interpersonal factors.

The focus of Hypothesis 13 was somewhat different from the others, in that it put forth that a difference should exist between correlations. Specifically, because the Managing Self dimension focused on self-regulatory activities that were not readily apparent in descriptions of the SJT, it was believed that the correlations should differ. This was the case -- unfortunately, the difference in correlations was in the wrong direction. The correlation of Self-Regulation with SJT was .2613 (.3622), while the correlation of Self-Regulation with Managing Self was .1141 (.2509). Moreover, all of the SJT dimensions correlated .16 to .19 with Self-Regulation, while all of the TK dimensions correlated .11 to .15 with it, providing another instance where the breakdown of the subscales might be called into question. Hypothesis 13 was thus rejected.

Hypothesis 14 put forth that individuals who scored highly on the Managing Self dimension of the TK test would be more likely to demonstrate an "accommodator" learning style (high in concreteness and action orientation) than would those who scored low on it. Or, in other words, a positive correlation should exist between Managing Self and Concreteness, and Managing Self and Action Orientation. Support was not obtained for this hypothesis, as the correlation between Managing Self and Concreteness was .0316 (.0427, $p > .05$), while the correlation between Managing Self and Action Orientation was .1412 (.2054, $p < .01$). As this meets only one of the two criteria for an "accommodator" learning style, no choice remained but to reject the hypothesis. Doing well at Managing Self meant that individuals were more oriented toward action, but had virtually nothing to do with

whether they preferred concrete or abstract problems and situations.

Thus far I have tested on an individual basis a set of hypotheses regarding the similarities between tacit knowledge and situational judgment. In assessing construct validity, however, the overall consistency of a pattern of correlations, termed a nomological network (Cronbach & Meehl, 1955), is probably more important than individual comparisons. Hence, the SEM represented in Figure 1 was tested. In those cases specified by the hypotheses, equality constraints were imposed. This model was compared with a model in which these constraints were not imposed to provide an overall test of the degree of SJT and TK equivalence. The parameters estimated in both constrained and unconstrained models are presented in Table 7, the control statements specifying the model evaluated and the constraints imposed are presented in Appendix L, and the model with unconstrained, standardized parameter estimates is presented in Figure 2.

The model without constraints provided a moderate fit to the data (χ^2 = 96.30, df = 50; Root Mean Square Error of Approximation (RMSEA) = .052; Normed Fit Index (NFI) = .92). As expected, when the equality constraints were applied, the model fit less well (χ^2 = 123.87, df = 60; RMSEA = .056; NFI = .89). Using the chi-square difference test, we find that the difference between the two nested models is 27.57, with ten degrees of freedom, is significant. This significant difference means that the "nomological net" related to tacit knowledge and situational judgment is different. Because the nomological networks of the tests are not identical, we should conclude that the tests likely do not measure the same constructs. However,

Table 7: Parameter Estimates from Structural Model

Indicator	SJT Construct	Unconstrained SJT Parameter	TK Construct	Unconstrained TK Parameter	Constrained Solution
Self-Regulation	n/a	n/a	Managing Self	-.03	.00
Conscient-iousness	Problem Solving Skill	.07	Managing Self	.08	.07
Action Orientation	n/a	n/a	Managing Self	.08	.09
Concreteness	n/a	n/a	Managing Self	-.07	-.09
Machiavell-ianism	Interpersonal Skill	.14	Managing Others	-.04	.01
Educational Experience	Communication Skill	.01	Managing Others	-.01	.00
Educational Experience	Interpersonal Skill	.01	Managing Others	-.01	.00
Extraversion	Communication Skill	.01	Managing Others	.02	.03
Extraversion	Interpersonal Skill	.09	Managing Others	.02	.03
Comm. Competence	Communication Skill	.03	Managing Others	.02	.02
Work Experience	Problem Solving Skill	.02	Managing Career	.00	.01
Openness to Experience	Problem Solving Skill	.01	Managing Career	-.02	-.01
Tolerance of Ambiguity	Problem Solving Skill	.04	Managing Career	-.05	-.02

Note: SJT = Situational Judgment Test; TK = Tacit Knowledge; Comm. Competence = Communication Competence

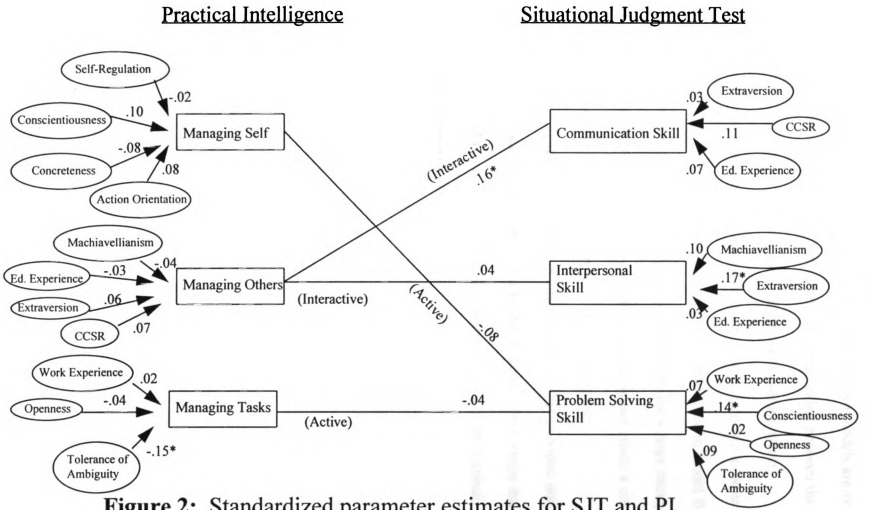

Figure 2: Standardized parameter estimates for SJT and PI nomological networks: Unconstrained model

Note: * = p < .05

we should also note that the fit indices associated with the two models are not very different. Thus, while a statistically significant difference exists between the constrained and unconstrained models, it is not an overwhelming effect.

Tests of less constrained models were made as well, in order to determine if any of the specific constraints were responsible for the difference in model fit found above. None of the individual constraints were responsible for a large enough portion of the χ^2 difference that the removal of a single constraint would create a constrained model that was nonsignificantly different from the original model.

Finally, it should be noted that the unconstrained model provided only a moderate fit to the data. Some authors (see Bollen & Long, 1993) claim that the χ^2 difference test should not be applied in those instances in which the original/full model does not fit the data satisfactorily.

Chapter 4

DISCUSSION

Given the attention situational judgment tests have begun to receive in the literature (Chan & Schmitt, 1997; Weekley & Jones, 1997), understanding precisely what they are measuring becomes increasingly critical. This study, with its focus on the similarity of situational judgment to Wagner and Sternberg's notion of tacit knowledge, represents one step in that direction. One step is not enough, however; the full specification of the nomological network surrounding situational judgment tests must be undertaken if the ambiguity surrounding these measures is to be removed.

The preponderance of evidence from this study suggests that situational judgment and tacit knowledge are not isomorphic. First, the correlation between the two measures is only .08 prior to correcting for attenuation due to unreliability, and only slightly higher after the correction has been applied; if they measured the same construct, the tests should reasonably be expected to correlate at least .40. Second, the test of the SEM constraining the relationships of the two tests with respect to their nomological networks demonstrated poorer fit than the SEM in which this constraint was absent, indicating different nomological networks for the two constructs. In evaluating these models and the difference tests, it should be emphasized that all

correlations were relatively low, and very often nonsignificant. While these results are obviously not what was hoped for, they are still informative and allow potentially useful statements to be made about situational judgment and tacit knowledge on empirical and conceptual planes.

In the next few pages I will discuss the contributions of this study, its limitations, and the directions it suggests for future research. Several of the results will be examined in greater detail, in an effort to understand precisely what lessons we can draw from these data.

Contributions

Finding that situational judgment and tacit knowledge were actually isomorphic would have represented an important contribution by helping to clarify what, precisely, these situational judgment tests are measuring. But as has been mentioned in various contexts throughout this paper, while what things are is an important question, we must also keep in mind the question of what they are not. As things worked out, the latter is the question better answered by this study.

The lack of correlation between SJT and TK, as well as the relatively weak evidence for distinctiveness of their nomological networks, represents an important contribution because it allows us to say that situational judgment is likely not tacit knowledge in another guise. While this finding is not as earth-shattering as determining once and for all what situational judgment is, it is nonetheless important because it helps us narrow the field of likely prospects by one. Incremental progress such as this is, after all, the way much of the knowledge in our field cumulates.

Moreover, this study helped to further our knowledge of the nomological

networks of both situational judgment and tacit knowledge. The position of personality variables such as those measured by the NEO-FFI, of self-regulation, and of various measures of experience are all pieces of information that assist us in understanding what characteristics of the individual and his or her life situation influence the capability to perform on these types of measures. More specifics regarding this new information will be taken up in pages to come.

Perhaps one of the most interesting and important confirmations offered by this study is the fact that neither measure evinced a correlation with a measure of cognitive ability (the Wonderlic Personnel Test) that was significantly different from zero. The ultimate value of situational judgment tests (and, to the extent they end up being used, measures of tacit knowledge) will lie in their ability to add predictive power to extant test batteries. The fact that neither measure correlates significantly with the measure of cognitive ability used in this study speaks well of their non-redundancy with traditional predictors of job performance. What remains to be seen is whether this non-redundancy translates into incremental validity for test batteries that include situational judgment or tacit knowledge tests; some evidence for this possibility on the tacit knowledge side has been provided by Sternberg and Wagner's work (Sternberg et al., 1995), but more must be collected.

Another potential contribution from this study is methodological; by extending Frederiksen's (1986a) work on construct validation, the approach taken in this study represents a fairly comprehensive method by which the similarity of constructs can be assessed. Admittedly, aspects of this methodology need refinement; the tests of differences between correlations are relatively low-power, and taken by themselves

might have led us to believe these two tests are very similar when in fact they are all but uncorrelated! It might be argued that their inclusion does not "buy us" anything, as researchers, and that the information they provide actually clouds the picture somewhat. A caveat that must be added, however, is that this may be due to the relatively low zero-order correlations observed in this study; with higher r's, smaller differences between correlations would have reached significance.

