The effect of gender self-schema on the accuracy of job evaluation ratings

John R. Curtis Jr

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THE EFFECT OF GENDER SELF-SCHEMA ON THE ACCURACY OF JOB EVALUATION RATINGS

A Thesis
Presented to the
Department of Psychology
and the
Faculty of the Graduate College
University of Nebraska at Omaha

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
University of Nebraska at Omaha

by
John R. Curtis, Jr.
May 1988
THESIS ACCEPTANCE

Accepted for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the requirements for the degree Master of Arts, University of Nebraska at Omaha.

Committee

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ABSTRACT

Previous research has examined sex of evaluator and sex-type of jobs as sources of systematic bias on job evaluation ratings. The present study attempted to go beyond the global notion of sex of evaluator and examine the effect of the information processing characteristics associated with an evaluator’s gender self-schema on evaluation ratings. Gender self-schema theory states that gender self-schematics possess more and have increased processing efficiency to relevant gender information. It was proposed that the content and information processing characteristics associated with gender self-schematics would increase the rating accuracy of gender relevant jobs and job evaluation factors. Eighty-four undergraduate college students with masculine, feminine, or androgynous schemata were randomly assigned to either a male or female sex-type job description condition. The results showed that all subjects exhibited greater differential accuracy for masculine and neutral dimensions when rating male and female sex-typed jobs respectively. Gender schema versus self-schema theory, job evaluation training, and accuracy bias are discussed in relation to the present findings.
Chapter I

INTRODUCTION

Background

Potential sources of systematic bias in job evaluation judgments have become a major concern within the field of Industrial/Organizational Psychology. Research in this area, however, has been relatively scarce (Arvey, 1986). Several studies have examined sex of the evaluator as one source of systematic bias on job evaluation outcomes. The hypothesis has been that female dominated jobs might be evaluated lower by male evaluators compared to female evaluators on job evaluation instruments. Previous research has demonstrated no significant effect of sex of evaluator on job evaluation ratings (Carlisi & Barrett, 1985; Durr, 1985; Grams & Schwab, 1985; Mahoney & Blake, 1979; Schwab & Grams, 1985). Research also has examined the sex-type of jobs as a source of systematic bias. Results concerning the effect of job gender on job evaluation ratings across the evaluators have been mixed. Several studies have demonstrated no significant effect of job gender on job evaluation ratings (Grams & Schwab, 1985; Schwab & Grams, 1985). Several studies, however, have found a significant effect of job gender on job evaluation ratings (Carlisi & Barrett, 1985; Durr, 1985; Mahoney & Blake, 1979).
The purpose of the present paper was to go beyond the global notion of the effect of sex of the evaluator on job evaluation ratings of sex-typed jobs and examine the effect of information processing characteristics with respect to gender of the evaluator. This goal was achieved by examining the gender self-schema of the evaluator. Gender self-schemata influences both the input and output of information related to the self by selecting what information is attended to, how it is structured, and how much importance is given to it. Thus, gender schematics demonstrate greater attention, memory, endorsement, processing capabilities, and expertise to relevant gender information relative to nonrelevant gender information (Markus, 1977; Markus, Crane, Berstein, and Siliadi, 1982; Markus, Smith, and Moreland, 1985). The present study proposed that the information processing characteristics of gender self-schematics would increase the accuracy of job evaluation ratings on gender relevant job dimensions of job evaluation instruments and job descriptions.

JOB EVALUATION

Job evaluation is a judgmental measurement procedure used to determine the relative worth of jobs within an organization. It was first employed in 1871 by the U.S. Civil Service Commission (Patton, Littlefield, & Self, 1964) and has since evolved into a variety of methods and procedures that are used for establishing compensation rates
in organizations. Four traditional job evaluation methods are the ranking method, classification method, factor comparison method, and the point method. The point method has become the most popular job evaluation instrument to be used in research and the industrial setting. The strength of the point method is that it measures the internal worth of a job, independent of the market. This enables job worth comparisons within an organization. Additional advantages of this method are that the job evaluation ratings made by the evaluators are relatively more reliable and valid, objectivity may be increased, and the flexibility in choosing the number of factors and degrees that make up an organization's job evaluation instrument is increased (Cascio, 1982).

Point methods consist of compensable factors, such as skills required, effort required, responsibility, and working conditions. These factors are composed of numerically scaled degrees and weights reflecting the relative importance of each factor. Basic steps for designing a point plan begin with a thorough job analysis of the jobs within an organization. Compensable factors are then chosen based on work relatedness, acceptability to management and employees, and the applicability to the organization. Key decision makers from various functions of an organization, along with compensation specialists; make up a committee which presents, reviews, defines, establishes degrees, and weights a set of factors that represent aspects
of the work valued by that organization. These compensable factors, then, make up the point method job evaluation instrument for that particular organization. Jobs are rated on each compensable factor and totaled to derive the job’s relative value within the organization. From this, each job’s location in the pay structure and compensation rate is determined (Cascio, 1982; Milkovich & Newman, 1984).

A major criticism of the job evaluation process has been that it may be subject to systematic sex-based errors (Arvey, 1986). Sex-based errors may occur when conducting the job analysis, writing the job description, and/or evaluating the job utilizing a job evaluation instrument (Schwab & Wichern, 1983). The main assumption has been that these sex-based errors result in a systematic bias against jobs dominated by female incumbents and a systematic bias in favor of jobs dominated by male incumbents in the job evaluation process (Arvey, 1986; Remick, 1981; Schwab & Wichern, 1983; Treiman & Hartmann, 1981). The literature describes three possible sources of systematic sex-based error: sex of evaluator, scale gender, and job gender.

One possible source of systematic error is the sex of the individuals performing job evaluation. The hypothesis here is that male evaluators evaluate jobs held predominately by females less favorably than if they were evaluated by female evaluators. Evidence does not support this assumption. Arvey, Passino, and Lounsbury (1977)
studied the effect of evaluator sex on evaluations utilizing the Position Analysis Questionnaire (PAQ). They found female evaluators gave relatively lower PAQ scores to jobs regardless of job gender across 22 out of 32 PAQ job dimensions. This shows some evidence of a sex of evaluator effect on job analysis evaluations, but it has failed to be replicated on job evaluation instrument ratings. Grams and Schwab (1985) and Schwab and Grams (1985) both found no significant effect of sex of evaluator on job evaluation ratings utilizing college students and compensation practitioners, respectively. This led Schwab and Grams (1985) to conclude that "the evidence to date suggests [biases regarding sex in job evaluation] generalize across the sexes of those making the judgments" (p.538). Two unpublished manuscripts Carlisi (1985) and Durr (1985) further reinforced Schwab and Gram's conclusion by also finding no significant effect of sex of evaluator on job evaluation ratings utilizing college students. One possible explanation why the sex of evaluator does not affect evaluation ratings is that raters' cognitive structures associated with their gender may be a more important and relevant variable when examining rating processes than biological sex. Two theories in the literature which have examined individuals' gender cognitive structures are gender schema and self-schema theories.
GENDER SELF-SCHEMA

Job evaluation consists of the processing of job information, such as job title, job description, job specification, and the information from the job evaluation instrument, in order to form a judgment concerning which rating to give a job on a particular scale on the instrument. Thus, how evaluators perceive and remember job information may significantly affect job evaluation outcomes. Schemata theory proposes explanations for the mechanisms and information processing characteristics of these two key cognitive processes, perception and memory. Schemata theory states that individuals are differentially selective as to what they perceive and remember from the vast amount and variety of social information presented to them. This selective tendency is determined by internal cognitive structures known as schemata, which may include frames, scripts, prototypes, and stereotypes that individuals possess and are central for encoding, representing, and processing information (Fiske & Dyer, 1985; Markus, 1977).

Schemata theory is essentially a theory about knowledge for a particular domain. Schemata represent "cognitive generalizations that are based on frequent past experiences with objects, events, or people to which one is exposed" (Strubbe, Berry, Lott, Fogelman, Steinhart, Moergen, & Davison, 1986, p.170). The knowledge from the schema
provides the basis for processing information relevant to that domain. Rumelhart (1984) describes schemata as "the fundamental elements upon which all information processing depends" (p. 162). They are active in guiding attention and memory and in categorizing, interpreting, and comprehending social information (Crane & Markus, 1982; Fiske & Taylor, 1984). Schemata are also depicted as being analogous to plays (Rumelhart, 1984). A particular schema such as "buy", leads to associations with "purchaser" and/or "seller". Thus, the more elaborate the schema, the more linkages and associations are connected to it from memory. In sum, schemata are rich in content information, guide our selective tendencies, and link associated knowledge from memory, for a particular domain. The main premise of this study was that evaluators making job evaluation ratings may differ in their schemata with respect to gender.