Methodological recommendations that might be made based on this study must be stated with caution, however, as this research may not typify construct validation research. This study was highly exploratory, dealing with constructs that had never (to the author's knowledge) been examined together prior to this effort. Most researchers, when approaching a question of construct similarity, will already have some idea of the extent to which the measures correlate with one another, and may in fact have based their assertion of construct similarity on such a correlation. It is reasonable to say that the presence of a correlation between your two focal variables is a necessary (though not sufficient) condition for any positive conclusions about construct similarity to be reached. Given this, the first (relatively obvious) recommendation to be made from this study is that before any other examinations of construct similarity are made, the researcher should first have evidence that the measures in question actually correlate and that they are measured adequately.

Once a relationship is established between the measures, attention should then be turned to the nomological networks surrounding them. The best analysis for this purpose seems to be structural equation modeling, as it allows the researcher the capability to not only model the data as it actually is, but to compare this model to

one in which the nomological networks of the two measures are constrained to be equal. Moreover, the methodology allows the researcher flexibility in determining which aspects of the networks are dissimilar, if the equality constraints result in a poorer-fitting model.

Perhaps one of the most important contributions of this study, or any study like it, is in the information it provides us about the relationships of the focal measures to the various external variables. That is, what did we learn about the nomological network, independent of tests of the similarity/difference of our models?

My approach to this will be straight-forward; I will examine the situational judgment test first, looking at the external variables it correlated with. I will also examine the correlates of its subscales for hints of the extent to which they are distinct from one another, and to help explain the specific correlations observed for the overall scale. I will follow the same basic process for the tacit knowledge test.

The overall situational judgment test correlated significantly with the tacit knowledge dimension of Managing Others, such that as SJT performance increased, respondents also performed better on those items labeled as Managing Others. The only subdimension of the SJT that correlated with Managing Others was Communication Skill, which is consistent with the belief that an important aspect of Managing Others is the ability to communicate. SJT also evidenced significant positive correlations with age and sex; the age finding is consistent with existing literature that suggests older respondents perform better on tests of situational judgment, and is further consistent in that the only subscale with which age correlates is Problem-Solving Skill (Denney & Palmer, 1981). The sex finding is interesting,

since it indicates that females perform better on the SJT than males. The SJT items that seem to be most highly correlated with sex are those involving Interpersonal Skill.

Three variables correlated significantly with the overall SJT as well as all three of its subscales, which might lead us to consider these as indicative of what the SJT as a whole measured. The first of these is Communication Competence, a finding that supports one of the hypothesized dimensions of situational judgment (Motowidlo et al., 1990) and should therefore not surprise us. The other two, however, are more surprising.

Self-regulation, in terms of paying attention to the learning process and the elements of that process (see Appendix J) showed significant positive relationships with all aspects of situational judgment. While this relationship was not hypothesized, it is very interesting; most of the thinking about managerial situational judgment tests has focused on the way managers interact with others and the skills involved in such interactions. This finding suggests that in order to really tap the way managers go about solving problems and interacting with others, more attention must be paid to their cognitive, and indeed their metacognitive (Flavell, 1979), processes.

The fact that the SJT and its subdimensions correlate significantly with conscientiousness may be interpreted in one of two ways -- one conceptual, one methodological. The first interpretation would be that individuals who are more conscientious make better managers, potentially because they are more concerned about the welfare of their employees and of the organization as a whole. Given the use personality variables have seen in recent years as predictors of job performance

(see Barrick & Mount, 1991), such an interpretation might not be far afield. However, an assertion that this is the case may be a greater logical leap than can be made on the basis of this study. The methodological interpretation might argue that conscientiousness correlated with the SJT and its dimensions for the same reason that it correlated with the positively-keyed tacit knowledge items, and the tacit knowledge subdimensions: because individuals who were more conscientious were the only ones who took the tests seriously, and are the only ones whose scores reflect effort and motivation to perform on the test. While the second interpretation is admittedly somewhat pessimistic, it cannot, within the context of this study, be discounted.

The overall situational judgment test also correlated significantly with Machiavellianism, as did the two "soft" subdimensions (Interpersonal Skill and Communication Skill). This relationship was hypothesized, and is consistent with the theoretical framework from which this study approached the notion of effective management.

Perhaps the most interesting finding was that responses to the overall SJT were significantly related to all of the Big Five personality dimensions, as measured by the NEO-FFI, and all of these were in the hypothesized direction. That is, individuals who were lower on Neuroticism and higher on Extraversion, Openness to Experience, Agreeableness, and Conscientiousness (as mentioned) tended to do better on the SJT than did individuals who were not. Previous studies (Pulakos, Schmitt, & Keenan, 1994) have found little or no relationship between personality variables and SJT performance, so the fact that the entire Big Five related to SJT in this study suggests that any notions of abandoning research relating personality to situational judgment

are premature. The nomological network of situational judgment, particularly with respect to personality, must be examined in greater detail in a variety of contexts to determine whether these results are replicable.

Communication Skill was the only SJT subscale which correlated with external variables not correlated with the overall scale. Educational Experience demonstrated a significant positive correlation with Communication Skill, while Community Experience demonstrated a significant negative correlation with the dimension. The positive relationship to Educational Experience is easy enough to explain; individuals who have had a greater variety of educational experiences, in terms of not only years of schooling but also number and variety of extracurricular activities they have been involved in, will likely have developed greater communication skills through their interactions than those who have not had the broad variety of educational experiences. More difficult to explain is the negative relationship with Community Experience. One would expect individuals who are more involved in religious groups, volunteer organizations, other community groups, or camp counseling to have developed the same kinds of communication skills that individuals in other organizations have. It may be that the structure of such community organizations is different than either educational or work environments, in terms of being more cooperative and less hierarchical. If that were the case, then even though a significant positive relationship exists between all three types of experience, different people may, based on various personality characteristics, take part in different aspects of the different experiences; individuals who possess managerial characteristics may be less apt, that is, to take control of a community group in the same manner they would an educational or

business group, or to communicate with others in those groups in the same manner. Clearly, personality and situational factors are important here, and there is room for potentially interesting research to be done on the factors that influence leadership and communication behaviors in the different experiential domains outlined in this study.

With respect to tacit knowledge, although the measure is of questionable validity some potentially interesting correlates emerged. As has been the case throughout the latter portions of this paper, when referring to the tacit knowledge measure I will discuss only the positively-keyed items for both the overall measure and the subscales.

First, Tacit Knowledge showed a significant positive correlation with race, a correlation which was also present for the Managing Career items. Given the relatively small proportion of non-white individuals in the sample, interpretation of this finding is probably not appropriate. More interpretable is the finding that Communication Competence was significantly positively related to performance on the Tacit Knowledge test, indicating that the skill with which individuals communicate with others is critical to their ability to demonstrate tacit knowledge. Given that tacit knowledge is believed to be gathered through interactions with others and with the world around us, this finding is consistent with previous theory.

As with situational judgment, tacit knowledge and all of its subdimensions correlated positively with self-regulation. The interpretation made above, regarding the importance of self-regulation and metacognitive skill to management, is one approach to explaining this finding. However, an examination of the correlation matrix in Table 4 demonstrates that self-regulation correlated with virtually all other

measures. This raises the alternative explanation that individuals who self-regulate more or better (as measured by the items utilized here) may simply perform better on written tests of the type included in this study. While this is not an unreasonable assertion, it does raise questions about the interpretability of findings regarding self-regulation in this study.

Action Orientation was hypothesized to relate to the Managing Self dimension of Tacit Knowledge; as it turned out, it also correlated with the Managing Others dimension and overall TK. The fact that two aspects of Tacit Knowledge correlate with Action Orientation argues somewhat for the distinctiveness of the Managing Career scale from the other scales; identifying areas in which the scales differ is one way we can go about identifying what the meaning of the dimensions, as measured in this study, actually was. The Managing Career dimension was significantly related to the other Learning Style variable, Concreteness, such that individuals who are more concrete learners tend to score higher on items from the Managing Career scale. Hence, active learning is important when dealing with yourself or with others, while concrete learning may be most important when dealing with tasks or the more macro-level career variable. Given that active, concrete learners are supposedly the individuals who are best suited to managerial jobs (Romero et al., 1992), these results may help explain which aspects of managerial jobs call for the application of which type of learning.

With respect to personality variables, we already noted that Conscientiousness related to all the subdimensions of Tacit Knowledge, just as it did with the SJT. As such, this variable will not be discussed again. Extraversion was also related to

overall tacit knowledge test performance, correlating .1124 with it. Thus, as the literature review for this study suggested, individuals who tend toward extraversion should have more opportunities to interact with people, and should therefore be more likely to develop tacit knowledge. Similarly, while Openness to Experience did not correlate with the overall TK measure, it did correlate with Managing Career; again, this makes sense in light of the literature review, given that individuals who are more open to experiences will develop a broader experiential base from which they can draw when issues of career management become salient.

Several other variables correlated with subscales but not with the overall scale. Educational Experience correlated positively with Managing Self. It is possible that this correlation is due to the undergraduate nature of the sample, for whom educational experiences are the most salient in determining how they manage their lives, while this would not be the case for a sample from an organization. In addition, the Communication Skill dimension of the SJT correlated significantly with the TK dimension of Managing Others (as was noted above), and age was positively correlated with Managing Others as well; this last finding is explicable in terms of the greater experience individuals have with others as they age, and the knowledge they gain as a result of this experience.

The last correlation I will discuss with respect to the tacit knowledge measure is the one which makes the least sense; both the overall tacit knowledge scale and its Managing Career subscale evinced significant negative correlations with Tolerance of Ambiguity. In considering the literature review for this study, it was my belief that individuals who were more tolerant of ambiguity would be able to handle the types of

ambiguous situations presented in both situational judgment and tacit knowledge measures more adeptly than would those who were less tolerant of ambiguous situations. To find that individuals who are more tolerant of ambiguity actually do worse on a test of tacit knowledge leads me to question whether it is possible for individuals to be too tolerant of ambiguous situations; if they treat ambiguity as commonplace and don't get overly upset about having to deal with the ambiguity they face on the job, are they likely to miss important aspects of the situations? Or might it be that individuals who are tolerant of ambiguity do not actively question ambiguous situations, instead allowing them to simply remain ambiguous, and therefore do not gain the tacit knowledge they might have obtained if they had been more active in questioning all aspects of the situation? Given the prevalence of ambiguous situations and the importance (to managers) of being able to deal with them efficiently, it will be critical to further investigate this relationship in future work.

Examining the correlations among all the variables, rather than only those for which equality constraints were hypothesized, allows us the opportunity to look at something broader than simply the conceptual model. By considering where sizable and statistically significant correlations did and did not appear with respect to tacit knowledge and situational judgment, we are better able to specify future iterations of the nomological networks surrounding both types of measures. With this said, I will now turn to the limitations of my study.

Limitations

The most obvious limitation of this study is the apparent motivational problems

of the participants. While no motivation scale was included in the battery of tests, there can be little doubt what one would have demonstrated, had it been included (and had the participants responded accurately!).

The battery administered to study participants included over 400 items, when the Wonderlic and the NEO-FFI are included. Of the items, over 1/3 were tacit knowledge items, 131 of which were not scored. While there is no way participants could know that many of the items to which they responded would not be used, the sheer volume of items was certainly sufficient to overwhelm them, and this might have been avoided by including only those items which would be scored.

That motivation among participants was problematic can be inferred from patterns within the data. Specifically, I noted earlier that the reverse-scored items ended up clustering together at the low end of the 1-7 scale, while the items that were not reverse-scored clustered together at the high end. This seems to indicate a response set on the part of participants, such that every option presented was met with a general positive response. The apparent demotivation might be due to the fatigue resulting from the length of the test battery, or it might be due to the lack of any sort of reward for performance on the battery (e.g., some form of monetary inducement might have encouraged higher levels of motivation).

The use of only the positively-scored tacit knowledge items represented an attempt to circumvent these motivational issues, as we may expect that at the very least, responses to the positively-keyed items represent the true feelings of the respondents with respect to the items. While this solution was by no means ideal, it did allow the analyses around which this study was designed to be conducted.

However, the results must be classified as preliminary.

Another study limitation also involves the tacit knowledge test. To all appearances, the key provided by the test developers was empirical, and likely based on a sample collected for research published in 1985. Empirical keys often demonstrate questionable cross-validities (Murphy & Davidshofer, 1994), casting doubt on the ultimate usefulness of such measures for research purposes. The creation of a new empirical key for the sample gathered in this research was considered; however, the only external criteria available for the creation of such a key were measures of cognitive ability. Not only would this create an artifactual correlation between variables that are hypothetically uncorrelated (cognitive ability and tacit knowledge), it is incorrect from a theoretical standpoint, so the creation of a new key was dismissed as a possibility.

Unfortunately, no other research measures of tacit knowledge are widely available. A more advanced, updated version of the tacit knowledge scale used here is in publication; budgetary and other logistical constraints made this option infeasible, though, leaving only the scale used in this study as an option. While it may prove impossible to construct, a rationally-keyed scale measuring tacit knowledge for managers would likely prove useful to researchers and practitioners and would eliminate the kinds of difficulties encountered here.

Some apparent measurement deficiencies of the focal measures must be noted as well. First, with respect to the situational judgment test, expert raters reported difficulty in making distinctions between items tapping communication skill and those tapping interpersonal skill. This difficulty is one symptom of a general

indistinguishability of the subscales that made up the SJT. For both the situational judgment and tacit knowledge tests, the dimensions of each had highly similar correlations with the Communication Competence, Conscientiousness, and Self-Regulation scales. As an example, consider Communication Competence; its correlations with the three tacit knowledge subtests were .1039, .1390, and .1519, while its correlations with the situational judgment subscales were .1532, .1680, and .1700. In addition, all of the tacit knowledge subscales had highly similar relationships to Extraversion, while all of the situational judgment subscales had similar relationships to Openness to Experience.

The fact that for each of the two scales, its subscales were not distinguishable with respect to at least four external variables where distinguishability would be expected is mildly troubling. One of the issues from which this arose has already been noted (the empirical key for the tacit knowledge test). Another potential causal factor is the method by which the situational judgment subscales were derived. Because no a priori classification existed of the SJT items used into Interpersonal, Communication, or Problem-Solving Skills, expert raters were asked to classify each item into the category they believed it fit best. The raters achieved 100% agreement on almost none of the items, indicating that some amount of overlap should be expected. However, the fact that the correlations of the three dimensions for each of the major tests differed significantly for many of the external variables allows us some level of confidence in the distinguishability of the scales. It was hoped that the use of expert raters would allow for meaningful subscales to be identified from the available items, where simple factor analysis did not. That low estimates of coefficient α were

obtained for the scales constructed based on the raters' work indicates that even when experts viewed the items as measuring the same construct, the items themselves were not internally consistent. This might be due to one of two reasons.

The first possibility is one already noted in an earlier section of this paper, that being the likelihood that situational judgment tests are multidimensional at the item level (Clause et al., 1996). Items which are themselves multidimensional contain multiple constructs which may prove more or less salient to different respondents. Under such a situation, it may well be that α represents an inappropriate estimate of reliability and that we should attend to estimates such as test-retest (since within individuals, there is little reason to believe the constructs measured by the test items will change over time) or interrater (which is essentially the method used to select items for inclusion in the subscales for this study).

The second possibility is that the theoretical dimensionality of situational judgment, put forward by Motowidlo and colleagues, may not generalize. The dimensionality of managerial behavior, while heavily discussed in various literatures (Baldwin & Padgett, 1993; Thornton & Cleveland, 1990), may not be to a stage where we can say with confidence that interpersonal, communication, and problem-solving skills represent the ultimate triumvirate of managerial behaviors. The fact that the scales were significantly intercorrelated in this study, while simultaneously having such low alphas, suggests that a general definition of the dimensionality of management remains a research need in this area.

Similar things can be said about the tacit knowledge measure. The scales do not look at all distinctive, initial problems existed with the coefficient α values, and

the scales are highly intercorrelated. Rather than reiterate specific criticisms that have been levied at both measures in the previous pages, I would like to briefly discuss the scoring of the TK test.

The response scale for the tacit knowledge items is such that it makes it easy to get positive response bias of the sort seen here. For each situation, trainees rate potential responses on a 1-7 scale, ranging from "Not Important" to "Extremely Important" with respect to the decision being made. It should not be overly surprising that respondents tended to treat every response as potentially important to the decision, since even though they have had a broad variety of experiences it is unclear based on data collected what they learned from the jobs they held in the past. Adopting a more ipsative format, such as the one utilized in the SJT, might improve the tacit knowledge test; however, it becomes unclear at that point whether a measurement effect might become dominant. If such a tacit knowledge measure were constructed and a stronger relationship between TK and SJT were found, the question of whether this represents an improvement in measurement quality or simply a convergence of measurement methods might prove difficult to answer.

The use of an undergraduate sample, while an apparent limitation, is not any more damning in this study than in any other study of this type. The general concerns of restriction of range on age, education, and experience are all issues that must be considered. While it is certainly true that all participants were undergraduates and the bulk of them were ages 18-24, they showed a range of experience with respect to the number of jobs held that was surprisingly close to normal. Most of them (193) held a moderate number of jobs (3-5) while fewer held

only 1-2 jobs (61) or 6-10 jobs (73), and fewer still held no jobs (5) or more than 10 jobs (16). The fact that the bulk of the respondents had held at least 3-5 jobs, with 89 having held 6 or more, speaks relatively well to the level of experience participants in this study had with the types of situations described in the SJT and TK test. If the fact that a decent range of experiences were brought to the questionnaire by respondents is considered, the inferences I sought to make are relatively safe; all revolved around construct issues, and given a broad enough experiential base, such relationships should not differ greatly when we move from one sample to another. As such, inferences made about them in this context should be relatively applicable to any other. One variable for which this was likely not the case was the Educational Experience variable, for reasons mentioned briefly in the Results section of this paper.

The reader will recall that among the tacit knowledge dimensions, Educational Experience was hypothesized to be most strongly related to Managing Others; instead, it was most strongly related to Managing Self, though the difference between the correlations was nonsignificant. The explanation offered for this finding dealt with the impact of education, and the fact that for individuals whose formal education is ongoing it should be more strongly related to proximal domains (such as time management and getting along with people) rather than distal domains (actually applying educational experiences to managing others).

Directions for Future Research

Although we now know one more thing situational judgment tests likely do not measure, we still do not know precisely what they do measure. This remains an

important question. Motowidlo et al. (1990) mention two options other than tacit knowledge/practical intelligence as alternative explanations of what situational judgment tests are measuring. The first is behavioral consistency; given that work experience correlated .0956 with situational judgment test performance, however, this study does not seem to support this notion. However, it must be noted that the work experience measure utilized here was constructed independent of the situational judgment test items, and was designed to assess those general on-the-job experiences that might have an impact on an individual's ability to perform well, given a managerial role. Future studies interested in testing whether situational judgment is merely tapping behavioral consistency should utilize experience measures constructed directly from the situational judgment test, in which respondents are asked whether they have ever been in a given situation. Once such an experiential checklist was completed, the situational judgment test could be administered and a more meaningful correlation coefficient computed.

The second explanation offered by Motowidlo et al. (1990) dealt with goal-setting theory and intentions. The type of research that might best address this explanation is presented in that paper, and I will not reiterate it here other than to note that it should, if we are to understand situational judgment tests, be done.

Other directions for research have been mentioned at various points throughout this paper. One such item deals with the tacit knowledge measure used in this study. The question of whether the 35 scored tacit knowledge items would measure the same construct without the administration of the other 131 unscored items is, practically speaking, very important. The demotivating effects of excessively long tests on

research participants are a relatively minor problem in comparison to the possibility of negative applicant reactions resulting from a test of that length. If this measure is to ever be used again, research should be conducted to ensure that the same construct is measured when only the scored items are presented as when the full set of items are presented.