Bem (1981) proposed a theory called gender schema theory. Bem stressed the importance of society or culture in establishing the sex-type of individuals. An individual learns from his or her society appropriate associations regarding sex such as, "anatomy, reproduction function, division of labor, and personality attributes". She stated that sex typing, the "process by which a society transmutes male and female into masculine and feminine", is a function of gender based schematic processing (Bem, 1981, p.354). She delineated four classifications of gender schema individuals: sex-typed, individuals who indicate
sex-congruent attributes describe themselves; cross sex-typed, individuals who indicate sex-incongruent attributes describe themselves; androgynous, individuals who indicate both sex-congruent and sex-incongruent attributes describe themselves; and undifferentiated, individuals who indicate both sex-congruent and sex-incongruent attributes do not describe themselves. Bem hypothesized and experimentally confirmed that sex-typed individuals have a "generalized readiness to encode and organize information including information about the self in terms of the culture's definitions of masculinity and femininity" in comparison to nonsex-typed typed individuals (Bem, 1982, p.1192). The central point of Bem's theory is process. Individuals who are sex-typed have greater saliency to gender connotations of both masculine and feminine stimuli. She did not advocate information processing efficiency, but only that these individuals have a general tendency to divide the world into masculine and feminine categories. Nonsex-typed typed individuals, who are aschematic to gender, do not have this general tendency (Bem 1981, 1982; Frable & Bem, 1985).

At about the same time as Bem's (1981) gender schema theory was proposed, Markus, Crane, Bernstein, and Siladi (1982) presented a similar theory; self-schema theory. Self-schema theory describes schemata as "cognitive generalizations about the self, derived from past experience, that organize and guide the processing of
self-related information contained in the individual's social experiences" (Markus, 1977, p. 64). Self-schemata are incorporated into the self-concept and facilitate information processing about the self for a particular domain. They influence both the input and output of information related to the self by selecting what information is attended to, how it is structured, and how much importance is given to it. Gender self-schema theory focuses on the way gender is incorporated in the self-concept. Markus et al. (1982, p. 64) state that "even though virtually all individuals develop some basic appreciation and understanding of their biological sex, only some individuals seem to construct an elaborated self-schema about their gender". The main premise of Markus et al.'s theory is that gender self-schematics contain differentiated amounts of a particular type of gender information and process this information efficiently.

Markus et al. (1982) hypothesized that the schemata of individuals (masculine, feminine, androgynous, aschematic) would differ in the gender content of their knowledge structure as well as their information processing efficiency. Results from their study showed that gender self-schematics had a great deal of differentiated gender knowledge content relevant to their gender self-schema. This point differs from gender schema theory. Gender schema theory vaguely clarifies its position on the nature of gender knowledge content among gender schematics. According
to the theory, masculine, feminine, and androgynous schematics do not have differentiated knowledge of masculine and feminine domains. Thus, Bem’s gender schematic most closely resembles Markus et al.’s androgynous self-schematic.

Gender self-schema theory also differed with gender schema theory concerning the information processing efficiency of gender schematics. Markus et al. believed and found that gender self-schematics remembered, endorsed, and were experts concerning gender relevant stimuli, supporting information processing efficiency. Bem (1982), however, stated gender schematics were not efficient. Crane and Markus (1982) challenged this point stating Bem (1981) found enhanced recall and quick judgments of gender relevant stimuli, and, thus, her findings represented efficiency in information processing.

In the context of the present analysis, a conclusion can be drawn that gender self-schematics do process gender relevant information more efficiently and are not schematic to both masculinity and femininity, supporting Crane and Markus (1982). This, however, does not eliminate Bem’s theory. The basic principles of both theories are not in direct opposition to each other as Bem (1982) has advocated. Bem (1981) proposed and confirmed that gender schematic individuals sort gender information into culturally defined sex-types and are quick to endorse gender
relevant information, which is evidence consistent with self-schema theory.

Markus, Smith, and Moreland (1985) further researched the role of self-schemata. They examined the expertise of self-schematic individuals for a particular domain and its effect on the perception of others. Their main theory is that the self is a "central point" or "frame of reference" for an individual's perceptual field. Thus, the perception of objects, people, groups, or social organizations is determined primarily by using the self as a reference. Self-schematics will have heightened attention to and interest in relevant domains because of their importance in defining the self. From this argument they hypothesized that schematics would "do the things that experts do" when perceiving others. They theorized that self-schematics would possess the "cognitive consequences" of experts. These "cognitive consequences" were:

"recognizing input relevant to their domain, integrating information with previously acquired information, making use of contextual cues to fill in incomplete or missing information, and varying their information processing strategy from one that focuses on the 'big picture' to one that concentrates on details of the actions" (p. 1496).

As schematics who would not be experts for a particular domain, therefore, would not possess these cognitive consequences. Results supported schematics as experts when perceiving others. Schematic individuals watching a schema relevant person in a film saw more meaning and coherence in that film. In addition, when they were asked to attend to
small detail of a schema relevant person in a film (varying information processing strategy), they were able to attend and extract more schema relevant behavior when given the time and opportunity to do so.

In sum, gender self-schema theory shows evidence that gender self-schematics differentially possess and process gender relevant information. This differs from gender schema theory which states that gender schematics differentially process gender information but do not have highly differentiated gender knowledge content. It is concluded that both theories are not in opposition to each other. Thus, both gender schema theories show evidence that schematic individuals possess and process gender relevant information differently from nonschematics. These individuals have the tendency to evaluate the world in terms of masculinity and femininity, possess a differentiated amount of knowledge of masculinity and/or femininity, process gender relevant information more efficiently, utilize the gender typed self as a perceptual frame of reference, and possess the cognitive consequences of expertise with respect to gender typed self-schema. Considering these characteristics of gender schematic individuals, the present study hypothesized that gender schematic evaluators would exhibit greater rating accuracy on gender relevant job evaluation dimension and jobs. It was proposed that masculine self-schematics would give greater attention to, attend to more detail when asked,
encode, store, and retrieve more masculine characteristics from male oriented scale definitions and job descriptions. This would result in higher accuracy ratings by masculine self-schematics for those particular dimensions and jobs. Individuals with feminine self-schemata would produce higher accuracy ratings for female oriented dimensions and jobs. Androgynous self-schematics which have greater content and processing efficiency to both masculine and feminine domains would exhibit no differences between the rating accuracy of masculine and feminine jobs or dimensions. Before one can examine these predictions, the issues concerning scale and job gender need to be addressed.

SCALE GENDER

A second source of systematic error in the job evaluation process is the subjective judgment involved in the selection and rating of compensable factors. It has been suggested that factors, such as physical effort, working conditions, and negotiating, consistently receive higher ratings for jobs dominated by male incumbents. It is possible these factors elicit masculine connotations which would result in higher ratings for male gender jobs. Hence, job evaluation instruments which consist of mostly male oriented factors and do not include factors such as Manual Dexterity, Fatigue, and Counseling, which have been suggested to be more associated with women, will result in higher total point scores for male sex-typed jobs (Blumrosen, 1979; Treiman & Hartmann, 1981).
Doverspike and Barrett (1984) developed and examined the psychometric properties of a point method job evaluation instrument, the Comprehensive Job Evaluation Instrument (CJET). Several factors, Manual Dexterity, Monotony, and Visual Effort, were included in the instrument because of the literature's suggestion that these factors may be biased towards female sex-typed jobs. Ten factors, Education, Time to Proficiency, Previous Experience, Mental Effort, Physical Effort, Supervisory Responsibility, Financial Responsibility, Responsibility for the Safety of Others, Surroundings, and Hazards, were included in the CJET because of their frequent occurrence in job evaluation. Two scales representing alternative measures of social interaction, Counseling and Teaching, and Negotiating and Influencing, were also included in the instrument. Thus, the CJET comprises 15 factor dimensions.

Internal bias analysis was utilized to determine if the psychometric properties of the job evaluation instrument were the same for stereotypical male and female jobs. Four methods of analysis, reliability, scale-total correlations, factor analysis, and partial correlation were employed. Results of the analyses demonstrated no evidence of overall sex bias on their particular job evaluation instrument. The instrument was equally reliable for both sex-typed jobs. Examining the compensable factors from the partial correlation analysis did show evidence of factors being biased. The partial correlations between the sex-type of
the job and the compensable factors controlling for the total point score demonstrated that two-thirds of the 15 job evaluation instrument dimensions were biased. Five dimensions, Time to Proficiency, Financial Responsibility, Negotiating and Influencing, Surroundings, and Hazards were found to be biased in favor of male sex-typed jobs. Five dimensions, Previous Experience, Supervisor Responsibility, Safety of Others, Counseling, and Monotony were found to be biased in favor of female sex-typed jobs. The remaining dimensions, Education, Manual Dexterity, Mental Effort, Visual Attention, and Physical Effort were found not to be biased. This suggests that certain compensable factors do tend to be biased in favor of sex-typed jobs.

From the partial correlation results of Doverspike and Barrett (1984), the present study proposed that certain compensable factors may elicit more masculine than feminine connotations. Thus, these factors would be associated as masculine stimuli. Also, compensable factors may elicit more feminine than masculine connotations and would be associated as feminine stimuli. Factors which elicit both masculine and feminine connotations would be associated as androgynous or neutral stimuli. From the information processing characteristics of self-schema theory, individuals who possess a gender self-schema, masculine or feminine, would give heightened attention to and more efficient processing of their gender relevant job factors. Thus, a major hypothesis of the present study was that
gender self-schematic individuals would rate gender relevant job dimensions more accurately than gender nonrelevant job dimensions.

Doverspike and Barrett (1984) found that the majority of the 15 compensable factors of the CJET were biased towards male or female sex-typed jobs. Sex-type of jobs seems to affect evaluation ratings of particular job evaluation factors. From gender schema theory, it is reasonable to assume that perceived stereotypical jobs may have many gender relevant associations for gender schematics which are deemed appropriate by society. Gender schematics may consider certain gender scale dimensions to be either appropriate or less appropriate for jobs depending on their gender schema. Thus, job gender may be an important component in determining the perceived gender of job dimensions which may have an effect on factor ratings. Therefore, the potential effect of job gender on job evaluation outcomes was also examined.

JOB GENDER

The third potential source of systematic sex-based error in job evaluation is job sex-type. It has been assumed jobs dominated by female incumbents might result in evaluations biased against these jobs. In contrast, jobs dominated by male incumbents might result in evaluations biased in favor of these jobs. Research on this potential
source of error has shown somewhat mixed results. Arvey et al. (1977) artificially manipulated the gender of one job by using color slides and tape recorded voices of male and female incumbents. Evaluations by analysts utilizing the Position Analysis Questionnaire (PAQ) demonstrated no significant effect for sex of incumbents. Grams and Schwab (1985) artificially manipulated job gender of three jobs by varying the ratio of female to male incumbents in a particular job. Ratings by college students using a three factor job evaluation instrument showed no effect of job gender on evaluations. Schwab and Grams (1985) employed the same experimental procedure as Grams and Schwab using compensation specialist's evaluations. Still, no effect on ratings was found. However, several studies have found small but significant effects for job gender. Mahoney and Blake (1979) examined 20 jobs and found that perceived femininity of occupations accounted for a small but significant effect for salary recommendations. Carlisi and Barrett (1985) and Durr (1985) each examined two male sex-typed jobs and two female sex-typed jobs in which sex of job was determined by Blumrosen's (1979) 80% criterion. Blumrosen’s (1979) criterion classifies jobs as sex-typed that have 80% of its incumbents either male or female. Both studies also found a small effect for feminine jobs being rated lower on job evaluation instruments.

Several points need to be addressed concerning the research on job gender. First, the manipulation of job
gender from previous studies may not have elicited evaluator's sex stereotypes of the jobs. Arvey et al. (1977), Grams and Schwab (1985), and Schwab and Grams (1985) all artificially manipulated job gender of one to three unstereotypical jobs by varying the ratio of male and female incumbents. These jobs were selected by the researchers on the premise that subjects would be less familiar with and have less prior expectations about the jobs. The results from these studies revealed no significant effects of job gender on evaluation ratings. Thus, the artificial manipulations of job gender in addition to subjects being less familiar with the jobs studied may have had little impact on the rater's job stereotype. Carlisi and Barrett (1985), Durr (1985), and Mahoney and Blake (1979), however, employed existing, sex-typed jobs in their studies. Carlisi and Barrett (1985) and Durr (1985) employed jobs selected from the Dictionary of Occupational Titles (DOT; U.S. Department of Labor, 1977). Both studies also employed Blumrosen's (1979) 80% criterion to the jobs selected to determine the job's sex-type. These studies did find a significant effect of job gender on evaluation ratings. Thus, it seems that studies which employ a number of stereotypical, existing jobs to be rated may have a greater effect on the perception of job sex-type. This might result in finding a significant effect of job gender on job evaluation ratings.

A second point concerns the number of jobs that are evaluated in studies which result in a significant job
gender effect on evaluation outcomes. Arvey et al. (1977), Grams and Schwab (1985), and Schwab and Grams (1985) had raters rate one to three jobs and found no effect of job gender on evaluation ratings. Carlisi and Barrett (1985), Durr (1985) and Mahoney and Blake (1979) used four to twenty jobs to achieve a significant effect of job gender on evaluation ratings. Thus, from prior research, it seems that as more jobs are rated significant effects of job gender on evaluation outcomes are found.

In order to address these two points concerning job gender, the present study employed the methodology of Carlisi and Barrett (1985), Doverspike and Barrett (1984), and Durr (1985) in order to create a greater impact of job sex-type. Blumrosen's (1979) 80% criterion was applied to jobs selected from the DOT. Krefting, Berger, and Wallace (1978) have shown that the dominant sex of job incumbents determines evaluators' perceptions of job sex-type. Thus, the application of Blumrosen's criterion to the jobs was thought to be a good criterion to determine job sex-type. Sixteen jobs, eight stereotypically male sex-typed and eight stereotypically female sex-typed, were chosen to be employed in the study in order to get a more reliable measure of the effect of job gender on evaluation outcomes. In addition, the present study used a manipulation check to examine evaluators' actual gender perception of each job similar to Mahoney and Blake (1979).
A last point concerning job gender is that the effect of job gender on evaluation ratings has only been examined with regard to sex of the evaluator. As mentioned previously, the main premise of the study was that raters' cognitive structures associated with their gender may be a more relevant variable when examining rating processes than biological sex. Thus, the effects of job gender on evaluation ratings made by gender self-schematic evaluators was also examined. The information processing characteristics of gender self-schematics was also proposed to increase job evaluation rating accuracy for relevant sex-typed job descriptions. Also, job gender was proposed to increase the saliency of dimensions whose gender was congruent with the gender of the job being rated. This would increase the rating accuracy for those factors. Job evaluation rating accuracy was assessed utilizing Cronbach's (1955) measure of differential accuracy.

DIFFERENTIAL ACCURACY

Differential accuracy (Cronbach, 1955) has been used in research to assess the accuracy of performance evaluation ratings (Borman, 1977; 1979; Cardy & Dobbins, 1986; Cardy & Kehoe, 1984; Pulakos, 1984) and job evaluation ratings (Cellar, Durr, Halsell, & Doverspike, 1985). Differential accuracy is one of four components that compose Cronbach's (1955) multidimensional accuracy score. Cronbach states that differential accuracy "reflects [the] ability to
predict differences between Os [actual scores] on any item" (Cronbach, 1955; p.179). Differential accuracy is actually detecting the level of differentiation between a rating or prediction score and the true or actual score within an item or dimension of a rating instrument. Cellar et al. (1985) state that job evaluation accuracy is dependent on the ability of a rater to differentiate jobs across dimensions. In essence, differential accuracy is measuring the raters' accuracy of differentiating jobs across dimensions. Thus, differential accuracy directly pertains to job evaluation and served as the dependent measure.

SUMMARY

In summary, gender schema and gender self-schema theories have shown that individuals with gender self-schemata possess more gender relevant information and process it more efficiently than nonschematics (Bem, 1981; 1982; Crane & Markus, 1982; Markus et al., 1982; Markus et al., 1985). It was proposed that job evaluation instrument factors and sex-type jobs have gender connotations associated with them which gender self-schematics would process more efficiently. Therefore, it was hypothesized that the information processing characteristics of gender schematic evaluator’s would enable them to exhibit greater differential accuracy for gender relevant job evaluation factors and job descriptions. The interaction effects of
gender self-schema (masculine, feminine, androgynous), perceived scale gender (masculine, feminine, neutral), and job gender (male sex-typed, female sex-typed) on job evaluation ratings and the differential accuracy of the evaluation ratings were investigated.

HYPOTHESES

Interaction effects

Hypothesis I: It was hypothesized that there would be an interaction of gender self-schema and job gender.

1. Masculine self-schematics would exhibit greater differential accuracy for job evaluation ratings of male versus female sex-typed jobs.


3. Androgynous self-schematics would exhibit no differences in differential accuracy for job evaluation ratings between male and female sex-typed jobs.
Hypothesis II: It was hypothesized that there would be an interaction of gender self-schema and scale gender.

1. Masculine self-schematics would exhibit greater differential accuracy for job evaluation ratings of masculine versus feminine and neutral scales.

2. Feminine self-schematics would exhibit greater differential accuracy for job evaluation ratings of feminine versus masculine and neutral scales.

3. Androgynous self-schematics would exhibit greater differential accuracy for job evaluation ratings of masculine and feminine scales versus neutral scales.

Hypothesis III: It was hypothesized that there would be an interaction of gender self-schema, job gender, and scale gender.

1. Masculine self-schematics would exhibit greater differential accuracy for job evaluation ratings of masculine scales for male versus female sex-typed jobs.

2. Feminine self-schematics would exhibit greater differential accuracy for job evaluation ratings of feminine scales for female versus male sex-typed jobs.