In addition, the development of a rationally-keyed tacit knowledge test should be considered. The difficulty, of course, lies in defining which of the myriad potential responses to a given situation are "effective" and which are "ineffective" in a way that cuts across organizational boundaries. Climate and culture variables will almost certainly assist in determining what types of responses are appropriate to a given situation, so the search for a rational key may ultimately be doomed, or at the very least, be forced to move to such a macro-level (regional or national, rather than corporate cultures, for example) as to be impractical for researchers interested in Industrial/Organizational psychology. Backing away from that direction somewhat, then, I would certainly recommend research be undertaken to define a new empirical key based on a broader sample than whatever the basis for the current tacit knowledge scale might have been. Similar comments can be made about situational judgment tests.

It should be clear, then, that much remains to be done with respect to understanding situational judgment tests. Tacit knowledge was one direction that had potential, but which ultimately fell short. Further research must be conducted in order to provide a solid research base for these measures. Two overriding responsibilities demand this. First, we have a responsibility to those organizations we

service to offer the best possible product, which not only selects the best individuals but will also stand up to legal scrutiny. Second, and more importantly, we have a responsibility to our field to cumulate knowledge about the process of personnel selection that will help us to move forward and better understand the what, when, why, and how of predicting job performance.

APPENDIX A

Consent Form

Subject #:_____

Informed Consent
Test Relations Study

The study in which you are about to participate investigates the relationships among various types of tests used by businesses to select whom they will hire.

Your participation in this study requires that you remain for the entire two and one-half hour session. While your participation is completely voluntary, the success of this study depends upon you making a commitment to do your best on the tests so that we get an accurate appraisal of your knowledge and abilities. No possible risks or discomforts are anticipated as a result of this study.

At the end of your involvement, you will be provided with feedback explaining the purpose of this study in more detail. Participation is strictly voluntary. You are free to discontinue the study at any time for any reason without penalty. Your responses will be completely confidential. During the study you will not be asked to put your name on any of the forms you will be filling out, in order to maintain your confidentiality. Once all data is collected all records of your name and its relation to your data will be discarded. You are free to ask any questions you might have about this study at any time. You may ask questions about the outcome of this study at any time by contacting Morrie Mullins at 3-9166 or through the Department of Psychology.

Consent: I have been fully informed of the above-described study and its possible risks. I give permission for my participation in this study. I know that the investigator and his associates will be available to answer any questions I may have. I understand that I am free to withdraw this consent and discontinue participation in this study at any time without penalty.

Name:_____

Signature:_____ Date:_____

APPENDIX B

Debrief Form

Test Relations Study Debriefing Form

The study in which you just participated was designed to examine the relationship between a situational judgment test (the items which asked, "Which of these would you most/least likely choose?") and a test of tacit knowledge (the items which constituted a long list after a statement of a problem). Some scientists have theorized that situational judgment tests may measure tacit knowledge, but that remains unclear. By filling out these measures, plus several others that measure things that should be related to both, we can compare these two tests to see if they are, in fact, measuring the same thing.

If you have any questions about this study or would like to receive a copy of the results when they are complete, please notify the investigator now. If, in the future, you have any questions about the study or would like to receive the results when they are complete, please call the investigator listed below. Finally, thank you for participating in this study. We tried to make it as interesting as possible and we are open to suggestions.

Investigator:
Morrie Mullins, 3-9166

APPENDIX C

Demographic Information

1. How old are you?

1.	17-19	4.	26-29
2.	20-22	5.	30 or older
3.	23-26		

2. What is your classification?

1.	Freshman	4.	Senior
2.	Sophomore	5.	Graduate student
3.	Junior		

3. Approximately, what is your grade point average?

1.	less than 2.0	4.	3.0 - 3.49
2.	2.0 - 2.49	5.	3.5 - 3.99
3.	2.5 - 2.99	6.	4.0

4. What is your gender?

1. Male 2. Female

5. What is your race?

1.	African-American	4.	American Indian
2.	Asian	5.	Caucasian
3.	Hispanic	6.	Other _____ (please describe)

6. Approximately what is the yearly household income for your family?

1.	less than $15,000	4.	$30,000 - 39,999
2.	$15,000 - 19,999	5.	$40,000 - 60,000
3.	$20,000 - 29,999	6.	more than $60,000

7. Which of the following best describes your major field of study?

1.	Business	4.	Arts
2.	Social Science	5.	Humanities
3.	Natural Science	6.	Other _____ (please describe)

8. Which of the following best describes the area in which you were raised?

1. Rural 2. Urban 3. Suburban

9. How many books have you read in the last six months that were not required for school?

1.	None	4.	5 - 6
2.	1 - 2	5.	more than 6
3.	3 - 4		

APPENDIX D

Tolerance of Ambiguity Measure (Major, 1990)

1. I prefer work assignments with specific directions to those with vague directions that require my own interpretation. (R)

2. I dislike supervisors who expect me to figure out my work assignments on my own. (R)

3. A good job is one where what is to be done and how it is to be done are always clear. (R)

4. It's important for me to know exactly what my work assignments are and when they are due. (R)

5. Jobs that have a lot of change and uncertainty are more desirable than jobs with little change and uncertainty.

6. I am uncomfortable when I'm not sure what is expected of me. (R)

7. It is impossible to do a good job when the requirements keep changing. (R)

note: (R) = reverse scored, if the same rating scale (1) = "strongly disagree" to (7) = "strongly agree" is to be used

APPENDIX E

Communication Competence Self-Report Questionnaire
(Rubin, 1986)

This questionnaire is composed of statements concerning your communication with other people. Please indicate how each statement reflects your own communication behavior by marking if it applies to you:

(1) ALWAYS (2) USUALLY (3) SOMETIMES (4) SELDOM (5) NEVER

1. I mispronounce a lot of words.

2. When speaking with someone, the words I use say one thing while my face and tone of voice say something different.

3. When giving a speech, I speak clearly and distinctly. (R)

4. When giving a speech, I can be persuasive when I want to be. (R)

5. When I speak with others, my ideas are clearly and concisely presented. (R)

6. When giving a speech, I thoroughly express and fully defend my positions on issues. (R)

7. I am unable to tell whether or not someone has understood what I have said.

8. I know when I'm hearing a fact and when I'm hearing someone's personal opinion. (R)

9. When professors make suggestions in class on how I can improve, I understand the suggestions. (R)

10. I understand the assignments that are given orally in class. (R)

11. When I tell others about a class lecture I've heard, my version leaves out some important items.

12. When I have to introduce myself in a class, I am able to fully and concisely describe my interests and let others know who I am. (R)

13. When speaking with others, I have to ask a question several times, in several ways, to get the information I want.

14. I have to answer a question several times before others seem satisfied with my answer.

15. I find it difficult to express my satisfaction or dissatisfaction about a course to the professor.

16. When I explain something to someone, it tends to be disorganized.

17. When I give directions to another person, the directions are accurate. (R)

18. When I try to describe someone else's point of view, I have trouble getting it right.

19. I am able to give a balanced explanation of differing opinions. (R)

note: (R) = reverse scored

APPENDIX F

Machiavellianism Measure

(Allsopp, Eysenck, & Eysenck, 1991
reported in Mudrack & Mason, 1995)

1. Would you be prepared to deceive someone completely if it were to your advantage to do so?

2. Would you be prepared to do a bad turn to someone else in order to get something you particularly wanted for yourself?

3. Do you often act in a cunning way in order to get what you want?

4. Would you be prepared to "walk all over people" to get what you want?

5. Do you enjoy manipulating people?

6. Do you tend to do most things with an eye to your own advantage?

7. Do you agree that the most important thing in life is winning?

8. Would you be prepared to be quite ruthless in order to get ahead in your job?

9. Would you be prepared to be humble and honest rather than important and dishonest? (R)

10. Would you like to be very powerful?

note: R = reverse scored; items are answered either "yes" or "no" by respondents

APPENDIX G

Tacit Knowledge Measure (Wagner & Sternberg, 1985)

All questions ask you to rate the importance you would assign to various items in making work-related decisions and judgments.

Use a 1 to 7 rating scale. A rating of 1 should signify "not important" while a 7 should signify "extremely important." A rating of 4 should signify "moderately important."

1----------2----------3----------4----------5----------6----------7		
Not Important	**Moderately Important**	**Extremely Important**

Try to use the entire scale when responding, although not necessarily for each question. For example, you may decide that none of the items listed for a particular question are important, or that they all are. There are, of course, no "correct" answers. You are encouraged to briefly scan the items of a given question before responding to get some idea of the range of importances for the items. Remember, you are being asked to rate the importance you would personally assign each item in making the judgment or decision mentioned in the question item.

Note: Items included in the Managing Career Scale are noted with a (C), those included in the Managing Self Scale are noted with an (S), and those included in the Managing Others Scale are noted with an (O). Items that were reverse-coded are noted with a (-).

I. It is your second year as a mid-level manager in a company in the communications industry. You head a department of about 30 people. The evaluation of your first year on the job has been generally favorable. Performance ratings for your department are at least as good as they were before you took over, and perhaps even a little better. You have two assistants. One is quite capable. The other just seems to go through the motions, but to be of little real help.

You believe that although you are well-liked, there is little that would distinguish you in the eyes of your superiors from the nine other managers at a comparable level in the company.

Your goal is rapid promotion to the top of the company. The following is a list of things you are considering doing in the next two months. You obviously cannot do them all. Rate the importance of each by its priority as a means of reaching your goal.

1. Find a way to get rid of the "dead wood", e.g., the less helpful assistant and three or four others.

2. Participate in a series of panel discussions to be shown on the local public television station. (C-)

3. Find ways to make sure your superiors are aware of your important accomplishments. (C-)

4. Make an effort to better match the work that needs to be done with the strengths and weaknesses of individual employees.