Exploratory Issue:

The literature on the effect of job gender on job evaluation ratings has been mixed. Several studies conclude that there is no effect (Grams & Schwab, 1985; Schwab & Grams, 1985) while others have found a marginal effect (Carlisi & Barrett, 1985; Durr, 1985; Mahoney & Blake, 1979). As an exploratory issue, the relative differences of ratings between male and female sex-typed jobs made by gender self-schematic evaluators was examined.
Chapter II

METHOD

Subjects

Five hundred male and female undergraduate students from a Midwestern university were asked to fill out a "Personality Questionnaire" (see Appendix A) from Markus et al. (1985). Eighty-four gender schematics were randomly assigned to one of two experimental conditions. The sample size of 84 was determined by a power analysis (Cohen, 1977). This was conducted in order to obtain a statistical power of .80, with a large effect size, and a Type I error rate of five percent for the experimental design. All subjects received extra credit in one or more of their classes for the time spent in the study.

Independent Variables

Gender self-schema. Fifteen percent of the 500 subjects or 84 subjects (28 masculine self-schematics, 28 feminine self-schematics, 28 androgynous self-schematics) were selected to participate in the present study on the basis of their score on the "Personality Questionnaire" (see Appendix A). Markus et al. (1982; 1985) found between five and twelve percent of sample sizes of 200 and 500 individuals respectively, to be masculine self-schematics and ten percent of a sample size of 200 individuals to be feminine self-schematics. The questionnaire contained a
number of self-rating scales. The self-rating scales consisted of 3 masculine characteristics: aggressive, dominant, and acts like a leader, 3 feminine characteristics: gentle, sensitive, emotional; 12 characteristics that were not related to masculinity or femininity: and the characteristics masculine and feminine. Subjects were asked to rate themselves on each of these characteristic scales using an 11-point scale (1=describes me; 11=does not describe me). In addition, subjects were asked to indicate how important each characteristic was to their overall self-evaluation using an 11-point scale (1=very important; 11=not at all important). Self-schema type was determined as follows:

Masculine schematics: Individuals who rated themselves extremely high (scale points 1-4) on at least two of the three masculine characteristics, who indicated that two of the three characteristics were important to their self-evaluation (points 1-4), and who rated the item "feminine" extremely low (points 8-11) (Markus et al., 1985).

Feminine schematics: Individuals who rated themselves extremely high (scale points 1-4) on at least two of the three feminine characteristics, who indicated that two of the three characteristics were important to their self-evaluation (points 1-4), who rated the item "masculine" extremely low (points 8-11), and who indicated that this
dimension was very unimportant to them (points 8-11) (Markus et al., 1977; 1985).

Androgynous schematics: Individuals who rated themselves extremely high (scale points 1-4) on at least five of the six masculine and feminine characteristics, and who indicated that five of the six were important to their self-evaluation (points 1-4) (Markus et al., 1977; 1985).

**Job gender.** The job gender of each job was determined on the basis of Blumrosen's (1979) 80% criterion. Blumrosen (1979) classified a job which had 80% of its incumbents either male or female as sex-typed. Doverspike (1983) applied Blumrosen's criterion to the occupational groupings in the 1981 Current Population Survey (U.S. Department of Labor, 1982) and the 1970 Census (U.S. Bureau of Census, 1973) which formed a pool of sex-typed jobs which were used in the study.

**Scale gender.** Scale gender was determined from the results of the study conducted by Doverspike and Barrett (1984). Doverspike and Barrett assessed interrater reliability of the scales utilizing generalizability theory. Results showed that generalizability coefficients for four raters were above .80 for all but four of the CJET scales. Three dimensions were found to have a generalizability coefficient between .70 and .80. One dimension, Visual Attention, was the only scale to be below .70. From their partial correlation analyses, they found
two-thirds of the CJET's factors to be biased towards male or female sex-typed jobs. Scales were gender classified according to their findings. Time to Proficiency, Financial Responsibility, Negotiating and Influencing, Surroundings, and Hazards were found to be biased in favor of male sex-typed jobs and were classified as masculine dimensions. Previous Experience, Supervisor Responsibility, Safety of Others, Counseling and Teaching, and Monotony were found to be biased in favor of female sex-typed jobs, thus, they were classified as feminine dimensions. The remaining dimensions, Education, Manual Dexterity, Mental Effort, Visual Attention, and Physical Effort were found not to be biased, hence, the neutral dimensions.

Jobs

Jobs from the Dictionary of Occupational Titles (U.S. Department of Labor, 1977) for which expert scores were available were chosen from a pool of 105 female sex-typed jobs and 105 male sex-typed jobs developed by Doverspike (1983). Doverspike (1983) determined the sex-type of each job by applying Blumrosen's (1979) 80% criteria to the 1981 Current Population Survey (U.S. Department of Labor, 1982) and the 1970 Census (U.S. Bureau of Census, 1973). White collar, stereotypic census occupations were converted to DOT codes using the Standard Occupational Classification Manual (U.S. Department of Commerce, 1980b). The Alphabetic Index of Occupations (U.S. Department of Commerce, 1980a) was then used to ensure that jobs selected were included in the
stereotypic census occupations. From the pool of jobs, 105 female sex-typed and 105 male sex-typed jobs were randomly selected to form Doverspike's pool.

Eight male sex-typed and eight female sex-typed jobs were selected from Doverspike's (1983) pool of 210 sex-typed jobs. Jobs which produced the greatest variability within all of the dimensions across a set of eight sex-typed jobs were selected for the present study by the experimenter. Selecting jobs on the basis of dimension variability across the jobs was done in order for differential accuracy to be calculated across jobs for dimensions for each subject.

Male sex-typed jobs selected were Flying Instructor (196.223-010), Meter Reader (209.567-010) Research Mechanic (002.280-010), School Plant Consultant (001.167-010), Ship Master (DOT code: 197.167-010), Stereoplotter Operator (018.281-010), Submersible Pilot (029.383-010), and Tester (011.361-010). Female sex-typed jobs selected were Central Office Operator (235.462-010), Commodity Loan Clerk (210.382-034), Consultant Nurse (075.127-014), Dietetic Technician (077.121-010), Head Nurse (075.127-018), Information Clerk (237.367-022) Nurse Midwife (075.264-014), and Typist (DOT code: 203.582-066).

Job Evaluation Instrument

The Comprehensive Job Evaluation Technique (CJET) (see Appendix H) developed by Doverspike (1983) was the point method job evaluation instrument employed in this study.
The CJET was based on the review of the Equal Pay Act and other job evaluation instruments. It consists of 15 dimensions, ten traditional, and five nontraditional. The ten traditional scales are: Education, Time to Proficiency, Previous Experience, Mental Effort, Physical Effort, Supervisory Responsibility, Financial Responsibility, Responsibility for the Safety of Others, Surroundings, and Hazards. The five nontraditional scales are: Manual Dexterity, Monotony, Visual Effort, Counseling and Teaching, and Negotiating and Influencing. The first three nontraditional scales were selected because of the literature's suggestion that they may be biased in favor of female jobs. The latter two nontraditional scales were included as alternative measures of social interaction.

Each dimension is composed of a summary description and five anchor points with definitions. The total point range is 15 to 75. These descriptions and definitions were based on the review of the job evaluation literature.

Doverspike and Barrett (1984) assessed inter-rater reliability and the internal consistency of the instrument. The generalizability coefficient for the total point score was calculated based on a rater by job ANOVA. The coefficient for one rater was .71 and for four raters was .91. The internal consistency of the instrument was calculated at alpha = .80 for the total job sample.
Dependent Variables

Subject's ratings and differential accuracy scores of each CJET dimension served as the dependent variables in this study. Accuracy was assessed using Cronbach's (1955) differential accuracy (DA) measure. Accuracy scores were computed for each scale dimension by correlating the rater's ratings of the jobs with the corresponding expert scores. In the Doverspike and Barrett (1984) study, expert scores were obtained from job evaluation ratings made by four Industrial and Organizational Psychology doctoral students, two males and two females. These expert scores were then reviewed by one I/O faculty member (male) and one I/O doctoral student (female), both of whom have had considerable experience in job evaluation. The jobs were then independently rated by the I/O faculty member and doctoral student and consensus was reached for discrepant ratings. Their consensus ratings, thus, served as the expert scores. Fisher's r-to-z transformation was then applied to each DA correlation. Transformations resulted in 15 dimension z scores for each subject. z scores were averaged within gender dimensions with higher scores representing higher scale gender accuracy. Subject's z scores of the 15 dimensions were also averaged to derive an overall measure of differential accuracy. Higher z scores represented greater rating accuracy for the job gender condition.
Manipulation Check of Job Gender

The manipulation check of job gender was assessed for each job by asking subjects to estimate the percentage of males and females that are employed in each rated job and to rate the perceived masculinity and femininity of each job using two 11-point unipolar scales (1=describes job; 11=does not describe job, see Appendix B). It was expected that subjects would estimate male sex-type jobs to have very high percentages of male incumbents and rated very high on the masculine rating scale and very low on the feminine rating scale. Subjects were expected to estimate female sex-type jobs to have very high percentages of female incumbents and rated very high on the feminine rating scale and very low on the masculine rating scale.

Manipulation Check of Scale Gender

Doverspike and Barrett (1984) found certain compensable factors to be rated higher depending on the sex-type of the job, indicating certain factors may be sex-typed. From their partial correlation analysis, they found Time to Proficiency, Financial Responsibility, Negotiating and Influencing, Surroundings, and Hazards to be biased in favor of male sex-typed jobs, and Previous Experience, Supervisory Responsibility, Responsibility for the Safety of Others, Counseling and Teaching, and Monotony to be in favor of female sex-typed jobs.
A manipulation check for scale gender was assessed for each dimension by asking subjects to rate each CJET dimension on both a masculine and feminine 11-point unipolar scale (1=describes scale; 11=does not describe scale, see Appendix C). It was expected that subjects would rate: masculine dimensions very high on the masculine rating scale and very low on the feminine rating scale; feminine dimensions very high on the feminine rating scale and very low on the masculine rating scale; and neutral dimensions neither very high or very low on both rating scales.

Procedure

Eighty-four subjects were selected (28 masculine self-schematics, 28 feminine self-schematics, 28 androgynous self-schematics) on the basis of the established criteria for the "Personality Questionnaire" (see Appendix A). Each individual whose questionnaire ratings indicated that they were one of the three types of gender schematics was telephoned and asked to participate in further research conducted by the experimenter. Schematic subjects were randomly assigned to one of two conditions of job gender (male sex-typed, female sex-typed) and asked to rate eight jobs utilizing a point method evaluation instrument (CJET).

During the experimental sessions, each subject was given a packet containing a consent form, "A Rater Training Manual to Accompany the CJET" (see Appendix G), the CJET Manual (see Appendix H), ten male sex-typed or ten female
sex-typed job descriptions (two practice, eight actual, see Appendix D), and ten corresponding rating forms (see Appendix E). The experimenter opened up the session by asking the subjects to complete the consent form. Upon completing the consent form, the experimenter gave a 90 to 120 minute training session on the process and utility of job evaluation, the purpose and use of a point method job evaluation instrument (CJET), and practice in rating job descriptions (see Appendix G). The training session was based on job evaluation training procedures used by Doverspike (1983) and Durr (1985) (see Appendix F). Rater training included all of the essential elements for an effective rater training program: lecture, discussion, practice and feedback (Smith, 1986).

The training sessions began with the experimenter first asking the subjects to read "A Rater Training Manual to Accompany the Comprehensive Job Evaluation Technique". Subjects were given approximately 30 minutes to read two-thirds of the manual. After the 30 minute reading period, subjects were given a 30 to 60 minute lecture. They were asked questions for discussion using the the CJET training manual as a guide. Job evaluation in general, point method job evaluation techniques, job analysis, compensable factors, common rating errors, and the CJET manual were discussed. The last 30 to 45 minutes of the training session involved the practice of rating job descriptions and feedback. Subjects were asked to rate two
sample jobs. After each sample job description was rated, expert scores were displayed on a flip chart and subject raters were asked to compare their ratings with the expert ratings. The expert ratings for the sample job were then discussed focusing on the subject rater's discrepancies and disagreements with the expert scores.

After the sample jobs were rated, the experimenter asked for any questions concerning job evaluation in general, the job evaluation instrument, the rating process, and experimental procedure. The subjects were asked next to rate the eight actual jobs on the corresponding rating forms utilizing the CJET. No time limit was imposed. The order of the jobs presented to each subject was randomized to control for any possible order effect. When subjects had completed the job evaluation ratings, they were asked to estimate the percentage of male and female incumbents in each job and to also rate each job on the masculine and feminine unipolar 11-point scales (see Appendix B). This served as the manipulation check for job gender. The subjects were also asked to rate each dimension definition on the masculine and feminine unipolar 11-point scales (see Appendix C). This served as the manipulation check for scale gender. After the subjects completed the manipulation check questionnaires, they were debriefed on the purpose and nature of the experiment and thanked for their participation.
Chapter III

Results

Manipulation Checks

Manipulation Check of Job Gender

The present study examined 16 jobs from the D.O.T.. Eight jobs were male sex-typed (Flying Instructor, Meter Reader, Research Mechanic, School Plant Consultant, Ship Master, Stereoplotter Operator, Submersible Pilot, and Tester) and eight jobs were female sex-typed (Central Office Operator, Commodity Loan Clerk, Consultant Nurse, Dietetic Technician, Head Nurse, Information Clerk, Nurse Midwife, and Typist) according to Blumrosen (1979). A manipulation check was performed in order to examine the subject’s perception of the sex-type of the 16 jobs. This was done by having the subjects rate each job on a unipolar masculine scale and unipolar feminine scale. It was expected that male sex-typed jobs would be rated as very masculine jobs. It was also expected that female sex-typed jobs would be rated as very feminine jobs. In addition, subjects were also expected to estimate that male and female jobs would have very high percentages of male and female incumbents respectively. Subjects’ mean ratings and percentages are presented in Table 1.
### Table 1
Mean and Standard Deviation of Ratings and Percentages for the Manipulation Check of Job Gender

<table>
<thead>
<tr>
<th>Jobs</th>
<th>Ratings</th>
<th>Percentage of Incumbents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Masculine</td>
<td>Feminine</td>
</tr>
<tr>
<td>Male Sex-Typed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flying Instructor</td>
<td>4.60</td>
<td>7.24</td>
</tr>
<tr>
<td>Meter Reader</td>
<td>6.38</td>
<td>7.36</td>
</tr>
<tr>
<td>Research Mechanic</td>
<td>2.86</td>
<td>9.12</td>
</tr>
<tr>
<td>School Plt Consultant</td>
<td>4.33</td>
<td>7.57</td>
</tr>
<tr>
<td>Ship Master</td>
<td>2.91</td>
<td>8.91</td>
</tr>
<tr>
<td>Stereoplotter Oper</td>
<td>5.98</td>
<td>6.60</td>
</tr>
<tr>
<td>Submersible Pilot</td>
<td>3.69</td>
<td>7.70</td>
</tr>
<tr>
<td>Tester</td>
<td>4.52</td>
<td>7.68</td>
</tr>
<tr>
<td>Overall</td>
<td>4.41</td>
<td>7.77</td>
</tr>
<tr>
<td>Female Sex-Typed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Off Operator</td>
<td>7.02</td>
<td>4.48</td>
</tr>
<tr>
<td>Commodity Loan Clerk</td>
<td>4.60</td>
<td>6.64</td>
</tr>
<tr>
<td>Consultant Nurse</td>
<td>7.76</td>
<td>3.36</td>
</tr>
<tr>
<td>Dietetic Technician</td>
<td>7.17</td>
<td>4.45</td>
</tr>
<tr>
<td>Head Nurse</td>
<td>8.41</td>
<td>2.83</td>
</tr>
<tr>
<td>Information Clerk</td>
<td>6.93</td>
<td>5.05</td>
</tr>
<tr>
<td>Nurse Midwife</td>
<td>8.98</td>
<td>2.60</td>
</tr>
<tr>
<td>Typist</td>
<td>8.91</td>
<td>3.14</td>
</tr>
<tr>
<td>Overall</td>
<td>7.47</td>
<td>4.07</td>
</tr>
</tbody>
</table>

N = 84
N = 83

**Note.** Both the masculine and feminine rating scales used an 11-point scale. For the masculine scale, the anchor points 1 and 11 represented "extremely masculine" and "extremely not masculine" respectively. For the feminine scale, the anchor points 1 and 11 represented "extremely feminine" and "extremely not feminine" respectively.
Examination of the means for the masculinity and femininity scales of the male sex-typed jobs shows that Research Mechanic, Ship Master, and Submersible Pilot were rated extremely masculine and only Research Mechanic and Ship Master were rated extremely not feminine. The means for the percentages of incumbents shows that these jobs also were the only male sex-type jobs perceived to have greater than 80% male incumbents. Flying Instructor, School Plant Consultant, and Tester were rated as moderately masculine and moderately not feminine. These jobs also were estimated to have 70% male incumbents which are moderately high percentages. Meter Reader and Stereoplotter Operator were rated somewhat neutral on both the masculine and feminine rating scales. These jobs also were estimated to have 63% and 69% male incumbents respectively.

The means for the female sex-typed jobs indicate that Consultant Nurse, Head Nurse, Nurse Midwife, and Typist were all rated as extremely feminine jobs and these jobs were rated as extremely not masculine except for Consultant Nurse. These four jobs were also estimated to have 80% or greater number of female incumbents. Central Office Operator and Dietectic Technician were rated moderately feminine and moderately not masculine on the unipolar rating scales. These jobs also were estimated to have 68% and 69% female incumbents respectively which are moderately high percentages. Information Clerk was rated somewhat neutral on each of the unipolar scales and was estimated to have 66%
female incumbents by the subjects. Commodity Loan Clerk, however, was rated moderately masculine (M = 4.60, SD = 2.22) and moderately not feminine (M = 6.64, SD = 2.06) and estimated to have 61% male incumbents.