5. Become more involved in local public-service organizations.

6. As a means of being noticed, propose a solution to a problem outside the scope of your immediate department that you would be willing to take charge of. (C-)

7. When making decisions, give a great deal of weight to the way your superior likes things to be done. (C)

8. Accept a friend's invitation to join the exclusive country club that many higher level executives belong to. (C-)

9. Accept a position of responsibility in the upcoming United Fund drive.

10. Ask for comments from superiors about important decisions you need to make.

11. Transfer many employees to get some "new blood" in the department.

12. Become involved in the local chamber of commerce and junior achievement organizations.

13. Adjust your work habits to increase your productivity.

14. Write an article on productivity for the company newsletter.

II. A subordinate has come to you for advice on how to be more successful in the company. You don't know the person well enough to speak in anything but generalities. Rate the following pieces of advice by their importance to succeeding in the company.

15. Regularly set priorities that reflect the importance of your tasks.

16. Try always to work at only what you are in the mood to do.

17. Keep in mind who will ultimately see or use the results of your labor when setting priorities.

18. Identify those tasks you face which are in fact trivial.

19. Do your absolute best on everything you do.

20. Frequently ask yourself whether anyone else should or could do the task.

21. Keep your long-term career goals in mind when setting priorities.

22. Set your priorities by what your boss thinks is important, unless you can sell him or her on a contrary priority.

23. Do routine tasks early in the day so as to be sure to get them done.

III. Your company has sent you to a university to recruit and interview potential trainees for management positions. You have been considering characteristics of students that are important to later success in business. Rate the importance of the following student characteristics by the extent to which they lead to later success in business.

24. Aptitude or intelligence.

25. Ability to set priorities according to the importance of your tasks. (S)

26. Being meticulous about all details.

27. Ability to evaluate critically your work and the work of others.

28. Effectiveness with which you organize your time.

29. Motivation. (S-)

30. Interpersonal skills.

31. Ability to follow through and bring completion to tasks. (S)

32. Creativity.

33. Tendency to try to do everything perfectly.

34. Broad-ranging interests and hobbies.

35. Ability to promote your ideas; to convince others of the worth of your words. (C-)

36. Ability to write well.

37. Speaking ability.

38. Ability to read material in your field with high comprehension.

39. Perseverance in pursuit of a single pet project or goal.

40. The need to win at everything no matter what the cost. (S)

41. Not one to take orders or direction; better at giving advice than taking it.

42. Ability to communicate what you do and think in an interesting manner and to convey your enthusiasm for what you are doing.

43. Knowledge of relevant areas of business (finance, production, etc.).

IV. During one of your recruiting interviews at the university, a student asks you about things one can do to increase one's chances for success in business. Rate each of the following things one might do by its importance to a successful career in business.

44. Avoid criticism of others unless you have a better alternative to propose.

45. Defend your views in the face of all criticism.

46. Make a point to meet the people that may in some way influence the course of your career. (C-)

47. Always say exactly what you think.

48. Take on assignments that potentially may bring your work to the attention of higher-level executives in the company.

49. Be the first to volunteer when volunteers are needed regardless of the importance of the task.

50. Take advantage of opportunities to take on responsibilities beyond the scope of your immediate assignment.

51. Don't worry if your reputation in the company is sagging so long as you know you are doing good work.

52. Dress and behave in a manner that fits the corporate image.

53. Give as much attention to when and how you present something as you do to what you are presenting.

54. Avoid drawing attention to yourself at all costs.

55. Model yourself after a successful superior. (S)

56. Take advantage of opportunities to get favorable attention from the local media. (C-)

V. A number of factors enter into the establishment of a good reputation in a company as a manager. Consider the following factors and rate their importance.

57. Critical thinking ability.

58. Visibility (i.e., well-known throughout the company).

59. Speaking ability. (C-)

60. Ability to set rather than just follow trends.

61. Involvement in public service and charitable organizations.

62. Being regarded as a "team player."

63. Extent of college education and the prestige of school attended. (C-)

64. Proceeding in a manner that avoids mistakes at all costs.

65. Ability to solve "people problems".

66. Ability to get results.

67. No hesitancy to take extraordinarily risky courses of action. (S)

68. Never being one to rock the boat.

69. Belonging to the appropriate clubs and being active in the appropriate organizations.

70. Ability to listen well.

71. Ability to get the job done bottom line.

72. Ability to come across well in meetings.

73. A keen sense of what superiors can be sold on. (C-)

VI. Rate the following characteristics of a job by their importance in leading to a successful career in a given company.

74. The job will bring your work to the attention of higher-level management personnel.

75. The job is considered to be an important one by company personnel.

76. The job should enable you to demonstrate your strengths and to hide to some extent your weaknesses. (S-)

77. Your boss seems to be advancing rapidly.

78. The job is the recent creation of a company reorganization.

79. You can master the job with almost no effort.

80. The job will result in frequent exposure to the local media.

81. The last person who held the job was well-liked.

82. The job is essential to the day-to-day operation of the company even though it is not perceived to be important. (C)

83. The reputation of the department is a poor one, so there is room for improvement.

84. You have your family's support on issues such as travel, working late or on weekends, etc.

VII. Rate the following strategies of working according to how important you believe them to be to doing well at the day-to-day work of a business manager.

85. Always have a variety of projects in progress; many "irons in the fire".

86. Think in terms of tasks accomplished rather than hours spent working. (S)

87. Be in charge of all phases of every task or project you are involved with. (S)

88. Do not force yourself to do tasks you don't feel like doing.

89. Use a daily list of goals arranged according to your priorities. (S)

90. Set personal deadlines to supplement externally imposed ones.

91. Don't try to do everything well -- many tasks are trivial.

92. Avoid schedules and "to do" lists because they are too inflexible.

93. Set aside a regular time for accomplishing important tasks.

94. Delegate tasks to competent others whenever possible.

95. Make good use of waiting time, commuting time, etc.

96. Pay careful attention to scheduling.

97. Carefully consider the optimal strategy before beginning a task. (S-)

98. Reward yourself upon completion of important tasks. (S-)

99. Pay particular attention to the details of a task.

100. Find a way to make a game of quickly completing mundane tasks.

VIII. You have just been promoted to head of an important department in the company. The previous head had been transferred to an equivalent position in a less important department. Your understanding of the reason for the move is that the performance of the department as a whole was mediocre. There were not any glaring deficiencies, just a perception of the department as so-so rather than very good. Your charge was to shape up the department. Results are expected quickly. Rate the following pieces of advice colleagues have given you by their importance in succeeding in your new position.

101. Always delegate to the most junior person who can be trusted with the task.

102. Give your superiors frequent progress reports. (C)

103. Announce a major reorganization of the department that includes getting rid of whomever you believe to be "dead wood." (O-)

104. Concentrate more on your people than on the tasks to be done.

105. Make people feel completely responsible for their work. (O)

106. Never settle for less than a perfect product.

107. Show a concern for the advancement of your people.

108. Fit the job to the person, not the person to the job.

109. Be intolerant of your own mistakes and the mistakes of others.

110. Let your very best people do things pretty much their own way.

111. Be honest in your evaluations of those who are doing poorly. (O)

112. If employees don't fear you then they won't give one-hundred percent.

113. Be careful to avoid the company's "sacred cows".

114. Give some, but very little, positive feedback to keep people trying harder.

115. Make the rules and the process by which you operate explicit.

116. Do not try to do too much too soon.

117. Let employees know their jobs are on the line every day of the week.

118. Understand the limits of your authority and how "the system" operates.

119. Know your people well in terms of their strengths, weaknesses, and aspirations.

120. Promote open communication.

IX. You are looking for several new projects to tackle. You have a list of possible projects and desire to pick the best two or three among them. Rate the importance of the following considerations when selecting projects.

121. Doing the project should prove to be fun. (S-)

122. The project will enable me to demonstrate my talents.

123. The project should attract the attention of the local media. (C-)

124. The project is of special importance to me personally. (S-)

125. The risk of making a mistake is virtually nonexistent. (S-)

126. The project addresses a problem that is recognized to be a serious one.

127. The scope of the project goes beyond my present responsibilities.

128. The project will bring favorable attention to my superiors.

129. The project may enhance cooperation among several departments that have been too autonomous.

130. The project will require working directly with several senior executives. (C-)

X. Rate the following kinds of experience by their importance in becoming a good manager.

131. Having completed an M.B.A. degree from a strong business department.

132. Working for several years as a salesperson.

133. Working your way through the ranks of a company from the bottom.

134. Working for a competitor in a similar position.

135. A strong background in finance.

136. Having worked at a diverse selection of jobs.

137. A strong background in psychology.

138. Having responsibility for things such as paper routes when young.

139. A strong background in the technology used by your company's production facilities.

XI. In business as in other fields, there are often several people who are acknowledged to do extraordinary work. Rate the following characteristics by how important you believe them to be for the success of these individuals.

140. Unusually creative.

141. Highly self-motivated.

142. Very good at selling their ideas to others.

143. Unusually plentiful resources at their disposal (assistants, facilities, etc.).

144. Tremendous need to achieve.

145. Work unusually long hours.

146. Highly efficient work habits.

147. Socially adept. (O-)

148. Lucky.

149. Willing to take substantial risks.

150. Power hungry.

151. Never one to make a mistake.

152. Always the leader in group situations.

153. Having an extraordinary amount of common sense.

154. Better able than most to grasp and operate in terms of the "big picture," i.e., the mission and charter of the company.