Thus, the overall manipulation of job gender was not as strong an independent variable as was expected. Only seven of the sixteen jobs were reported to have 80% incumbents to be dominated by one sex. An explanation for this is that jobs considered to be sex-typed were occupational groupings in the 1981 Current Population Survey that Blumrosen's 80% criterion was applied to. Jobs that were not estimated to have a very high percentage of either male or female incumbents may be jobs that incumbent percentages have changed since 1981. Jobs, however, were perceived as either male or female sex-typed consistent with Blumrosen's criterion with the exception of the female sex-type job Commodity Loan Clerk which was perceived as a male sex-type job. These findings were consistent with Krefting, Berger, and Wallace (1978) who found that the predominant sex of the incumbents was the best predictor of job sex-type. Thus, the strength of the manipulation of job gender was not as strong as expected. Two sample t-tests were performed between the averaged male and female jobs' manipulation check measures. This was done in order to determine if the mean ratings and percentages of the male sex-typed jobs as a group were significantly different than the female sex-typed jobs ratings and percentages.
Results from the t-test between the mean masculine ratings for predicted male and female jobs revealed that male jobs were perceived as significantly more masculine than female jobs, t(82) = 9.21, p < .001. The t-test conducted between the mean feminine ratings for male and female jobs demonstrated that female jobs were perceived significantly more feminine than male jobs, t(82) = 11.30, p < .001. The third t-test, performed on the mean estimated percentages of male incumbents revealed that male jobs were considered to have a significantly greater number of male incumbents than female jobs, t(81) = 25.88, p < .001. The final t-test revealed that female jobs were thought to hold a greater number of female incumbents than male jobs, t(81) = 25.65, p < .001. Thus from the t-test results, we conclude that: 1) Male sex-typed jobs, overall, were perceived to be more masculine and to have a greater number of male incumbents than female sex-typed jobs, and 2) Female sex-typed jobs, overall, were perceived to be more feminine and to have a greater number of female incumbents than male sex-typed jobs.

Manipulation Check for Scale Gender

The 15 scale dimensions from the CJET job evaluation instrument were hypothesized to be perceived as either extremely masculine, feminine, or neutral. Specifically, Time to Proficiency, Financial Responsibility, Negotiation and Influencing, Surroundings, and Hazards were predicted to be perceived as very masculine and very not feminine.
Conversely, Previous Experience, Supervisory Responsibility, Responsibility for the Safety of Others, Counseling and Teaching, and Monotony were predicted to be perceived as very feminine and very not masculine. Finally, Education, Mental Effort, Visual Attention, Manual Dexterity, and Physical Effort were predicted to be perceived as neutral dimensions. In order to determine the perceived gender of each scale, subjects rated the 15 scale dimensions on both a masculine and feminine 11-point unipolar scale. The mean masculine and feminine rating for each dimension were computed and are presented in Table 2.

Examination of the means indicate that the dimensions Physical Effort, Supervisory Responsibility, Financial Responsibility, Responsibility for the Safety of Others, Negotiating and Influencing, and Hazards were rated extremely masculine on the masculine scale but only Physical Effort and Hazards were rated extremely not feminine on the feminine rating scale. None of the 15 dimensions were rated either extremely feminine or extremely not masculine, suggesting that none of the dimensions were perceived as extremely feminine. Education, Time to Proficiency, Previous Experience, Mental Effort, Visual Attention, Manual Dexterity, Counseling and Teaching, Surroundings, and Monotony were rated as neutral dimensions.

The strength of the manipulation of scale gender was not as strong as expected. Dimensions predicted a priori to
Table 2
Mean and Standard Deviation of the Masculine and Feminine Ratings for the Manipulation Check of Scale Gender

<table>
<thead>
<tr>
<th>A Priori Gender Dimensions</th>
<th>Ratings</th>
<th>t value</th>
<th>Post Hoc Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Masculine</td>
<td>Feminine</td>
<td></td>
</tr>
<tr>
<td>Time to Proficiency</td>
<td>5.51</td>
<td>5.80</td>
<td>1.23</td>
</tr>
<tr>
<td>Financial Respons</td>
<td>3.60</td>
<td>6.04</td>
<td>7.90**</td>
</tr>
<tr>
<td>Negotiating and Infl</td>
<td>3.56</td>
<td>5.54</td>
<td>6.21**</td>
</tr>
<tr>
<td>Surroundings</td>
<td>4.55</td>
<td>6.95</td>
<td>4.95**</td>
</tr>
<tr>
<td>Hazards</td>
<td>3.21</td>
<td>8.08</td>
<td>11.50**</td>
</tr>
<tr>
<td>Overall</td>
<td>4.09</td>
<td>6.48</td>
<td>2.61</td>
</tr>
<tr>
<td>Previous Experience</td>
<td>5.26</td>
<td>5.77</td>
<td>2.55*</td>
</tr>
<tr>
<td>Supervisory Respons</td>
<td>3.89</td>
<td>5.29</td>
<td>5.26**</td>
</tr>
<tr>
<td>Respons Safety Oth</td>
<td>3.95</td>
<td>5.60</td>
<td>4.37**</td>
</tr>
<tr>
<td>Counseling and Teach</td>
<td>5.88</td>
<td>4.18</td>
<td>5.91**</td>
</tr>
<tr>
<td>Monotony</td>
<td>6.54</td>
<td>5.64</td>
<td>2.85**</td>
</tr>
<tr>
<td>Overall</td>
<td>5.11</td>
<td>5.30</td>
<td>2.61</td>
</tr>
<tr>
<td>Education</td>
<td>4.60</td>
<td>4.81</td>
<td>1.33</td>
</tr>
<tr>
<td>Mental Effort</td>
<td>4.71</td>
<td>5.16</td>
<td>1.65</td>
</tr>
<tr>
<td>Visual Attention</td>
<td>6.17</td>
<td>4.76</td>
<td>5.69**</td>
</tr>
<tr>
<td>Manual Dexterity</td>
<td>5.07</td>
<td>4.44</td>
<td>1.57</td>
</tr>
<tr>
<td>Physical Effort</td>
<td>2.08</td>
<td>8.42</td>
<td>18.03**</td>
</tr>
<tr>
<td>Overall</td>
<td>4.53</td>
<td>5.52</td>
<td>2.64</td>
</tr>
</tbody>
</table>

N = 84
df = 83
*p < .01
**p < .001

Note. Post hoc gender key: M = Masculine, F = Feminine, N = Neutral. Both the masculine and feminine rating scales used an 11-point scale. For the masculine scale, the anchor points 1 and 11 represented "extremely masculine" and "extremely not masculine" respectively. For the feminine scale, the anchor points 1 and 11 represented "extremely feminine" and "extremely not feminine" respectively.
be very masculine or feminine were not supported by the data. Because the mean unipolar ratings did not exhibit the expected extreme ratings for either masculine, feminine, or neutral dimensions, means for the masculine and feminine ratings scales were computed for the three groups of gender dimensions (masculine, feminine, and neutral). Three single sample \( t \)-tests were then performed to test whether or not there was a significant difference between the masculine ratings of the predicted masculine, feminine, and neutral dimensions. Similarly, three single sample \( t \)-tests were conducted between the feminine ratings of the predicted grouped gender dimensions (see Table 2).

The results of the single sample \( t \)-tests revealed that the predicted masculine dimensions were rated significantly more masculine than the predicted feminine, \( t(83) = 7.65, p < .001 \), and neutral, \( t(83) = 3.48, p < .001 \), dimensions. Feminine dimensions were rated significantly more feminine than masculine dimensions, \( t(83) = 8.95, p < .001 \), but were not significantly more feminine than neutral dimensions, \( t(83) = 1.76, p < .08 \). Finally, predicted neutral dimensions were rated significantly more masculine than feminine dimensions, \( t(83) = 5.00, p < .001 \), and significantly more feminine than masculine dimensions, \( t(83) = 6.58, p < .001 \). Thus, these results reveal that masculine dimensions were perceived by the subjects as significantly more masculine than the other dimensions. Feminine dimensions were perceived as significantly more feminine than masculine dimensions. Finally, neutral dimensions were
perceived as somewhat feminine. These results were consistent with the a priori gender dimension predictions.

Reliability

The average correlation among raters was utilized as an index for interrater reliability. Interrater reliability was assessed for total point scores and scores of each dimension for raters of male and female sex-typed jobs. The average correlation among raters was calculated using Nunnally’s (1978) item sample equation for reliability.' Coefficient alpha was used to represent the reliability of the whole test ($r_{kk}$) in the equation. Forty-two raters who rated eight male jobs and 42 raters who rated eight female jobs served as items ($k$) in the equation. The eight jobs served as cases or tests. Interrater reliability was calculated by first computing coefficient alpha for the raters of the male jobs and the raters of the female jobs. Coefficient alphas were then entered in Nunnally’s item sample equation for reliability and the equation was solved for the average correlation among raters ($\bar{r}_{ij}$).

The average correlation among 42 raters for the total point score for male sex-typed jobs was .70. The average

---

The reliability of an item sample equation is:

$$r_{kk} = \frac{k^2 \bar{r}_{ij}}{k + k^2 \bar{r}_{ij} - k \bar{r}_{ij}}$$

Where: $k =$ number of items
$\bar{r}_{ij} =$ average correlation among the items
$r_{kk} =$ reliability of the whole test
correlation among 42 raters for the total point score for female sex-typed jobs was also .70. Thus, the average correlation among raters for both sets of jobs was moderately high. This finding is much lower than the generalizability coefficient of .91 for four raters that was found by Doverspike and Barrett (1984). Their reliability index represented the ability of four raters to reliably differentiate 210 jobs. The present study’s reliability index, however, is based on the correlation of two raters’ ratings of eight jobs. Thus, the reliability of the two studies are based on different designs which both show moderate to high interrater reliability among the raters. One important consideration that needs to be addressed is the different rater samples of the two studies. Doverspike and Barrett utilized four Ph.D. I/O graduate students as raters. The present study employed college undergraduates as raters.

The average correlation among raters was also assessed for each CJET dimension rating for jobs within each job gender condition. The coefficient alpha and average correlation among raters for each dimension of male and female jobs are presented in Table 3. For male jobs, Negotiation and Influencing, and Counseling and Teaching were the only dimensions that demonstrated average correlations among raters of .70. All other dimensions for male jobs demonstrated average correlations lower than .70. For female jobs, Previous Experience, Safety of Others, Counseling and Teaching, and Education revealed average
Table 3
Coefficient Alpha and Average Correlation Among Raters
of Scales Within Male and Female Sex-Type Job Conditions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Male Jobs</th>
<th>Female Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient Alpha</td>
<td>Average Correlation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to Proficiency</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td>Financial Respons</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td>Negotiating and Infl</td>
<td>.99</td>
<td>.70</td>
</tr>
<tr>
<td>Surroundings</td>
<td>.97</td>
<td>.44</td>
</tr>
<tr>
<td>Hazards</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td>Previous Experience</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td>Supervisory Respons</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td>Respons Safety Oth</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td>Counseling and Teach</td>
<td>.99</td>
<td>.70</td>
</tr>
<tr>
<td>Monotony</td>
<td>.96</td>
<td>.36</td>
</tr>
<tr>
<td>Education</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td>Mental Effort</td>
<td>.97</td>
<td>.44</td>
</tr>
<tr>
<td>Visual Attention</td>
<td>.94</td>
<td>.27</td>
</tr>
<tr>
<td>Manual Dexterity</td>
<td>.93</td>
<td>.24</td>
</tr>
<tr>
<td>Physical Effort</td>
<td>.98</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td>.98</td>
<td>.54</td>
</tr>
</tbody>
</table>

Note. Coefficient alpha was assessed across 42 raters which represented items for each dimension of both job gender conditions. The average correlation among the 42 raters for each dimension was found by inserting the obtained coefficient alpha in the reliability of an item sample equation from Nunnally (1978) and solving for $\bar{r}_{ij}$. 


correlations among raters of .70. All other dimensions had average correlations below .70. Counseling and Teaching was the only dimension to show a moderately high average correlation among raters for both male and female sex-type jobs. Doverspike and Barrett (1984) found only Visual Attention to be rated below the generalizability coefficient of .70 for four raters across 210 jobs. Again the different methodological designs and rater samples may attribute for this difference.

Tests of Hypotheses

ANOVA for the Differential Accuracy of the A Priori Gender Dimensions

A 3 (masculine, feminine, androgynous schematics) x 2 (male, female sex-typed jobs) x 3 (masculine, feminine, neutral dimensions) ANOVA was performed with the third factor being the repeated measures variable and differential accuracy as the dependent variable. Cell means and standard deviations for differential accuracy are presented in Table 4. Assumptions of ANOVA were met by utilizing random assignment in order to attain a normal distribution of treatment and error effects. Interval data were used. Cochran’s test of homogeneity of variance was calculated to test whether the error estimates were equal across the treatment populations. Cochran’s test uses the summation of all the variance in the denominator, thus, it includes more variance information and is a more sensitive test than
Table 4
Means and Standard Deviations of the Differential Accuracy for the A Priori Gender Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Male Jobs</th>
<th></th>
<th>Female Jobs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Masculine</td>
<td>Feminine</td>
<td>Neutral</td>
<td>Masculine</td>
</tr>
<tr>
<td>Scales</td>
<td>Scales</td>
<td>Scales</td>
<td>Scales</td>
<td>Scales</td>
</tr>
<tr>
<td>Masculine Schematics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>.70</td>
<td>.74</td>
<td>.56</td>
<td>.48</td>
</tr>
<tr>
<td>SD</td>
<td>.16</td>
<td>.20</td>
<td>.10</td>
<td>.15</td>
</tr>
<tr>
<td>Feminine Schematics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>.73</td>
<td>.73</td>
<td>.52</td>
<td>.44</td>
</tr>
<tr>
<td>SD</td>
<td>.09</td>
<td>.14</td>
<td>.17</td>
<td>.19</td>
</tr>
<tr>
<td>Androgynous Schematics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>.72</td>
<td>.74</td>
<td>.51</td>
<td>.52</td>
</tr>
<tr>
<td>SD</td>
<td>.17</td>
<td>.15</td>
<td>.13</td>
<td>.19</td>
</tr>
</tbody>
</table>

Note. N = 84. Differential accuracy correlations are represented in z scores.
Hartley's (Kirk, 1982). The results from Cochran's test failed to reject the null for the masculine dimensions, $C(13,6) = .26, p > .05$, feminine dimensions, $C(13,6) = .29, p > .05$, and neutral dimensions, $C(13,6) = .29, p > .05$. Hence, there were no significant differences between the error effects in these treatment populations, and homogeneity of variance was supported.

**Hypothesis 1**

It was hypothesized that a significant interaction would be present between the independent variables, gender self-schema and gender of job, on the differential accuracy of job evaluation ratings. More specifically, masculine schematics would exhibit greater differential accuracy for male versus female sex-typed job evaluation ratings. Feminine schematics would demonstrate greater differential accuracy for female versus male sex-typed job evaluation ratings. Androgynous schematics would exhibit no differential accuracy differences between male and female sex type jobs. The ANOVA results (see Table 5) did not support the predicted interaction, $F(2,78) < 1, \text{n.s.}$ for masculine and feminine schematics. However, the androgynous schematic demonstrated no rating accuracy differences between job conditions. Thus, the androgynous schematic finding was consistent with hypothesis one.

**Hypothesis 2**

This hypothesis predicted an interaction between the independent variables, gender self-schema and scale gender,
Table 5
Analysis of Variance Summary Table for the Effect of Gender Self-Schema (Schema), Job Gender (Job), and Scale Gender (Scale) on Differential Accuracy for the A Priori Gender Dimensions

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects</strong></td>
<td>83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schema</td>
<td>2</td>
<td>.02</td>
<td>.64</td>
<td></td>
</tr>
<tr>
<td>Job</td>
<td>1</td>
<td>.15</td>
<td>3.49</td>
<td></td>
</tr>
<tr>
<td>Schema x Job</td>
<td>2</td>
<td>.03</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>78</td>
<td>.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within Subjects</strong></td>
<td>168</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td>2</td>
<td>.99</td>
<td>57.46*</td>
<td>.02</td>
</tr>
<tr>
<td>Schema x Scale</td>
<td>4</td>
<td>.01</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>Job x Scale</td>
<td>2</td>
<td>.54</td>
<td>31.16*</td>
<td>.01</td>
</tr>
<tr>
<td>Schema x Job x Scale</td>
<td>4</td>
<td>.03</td>
<td>1.54</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>156</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .001
on the differential accuracy of job evaluation ratings. It was predicted that masculine schematics would provide job evaluation ratings with greater differential accuracy for masculine versus feminine and neutral dimensions. Feminine schematics would exhibit greater differential accuracy ratings for feminine versus masculine and neutral dimensions. Androgynous schematics would exhibit greater differential accuracy for masculine and feminine dimensions versus neutral dimensions. The ANOVA failed to reject the null hypothesis for this interaction, $F(4,156) < 1$, n.s.. Thus, hypothesis two was not supported.

**Hypothesis 3**

Hypothesis three predicted a three way interaction between the independent variables, gender self-schema, job gender, and scale gender. Specifically, it was predicted that masculine schematics would exhibit greater differential accuracy when rating masculine dimensions for male versus female sex-typed jobs. Feminine schematics would exhibit greater differential accuracy when rating feminine dimensions for female versus male sex-typed jobs. Androgynous schematics would demonstrate greater differential accuracy for masculine dimensions when rating male versus female sex-typed jobs and feminine dimensions when rating female versus male sex-typed jobs. The results from the ANOVA revealed nonsignificance for the predicted three way interaction, $F(4,156) = 1.54$, n.s.. Hypothesis three was not supported.
Exploratory Analysis

The ANOVA results did reveal some potentially interesting significant effects that were not predicted. A main effect of scale gender and an interaction effect of job gender x scale gender were found. First, the analyses demonstrated a significant main effect for scale gender, $F(2,156) = 57.46, p < .001, \omega^2 = .02$. In order to determine if the masculine, feminine, and neutral dimensions were rated significantly different from each other, Tukey's A multiple comparison technique was performed. Tukey's A analysis revealed that feminine dimensions ($M = .76$) exhibited significantly greater differential accuracy than masculine dimensions ($M = .60$) and neutral dimensions ($M = .55$) at the .01 alpha level. These findings demonstrate that masculine, feminine, and androgynous schematics rated feminine dimensions with the most accuracy.