155. Having virtually no outside interests -- their job is their life.

XII. Rate the following motivations in terms of their importance as incentives for pursuing a career in management.

156. I think my abilities are a good match to this career choice.

157. I enjoy working with people.

158. I like being a "team player".

159. I would like to make a lot of money.

160. I enjoy responsibility and the power that goes with it.

161. I enjoy leading others.

162. I like to be my own boss.

163. I like a job that I can "leave at the office" at the end of the day. (S-)

164. I am easily bored by routines.

165. I need to do things my own way.

166. I want to lead others, but not be lead by them.

APPENDIX H

Situational Judgment Test

SITUATIONAL JUDGMENT TEST
MANAGERIAL ITEMS

For each of the following scenarios, please indicate your responses to the questions that follow each in the blanks on the scantron sheet you have been provided. When responding, use the following options:

a = 1 b = 2 c = 3 d = 4 e = 5

At the completion of an interview of an individual whom you believe could never qualify to be an acceptable worker for your company, the interviewee asks you about entry requirements to your company. What response do you give?

a. Give the person your truthful and frank opinion about his/her qualifications.

b. Relay the company's stated employment requirements and discuss the competitiveness of the process but do not offer your opinion about the person's chances of employment.

c. Offer specific suggestions that you believe will increase his/her competitiveness.

d. Refer interviewee to the recruitment office of your company where people can assess the individual's qualifications thoroughly.

1. Which of these options would you **most likely** choose?

2. Which of these options would you **least likely** choose?

You and two co-workers are assigned to a project. Co-worker A makes an unwanted advance to co-worker B. Co-worker B is upset and tells co-worker A that such conduct is improper. You observe the scene. What would you do?

a. Since co-worker B handled the situation appropriately, do nothing but be willing to support the co-worker if needed.

b. Explain to co-worker A that such behavior is considered harassment and that you will report it if it does not cease.

c. Privately pull co-worker A aside and express your concerns that such behavior may hurt the working relationship and successful completion of the project.

d. Advise both co-workers about the importance of not letting this encounter interfere with conduct of the project.

e. Tell co-worker A that you consider such behavior unacceptable. Inform the person to stop it and apologize, or you will urge co-worker B to file a complaint.

3. Which of these options would you **most likely** choose?

4. Which of these options would you **least likely** choose?

You are assigned to routine projects with differing deadlines. Several of these projects develop unanticipated complications and you will not be able to meet all of the preset deadlines. How would you proceed?

a. Identify the projects with priorities so that these can be done first and notify your supervisor of the specific delays and new anticipated completion dates.

b. Finish the projects you can on time and request additional help or an extension for the remainder.

c. Seek guidance from your supervisor about what to do.

d. Work overtime as needed to complete as much of the work as possible on time.

5. Which of these options would you **most likely** choose?

6. Which of these options would you **least likely** choose?

You are working on a very important project, and realize that the project requires more resources than have been budgeted for. You have requested and your supervisor has refused to provide the additional resources needed. What would you do?

a. Determine alternative methods of doing the task with less resources.

b. Seek input from others who have experienced similar problems on how to best handle the matter.

c. Discuss with your supervisor the importance of and progress made on the project, exactly why you need the additional resources, and how the lack of resources will impact the work. Try to persuade the supervisor to give you what you need.

d. Put in additional hours as needed so that the project is completed.

e. Request to speak to the next person up the chain of command to request the resources needed.

7. Which of these options would you **most likely** choose?

8. Which of these options would you **least likely** choose?

As a project supervisor, others are responsible for securing and keeping inventory of all project expenses and findings. You become aware of the fact that the log in which all expenditures and important activities are recorded is not being kept. What would you do?

a. Stress to the individual(s) in charge of the log the criticality of keeping good records.

b. Stop the project and have everyone work on getting the log up to date. Do not proceed with the work until the log problem is corrected.

c. Determine why the log is not maintained. Put in place procedures to ensure that the log is kept.

d. Report your findings to your supervisor and document your findings.

e. Reassign the log-keeping responsibility to another worker.

9. Which of these options would you **most likely** choose?

10. Which of these options would you **least likely** choose?

You are responsible for setting up electrical equipment for various projects. One of your team members has performed inconsistently in the past. Your six-member team was given 48 hours to complete a project. No other replacement personnel are available and all six members are need. What would you do?

a. Meet with the inconsistent team member, specifically discuss what you want the person to do, and make sure the person understands his responsibilities.

b. Closely monitor the individual and carefully check over his work after the job is done.

c. Assign the inconsistent worker the easiest tasks and least amount of responsibility.

d. Make sure that the worker understands how important his role is in completing the work and that you need 100% of his effort on this job.

e. Divide the group into teams of workers, assigning the weakest member with the strongest member.

11. Which of these options would you **most likely** choose?

12. Which of these options would you **least likely** choose?

You are assigned a complicated project, and collect hundreds of boxes of documents that need to be inventoried, reviewed, and evaluated. You ask your supervisor for the help of a computer person, but there are none available for a month. You can't operate a computer, but you know this is a priority matter. What would you do?

a. Ask the supervisor to find the available help from another source.

b. Seek funds to hire a temp.

c. Request training to learn the computer skills that you need.

d. Solicit help from co-workers more computer literate than yourself.

e. Have a clerk start the inventory manually until a person with computer skills becomes available.

13. Which of these options would you **most likely** choose?

14. Which of these options would you **least likely** choose?

You are in the office and get a telephone call that requires immediate attention. To perform effectively, you need to change the conditions of a contract, which technically needs approval. Your supervisor is out and cannot be reached. If you change the conditions of the contract, you may be reprimanded later for not having proper approval. If you do nothing, the contract may be lost. What would you do?

a. Seek approval from the next person in the chain of command.

b. Make a decision about which is more important to the company, the technical requirement or ensuring that the contract is maintained, and act accordingly.

c. Do what it takes to close the contract and follow up with documentation to justify your actions.

d. Follow the procedures and risk the contract if necessary.

15. Which of these options would you **most likely** choose?

16. Which of these options would you **least likely** choose?

You are an experienced employee. A new employee comes to you for assistance. You spend time showing the employee how to do a task. Next month the same thing happens and you again help the new employee do the same task. This situation continues and you finally get upset since the new employee should be able to do the task alone. How do you proceed?

a. Explain to the person that you do not understand what the problem is with the task but that you have helped as much as you can.

b. As long as the person was trying, continue to show the person how to do the task.

c. Ask the employee to take notes or make a copy of the product to use as a guide in the future for how to perform the task.

d. Inform the employee to pay careful attention because this is the last time you will demonstrate how to do the task.

e. Sit down with the employee to try to determine what the problem is so that you can figure out the best way to deal with the situation from here on.

17. Which of these options would you **most likely** choose?
18. Which of these options would you **least likely** choose?

You observe another employee performing her job in a questionable manner. The other employee is assigned to a different group, but her performance could affect the outcome of your project. On the other hand, if you report the employee, it could cause friction with the other group and that could affect the long term working relationship between the two groups. What would you do?

a. Accept the employee's deficiencies and work around them.

b. Discuss your problems with the employee, and inform her that if her performance does not improve you will be forced to report her.

c. Without making the problem employee suspicious, get another worker to aid her in getting her work done.

d. Advise a supervisor of the problem.

e. Set up a group meeting in which all employees discuss the problems they have encountered in achieving the group's goals. Bring up this employee if necessary.

19. Which of these options would you **most likely** choose?

20. Which of these options would you **least likely** choose?

The supervisor is out of the office and an emergency arises that requires the immediate assignment of personnel. The secretary notifies you of the situation and explains that the supervisor is out of contact for at least three hours. The supervisor's immediate supervisor is also unavailable, but scheduled to return within the hour. How would you proceed?

a. Immediately make the assignment of needed personnel, and explain to the supervisor on his/her return.

b. Find another supervisor of appropriate status and advise them of the situation.

c. Simultaneously continue searching for one of the supervisors, and notify the personnel likely to be assigned to the emergency.

d. Call a meeting of the employees to discuss the situation. Collectively make a decision on what to do.

21. Which of these options would you **most likely** choose?
22. Which of these options would you **least likely** choose?

You're working on a deal that involves a lot of paperwork and record reviewing with another employee. You take leave and come back to find that your desk is filled with more records. The employee you were working with re-arranged your papers and desk, and you can't tell what was already reviewed and what you've done. You're angry. What would you do?

a. Take a few minutes to cool down and then request that the employee report what progress has been made in written and oral form.

b. Ask the co-worker if he/she knew where you had left off since the records are now shifted.

c. Inform the employee that you are angry for what he/she has done and tell the employee that in the future you do not want him/her to touch your desk.

d. Assume that the employee has no bad intentions, and try to re-sort the piles.

e. Realize it is your fault for leaving the files unattended on your desk.

23. Which of these options would you **most likely** choose?
24. Which of these options would you **least likely** choose?

A senior, highly commended co-worker has recently experienced some personal difficulties. He has confided these problems only to you. You have experienced an increased workload because of his problems. You have talked to him about your concerns, and empathetically requested that he resume full duties as soon as possible. A month passes and you are still doing too much of his work. What would you do?

a. Inform your co-worker that you understand his problems, but are no longer able to perform his work for him.

b. Ask your co-worker to take vacation, sick days, or a leave of absence until he has resolved his problems.

c. Continue to inform your co-worker of your concerns until he resumes his full job duties.

d. Talk to your supervisor about the situation.

e. Report your co-worker's actions to his supervisor.

25. Which of these options would you **most likely** choose?
26. Which of these options would you **least likely** choose?

After delegating work to several teams of employees, you subsequently obtain all of the necessary paperwork/reports from all of the teams, except for one. You repeatedly approach the person responsible for the work and on each occasion, he gives you a general excuse and promises to produce them. As you come closer to concluding the project, you are requested to provide the paperwork/reports. What would you do?

a. I would advise the person that all other teams have turned in their paperwork in a timely and professional manner, but his excuses and delays are undermining the total effectiveness of the project.

b. Confront this person, and threaten to report it to the supervisor.

c. Tell the person that the paperwork is due now, but that you will help him if needed.

d. Simply turn in the reports that you have.

e. Try to finish the report yourself, making a notation that this employee was unreliable.

27. Which of these options would you **most likely** choose?

28. Which of these options would you **least likely** choose?

You have been told to work with a vice-president of the company to assist you in negotiating a contract. You have called the VP to try to set up a meeting. The morning of the meeting she calls to cancel, but tells you that she will call to reschedule your meeting. A week goes by and you do not hear from the VP. You call again and leave messages. The VP does not call. What would you do?

a. You would advise your supervisor of the problem, and ask for his or her input.

b. Call the VP's secretary to have her re-schedule the meeting.

c. Ask that someone else be assigned to this case.

d. Request the VP to re-schedule a date in writing.

e. Physically confront the VP.

29. Which of these options would you **most likely** choose?
30. Which of these options would you **least likely** choose?

You are the team leader for a large project with five others assigned to assist you. Four of the five have completed their assignments and turned them in on time. The other individual is continually advising you the work is forthcoming and that there must be a problem in the steno pool. The deadline for the project is 9:00 a.m. tomorrow. At 2 p.m., you check with the steno pool and are advised they have yet to receive any work from this individual. What would you do?

a. You would call the co-worker and advise him/her that you know that he/she has not turned in any work to the steno pool, and to get it there immediately.

b. Go to a superior and advise him/her of the situation.

c. Take any necessary action to get the work done, and then report it to a superior.

d. Help the individual as necessary, and remove this person from any future team projects.

e. Turn in the incomplete project as is.

31. Which of these options would you **most likely** choose?

32. Which of these options would you **least likely** choose?

You have been involved in a long project that is rather unique in scope. The project is far from being finished. When your new supervisor begins to interject his ideas and then begins to force you to adopt these suggestions, what do you do?

a. You would do as he suggests because he is your superior, but document the times you disagreed.

b. You would explain your vision of the project, and stand firm with the direction you think it should be headed in.

c. Explain your point of view, and try to reach a compromise.

d. Explain that you have been working on this longer than him, and you are best qualified to determine the direction of the project.

e. You would talk to his supervisor about your concerns.

33. Which of these options would you **most likely** choose?
34. Which of these options would you **least likely** choose?

One of your friends calls you to ask for information about prices paid for your company's products and services. You know that this is private information. What would you do?

a. Refuse, explaining that this is not ethical.

b. Give them the name of someone else who might help them.

c. Since you are friends, you feel you can trust him/her, so you supply the information.

d. Refuse, and then report your friend to the authorities if this solicitation was illegal.

e. Tell him/her what you can without going against the rules/law.

35. Which of these options would you **most likely** choose?

36. Which of these options would you **least likely** choose?

For the past three weeks you have been working on a presentation to a potential client interested in a product that will support their needs. The presentation is scheduled for the next day. Then another person in your group suggests to you that your presentation might be too heavily technical to be understood by the client. What would you do?

a. Work all night to adjust the presentation to the expertise level of the client.

b. Decide on your own if the client will understand the presentation, then proceed from there.

c. Ask for help from the person who made the suggestion in revising the presentation.

d. Conduct a question and answer period after the presentation to clarify any technical terms or concepts.

e. Leave the presentation as it is, and proceed as planned.

37. Which of these options would you **most likely** choose?

38. Which of these options would you **least likely** choose?

Two of your peers (you are not their manager but you all work for the same manager) dislike each other and are constantly arguing. Their attitude toward each other creates an uncomfortable feeling of hostility and tension. What would you do?

a. You advise the supervisor after talking with your peers.

b. You would do nothing because it is not your responsibility. Only the supervisor should handle this problem.

c. You suggest to your peers that they talk with the manager about their conflicts.

d. You try to mediate their differences on your own.

e. You let them handle it themselves because they are adults.

39. Which of these options would you **most likely** choose?

40. Which of these options would you **least likely** choose?

One of your projects is experiencing a variety of problems that threaten to make it slip behind schedule. Others working on this project with you want to delay it because of the problems. Another option would be to work overtime and keep the project on schedule. What would you do?

a. You base your decision on the importance of this deadline in comparison to your other projects and responsibilities.

b. You work overtime to complete the project by the deadline.

c. You have everyone vote on what should be done.

d. You define the problems and find solutions, working overtime only if necessary.

41. Which of these options would you **most likely** choose?

42. Which of these options would you **least likely** choose?

You have volunteered to serve on the United Way Committee. The person in charge of the committee is disinterested in it. He frequently arrives late for meetings discussing personal matters, and complains that his talents are wasted there. What would you do?

a. You convince him to resign and take his position or get someone more interested assigned.

b. You approach the leader and offer assistance with some aspects of the project in an attempt to motivate him.

c. You ask him if you could head the drive while reporting to him.

d. You threaten to stop helping unless he shows more interest.

43. Which of these options would you **most likely** choose?

44. Which of these options would you **least likely** choose?

Your department has been following a particular procedure for the past two years. Lately though, some people have been complaining about it. Your manager asks you to revise the procedure. What would you do first?

a. You talk to members and get their suggestions to come up with the best possible procedure.

b. You ask everyone to list their complaints and revise the current procedure accordingly.

c. You evaluate the existing procedure and implement changes you believe will resolve the problem.

d. You review the complaints with the people involved to see if their complaints are valid before proceeding to suggest any revisions.

45. Which of these options would you **most likely** choose?

46. Which of these options would you **least likely** choose?

You work with people who are not as well educated as you and who seem to resent your presence there. As a result, you are finding it hard to get their cooperation when you need it. What would you do?

a. You play dumb and try not to appear educated.

b. You try to talk with them to resolve the problem and stress the importance of teamwork.

c. You make sure that you do not talk above their level or talk at them to facilitate communication.

d. You keep working hard so that you can gain their respect.

e. You try to be their friend and create the impression that you are all alike.

47. Which of these options would you **most likely** choose?

48. Which of these options would you **least likely** choose?

Your manager gives you a major assignment and spells out in a general way how you should approach it. As you begin, you become convinced that your manager's method is inefficient and you want to do it another way. What would you do?

a. You do it your way convinced that the end result is the only important consideration.

b. You develop your way and approach the manager with a detailed reason why you are heading in a direction opposed to his.

c. You use some of the manager's ideas and your own.

d. You use your best judgment to get the project done the best way you can.

e. You make suggestions and act on your manager's opinions after considering the suggestions.

49. Which of these options would you **most likely** choose?

50. Which of these options would you **least likely** choose?

You just spent two days working on a very sensitive letter to a customer. You gave it to your manager for review. A couple of hours later she gives it back to you with extensive suggestions for revision, primarily involving editorial changes that reflect her preferred style of letter writing. What would you do?

a. If you feel the letter is accurate, you let the letter go out as is; that is, you do the letter your way.

b. You tell her the sensitivity of the letter and that it needs to be said in your style of writing and not hers.

c. You change the letter, but explain why you wrote it as you did.

d. You try to compromise and do some of her suggested revisions.

e. You make the changes, but have the manager sign her name to it.

51. Which of these options would you **most likely** choose?

52. Which of these options would you **least likely** choose?

You are working on several important assignments simultaneously. People are counting on you to complete them when you promised. However, events beyond your control make it impossible for you to finish them all on time. What would you do?

a. You prioritize the assignments, knowing that some will not get done.

b. You discuss the problem with each person involved and explain why the projects won't be done on time.

c. If you cannot get extensions to the deadlines on these projects, ask for help.

d. You finish the assignments when you can.

e. You meet with those involved, explain the situation and request their input and assistance.

53. Which of these options would you **most likely** choose?

54. Which of these options would you **least likely** choose?

You are part of a three-person team working on a project with a short deadline. One member of the team is not pulling her weight. She avoids assignments, complains about the amount of work that has to be done, and says the project doesn't really matter anyway. All three of you are at the same level, but you are the team leader. What would you do?

a. You discharge her and get a replacement.

b. You try to talk to that person and inform the supervisor of the problem.

c. You ask her to do her share of the work or leave.

d. You let her know the importance of her participation with the project.

e. As the team leader, you tell her to stop complaining and do her job.

55. Which of these options would you **most likely** choose?

56. Which of these options would you **least likely** choose?

You are a member of a team that just completed a project. The person for whom the project was done calls you to complain about an error. He is very upset, but the error is not related to the part of the project for which you were personally responsible. What would you do?

a. You bring it to the attention of the person that was responsible and have that person contact the complainant if you cannot correct the problem yourself.

b. You tell the person responsible for the error that he should contact the team leader.

c. You tell the person for whom the project was done that you will handle the problem and then work with the person responsible for the error to remedy the situation.

d. You take the responsibility, try to correct the error and apologize.

57. Which of these options would you **most likely** choose?

58. Which of these options would you **least likely** choose?

You have just made a formal presentation to a group of people at your own supervisor's level. One of them tells you that if you worked for her, she would never allow you to speak before a group because your presentation was totally inept. What would you do?

a. You consider comments from other as well which may discount her criticisms.

b. You smile and thank her for her remarks.

c. You ask her for specifics as to why your presentation was poor.

d. You take the criticism constructively and use it to improve next time.

e. You talk to your supervisor about the comment.

59. Which of these options would you **most likely** choose?

60. Which of these options would you **least likely** choose?

APPENDIX I

Experience Measure

Experience Questionnaire

For each of the following questions, please place your answer on the scantron sheet provided. Be sure to match the number of the items to the numbers on the scantron sheet, and begin with number [1] on your scantron.

[Work Experience]

1. How many jobs (both part-time and full-time) have you held since you began high school?

   1. None
   2. 1-2
   3. 3-5
   4. 6-10
   5. More than 10

2. How many of your jobs have been in service-related fields (for example, food service or retail organizations)?

   1. None
   2. 1-2
   3. 3-5
   4. 6-10
   5. More than 10

3. How many of your jobs have been clerical jobs (for example, secretarial work)?

   1. None
   2. 1-2
   3. 3-5
   4. 6-10
   5. More than 10

4. How many of your jobs have been in construction or manufacturing fields (for example, working on the line at a plant)?

   1. None
   2. 1-2
   3. 3-5
   4. 6-10
   5. More than 10

5. How many of your jobs have been in fields other than those listed in questions [2, 3, and 4] above?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

6. In how many of your jobs have you held a position designated by your employer as a "management" position?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

Please use the following options to respond to the next set of questions, using the scantron sheet to record your answers. If you are currently employed, please respond to questions [7-11] with respect to your current job; if not, please respond with respect to the last job you held.
If the question does not apply to you, please enter a 7.

6	5	4	3	2	1
Very Much	A Large Amount	A Moderate Amount	A Small Amount	A Very Small Amount	Not Much At All

7. How much responsibility were you given in your most recent or current job?

8. To what extent were you responsible for training new employees in your most recent or current job?

9. In your most recent or current job, how responsible were you for deciding on how to proceed in performing the tasks required of you?

10. In your most recent or current job, how much emphasis was put on your duties with respect to customer service?

11. In your most recent or current job, how much interaction did you have with members of management?

12. Over the course of your last three jobs, how much responsibility have you been given?

6	5	4	3	2	1
Very Much	A Large Amount	A Moderate Amount	A Small Amount	A Very Small Amount	Not Much At All

If the question does not apply to you, please enter a 7.

13. Over the course of your last three jobs, how much responsibility have you been given for training new employees?

14. Over the course of your last three jobs, how much responsibility have you been given for deciding how to proceed in performing the tasks required of you?

15. Over the course of your last three jobs, how much emphasis has been put on your duties with respect to customer service?

16. Over the course of your last three jobs, how much interaction have you had with members of management?

[School Experience]

The next set of questions will ask you about your experiences in high school and college. When answering these questions, consider academic clubs to be any club focused on issues of academic content (for example, Math or Science Clubs) as well as any club whose requirements for entry were certain academic standards (like National Honor Society). Consider extracurricular activities to be those for which grades may or may not have been given (such as band or athletics) but whose primary purpose was the development of something other than a strict "academic" ability. Examples are given to help you determine where various types of activities fit best, so be certain to read the questions carefully.

1. How many academic clubs (for example, National Honor Society) were you a member of in high school?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

2. How many extracurricular activities (for example, band, athletics, or drama) were you involved with in high school?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

3. For how many years in high school were you involved in at least one extracurricular activity from question [2] above?

1.	None	4.	3 years
2.	1 year	5.	4 years
3.	2 years		

4. To how many leadership positions were you elected in the clubs and other organizations you were involved with in high school?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

5. How many academic clubs (for example, Physics Club, Phi Beta Kappa, etc.) have you been a member of since beginning college?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

6. How many extracurricular activities (for example, fraternities or sororities) have you been involved in since entering college?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

7. For how many years in college have you been involved in at least one extracurricular activity from question [6] above?

1.	None	4.	3 years
2.	1 year	5.	4 or more years
3.	2 years		

8. To how many leadership positions have you been elected in the clubs and other organizations you've been involved in since entering college?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

Please use the following options to respond to the next set of questions, using the scantron sheet to record your answers.

6	5	4	3	2	1
Very Much	A Large Amount	A Moderate Amount	A Small Amount	A Very Small Amount	Not Much At All

If the question does not apply to you, please enter a 7.

9. How much responsibility did you have for organizing the activities of the clubs and organizations you were involved in during high school?

10. How much responsibility have you had for organizing the activities of the clubs and organizations you have been involved in since entering college?

11. How much interaction did you have with the faculty sponsor(s) of the clubs and organizations you were involved in during high school?

12. How much interaction have you had with the faculty sponsor(s) of the clubs and organizations you have been involved in since entering college?

13. How much responsibility did you have, in general, in the clubs and organizations in which you were involved in high school?

14. How much responsibility have you had, in general, in the clubs and organizations you have been involved in since entering college?

[Church/Community Experience]

1. How many social groups have you been involved in at your church/place of worship?

1.	Does not apply	4.	3-5
2.	None	5.	6-10
3.	1-2	6.	More than 10

2. How many non-religious community groups (for example, Neighborhood Watch, Big Brothers/Sisters) have you been involved in?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

3. How many leadership positions have you held on committees organized by members of your church/place of worship?

1.	Does not apply	4.	3-5
2.	None	5.	6-10
3.	1-2	6.	More than 10

4. How many leadership positions have you held in non-religious community groups?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

5. How many times have you served as a camp counselor?

1.	None	4.	6-10
2.	1-2	5.	More than 10
3.	3-5		

Please use the following options to respond to the next set of questions, using the scantron sheet to record your answers.

6 ---------- 5 ---------- 4 ---------- 3 ---------- 2 ---------- 1

Very Much	A Large Amount	A Moderate Amount	A Small Amount	A Very Small Amount	Not Much At All

If the question does not apply to you, please enter a 7.

6. How much responsibility have you had in the social groups in which you have been involved at your church/place of worship?

7. How much responsibility have you had in the community groups in which you have been involved?

8. How much responsibility have you had in the volunteer groups in which you have been involved?

9. How much responsibility have you had when serving on committees organized by individuals in your church/place of worship?

10. How much responsibility have you had when serving as a camp counselor?

11. How much interaction have you had with the leaders of social groups (other than yourself) in your church/place of worship?

6	5	4	3	2	1
Very Much	A Large Amount	A Moderate Amount	A Small Amount	A Very Small Amount	Not Much At All

If the question does not apply to you, please enter a 7.

12. How much interaction have you had with the leaders of community groups (other than yourself) in which you have been involved?

13. How much interaction have you had with committee chairpersons (other than yourself) in your church/place of worship?

14. How much interaction did you have with the camp director and his/her upper-level assistants while serving as a camp counselor?

APPENDIX J

Self-Regulation Measure
(adapted from Ashford & Tsui, 1991)

Please use the following scale to respond to the following questions. For each question, consider how much the statement applies to your behavior in school and work environments over the past year.

6	5	4	3	2	1
Always True	Usually True	Sometimes True	Infrequently True	Rarely True	Never True

1. Negative feedback stimulates me to consider how I can perform better.

2. I often think about how I can improve my performance even when no one has offered me feedback.

3. I pay attention to the work I'm doing to see if it can be improved.

4. I often think about finding feedback from informal sources.

5. When the task I'm working on does not seem to be going well, I like to figure out what's going on.

APPENDIX K

Learning Style Measure
(Romero, Tepper, & Tetrault, 1992)

1.	I would describe myself as impartial (open-minded)	1	2	3	4	5	6	I would describe myself as explicit (definite)
2.	I would describe myself as reflective	1	2	3	4	5	6	I would describe myself as action-oriented
3.	I like to be specific	1	2	3	4	5	6	I like to remain flexible
4.	I value patience	1	2	3	4	5	6	I value getting things done
5.	I like things to be varied and colorful	1	2	3	4	5	6	I like things to be exact and precise
6.	I would describe myself as a doer	1	2	3	4	5	6	I would describe myself as an observer
7.	I take a creative and imaginative approach to solving problems	1	2	3	4	5	6	I take a precise and calculated approach to solving problems
8.	I feel good when I understand	1	2	3	4	5	6	I feel good when I have an impact on things
9.	I like to stay flexible (not get too focused)	1	2	3	4	5	6	I like to get as focused as possible
10.	I am good at getting things accomplished	1	2	3	4	5	6	I am good at seeing things from many perspectives
11.	I would describe myself as evaluative and logical	1	2	3	4	5	6	I would describe myself as receptive and accepting
12.	I like to watch what is going on	1	2	3	4	5	6	I like to see the results of my actions
13.	I strive for versatility	1	2	3	4	5	6	I strive for accuracy
14.	I am reserved	1	2	3	4	5	6	I am prepared

note: Odd-numbered items reflect the concreteness (L) vs. abstractness (R) dimension, while even-numbered items reflect reflection (L) vs. action (R); 3, 6, 10, & 11 are reverse-scored

APPENDIX L

LISREL 8 Control Statements

I. Model Without Equality Constraints

```
Initial Thesis Analysis -- Micro Models
observed variables=sjt tkpos intrprs commskil probsolv selfpos carpos
  othpos tolamb commcomp machscor workexp edexp selfreg
  concrete action extrav open consc
correlation matrix from file thesis5.cor
standard deviations from file thesis2.sd
sample size=348
selfpos=selfreg consc concrete action
othpos=machscor edexp extrav commcomp
carpos=workexp open tolamb
commskil=extrav commcomp edexp
intrprs=machscor extrav edexp
probsolv=workexp consc open tolamb
let the errors between selfpos and probsolv correlate
let the errors between othpos and intrprs correlate
let the errors between othpos and commskil correlate
let the errors between carpos and probsolv correlate
let the errors between selfpos and othpos correlate
let the errors between selfpos and carpos correlate
let the errors between carpos and othpos correlate
let the errors between commskil and intrprs correlate
let the errors between commskil and probsolv correlate
let the errors between probsolv and intrprs correlate
path diagram
lisrel output rs ef mi va sc
```

II. Model With Equality Constraints

```
Final Thesis Analysis -- Micro Models
observed variables=sjt tkpos intrprs commskil probsolv selfpos carpos
  othpos tolamb commcomp machscor workexp edexp selfreg
  concrete action extrav open consc
correlation matrix from file thesis5.cor
standard deviations from file thesis2.sd
sample size=348
relationships:
intrprs=machscor extrav edexp
commskil=extrav commcomp edexp
probsolv=workexp consc open tolamb
selfpos=selfreg consc concrete action
carpos=workexp open tolamb
othpos=machscor edexp extrav commcomp
set tolamb -> carpos = tolamb -> probsolv
set commcomp -> othpos = commcomp -> commskil
set machscor -> othpos = machscor -> intrprs
set workexp -> carpos = workexp -> probsolv
set edexp -> intrprs = edexp -> othpos = edexp -> commskil
set extrav -> othpos = extrav -> intrprs = extrav -> commskil
set open -> carpos = open -> probsolv
set consc -> selfpos = consc -> probsolv
let the errors between selfpos and probsolv correlate
let the errors between othpos and intrprs correlate
let the errors between othpos and commskil correlate
let the errors between carpos and probsolv correlate
let the errors between selfpos and othpos correlate
let the errors between selfpos and carpos correlate
let the errors between carpos and othpos correlate
let the errors between commskil and intrprs correlate
let the errors between commskil and probsolv correlate
let the errors between probsolv and intrprs correlate
path diagram
lisrel output: rs ef mi va sc
```

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