Second, the ANOVA analyses revealed a significant interaction for job gender x scale gender, $F(2,156) = 31.16, p < .001, \omega^2 = .01$ (see Figure 1). Simple effects analyses were then performed in order to further investigate the nature of the interaction. It was found from the simple effects analyses that there was a significant difference between the differential accuracy of job evaluation ratings for male and female sex-typed jobs on masculine dimensions, $F(1,130) = 42.22, p < .001$. Examination of the means revealed that subjects rated masculine dimensions significantly more accurately when rating male jobs ($M =$
Figure 1. Interaction Effect of Job Gender x Scale Gender for the Differential Accuracy of the A Priori Gender Dimensions.
than when rating female jobs ($M = .48$). The simple effects analyses also showed that there was a significant difference in differential accuracy between masculine, feminine, and neutral dimensions for male jobs, $F(2,156) = 30.48, p < .001$, and female jobs, $F(2,156) = 58.14, p < .001$. Tukey's A multiple comparison technique was then performed in order to determine if there were any significant differences among the pairs. The results from Tukey's A revealed that ratings of male jobs, masculine dimensions ($M = .71$) and feminine dimensions ($M = .74$) exhibited significantly higher levels of differential accuracy than neutral dimensions ($M = .53$) at the .01 alpha level. In addition, ratings of female jobs, feminine dimensions ($M = .78$) were significantly more accurate than masculine ($M = .48$) and neutral dimensions ($M = .57$). Also, ratings made on neutral dimensions were more accurate than masculine dimensions of female jobs at the .01 alpha level (see Figure 1).

In summary, the results of the ANOVA did not support the hypotheses with the exception of finding some consistency with hypothesis one. Androgynous schematics demonstrated no differences between the differential accuracy of male and female jobs. Significance was found for the main effect scale gender and the job gender $\times$ scale gender interaction. Further analyses revealed that schematic subjects exhibited the greatest differential accuracy for the job evaluation ratings of feminine
dimensions. Furthermore, masculine dimensions were rated more accurately when rating male sex-typed jobs, and feminine dimensions were rated more accurately when rating female sex-typed jobs.

Analysis of Post Hoc Gender Dimensions

One plausible explanation for the lack of statistical support for the proposed hypotheses is that the a priori gender for each dimension was not consistent with the subjects' gender perceptions of the dimensions. For example, Physical Effort was predicted a priori as a neutral dimension. However, Physical Effort was rated by the subjects as an extremely masculine dimension. In order to determine the schematics' gender perception of each dimension, single sample t-tests were performed between the masculine and feminine scale ratings for each of the 15 CJET dimensions. The single sample t-test results are presented in Table 2. Dimensions with significant differences between the masculine and feminine ratings were classified post hoc as either masculine or feminine, according to their means. Dimensions which were not found to have significant differences between the gender ratings were classified post hoc as neutral dimensions.

From the single sample t-test results, dimensions that were rated significantly more masculine than feminine were: Financial Responsibility, Negotiating and Influencing,
Surroundings, Hazards, Previous Experience, Supervisory Responsibility, Responsibility for the Safety of Others, and Physical Effort. Hence, these eight dimensions were classified as masculine scales. Scales that were rated significantly more feminine were: Counseling and Teaching, Monotony, and Visual Attention. Manual Dexterity, Monotony, and Visual Attention were three nontraditional scales which Remick (1981) suggested as potential scales that were biased toward female sex-typed jobs and that Doverspike (1983) included in his job evaluation instrument. Thus, the results are partially consistent with those of Remick (1981). These three dimensions were classified as feminine scales. Dimensions which exhibited no significant difference between the masculine and feminine ratings were: Time to Proficiency, Education, Mental Effort, and Manual Dexterity. These four dimensions were classified as neutral scales. The post hoc gender classifications of the dimensions demonstrate that only three-fifths of the a priori dimensions were consistent with the schematic subjects' gender dimension ratings. Since there was a discrepancy between the a priori and post hoc gender classifications of the CJET dimensions, the original 3 x 2 x 3 ANOVA was performed a second time utilizing the post hoc gender dimensions.

ANOVA for the Differential Accuracy of the Post Hoc Gender Dimensions

A 3 (masculine, feminine, androgynous schematics) x 2 (male, female sex-type jobs) x 3 (post hoc gender
dimensions: masculine, feminine, neutral) ANOVA was performed with the third factor being the repeated measures variable and differential accuracy as the dependent variable. Cell means and standard deviations are presented in Table 6. As in the first ANOVA, statistical assumptions were met by utilizing independent random sampling and random assignment. Interval data was also used. Cochran's test of homogeneity of variance was conducted. Results showed that the null hypothesis was rejected for masculine dimensions, $C(13,6) = .34$, $p < .05$. Cochran's test for feminine dimensions, $C(13,6) = .24$, $p > .05$, and neutral dimensions, $C(13,6) = .23$, $p > .05$ failed to reject the null. This demonstrates that there were no significant differences between the error effects of the treatment populations for the feminine and neutral dimensions, but the assumption of homogeneity of variance for the masculine dimensions was violated. Because of the concern regarding the serious influence of the violation of the homogeneity of variance assumption, the Geisser-Greenhouse (1958) conservative $F$ test was applied to the data.

**Hypothesis 1-3**

Hypothesis one, which predicted a gender self-schema x job gender interaction, was not supported by the ANOVA, $F(2,78) < 1$, n.s. (see Table 7). Specifically, masculine schematics did not exhibit greater job evaluation rating accuracy for male jobs ($M = .65$) in comparison to female jobs ($M = .62$). Also, feminine schematics did not exhibit
Table 6
Means and Standard Deviations of the Differential Accuracy for the Post Hoc Gender Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Masculine Scales</th>
<th>Feminine Scales</th>
<th>Neutral Scales</th>
<th>Masculine Scales</th>
<th>Feminine Scales</th>
<th>Neutral Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Jobs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Masculine Schematics</td>
<td></td>
<td></td>
<td>.70</td>
<td>.17</td>
<td>.66</td>
<td>.17</td>
</tr>
<tr>
<td>Feminine Schematics</td>
<td></td>
<td></td>
<td>.71</td>
<td>.09</td>
<td>.64</td>
<td>.23</td>
</tr>
<tr>
<td>Androgynous Schematics</td>
<td></td>
<td></td>
<td>.70</td>
<td>.13</td>
<td>.65</td>
<td>.26</td>
</tr>
</tbody>
</table>

Note. N = 84. Differential accuracy correlations are represented in z scores.
Table 7
Analysis of Variance Summary Table for the Effect of Gender Self-Schema (Schema), Job Gender (Job), and Scale Gender (Scale) on Differential Accuracy for the Post Hoc Gender Dimensions

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>$\omega^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schema</td>
<td>2</td>
<td>.01</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>Job</td>
<td>1</td>
<td>.45</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>Schema x Job</td>
<td>2</td>
<td>.02</td>
<td>.45</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>78</td>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td>2</td>
<td>.03</td>
<td>1.46</td>
<td></td>
</tr>
<tr>
<td>Schema x Scale</td>
<td>4</td>
<td>.00</td>
<td>.23</td>
<td></td>
</tr>
<tr>
<td>Job x Scale</td>
<td>2</td>
<td>.45</td>
<td>20.87*</td>
<td>.15</td>
</tr>
<tr>
<td>Schema x Job x Scale</td>
<td>4</td>
<td>.01</td>
<td>.38</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>156</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .001
greater accuracy for female ($M = .64$) versus male jobs ($M = .60$). As predicted, however, androgynous schematics rated male ($M = .64$) and female ($M = .66$) jobs nondifferentially. Thus, this was consistent with hypothesis one. Hypothesis two, which predicted a gender self-schema x scale gender interaction was also found not to be significant, $F(4,156) < 1$, n.s.. Raters did not demonstrate significant differential accuracy differences within the gender self-schematic conditions. Hypothesis three, which predicted a gender self-schema x job gender x scale gender interaction was not supported by the results from the ANOVA, $F(4,156) < 1$, n.s.. In sum, the ANOVA demonstrated no support for the hypotheses with the exception some consistency with hypothesis one. From these findings, there seem to be no differences in the differential accuracy of job evaluation ratings between masculine, feminine, and androgynous schematics.

**Exploratory Analysis**

A significant finding from the ANOVA that was not predicted was a job gender x scale gender interaction, $F(2,156) = 20.87, p < .001, \omega^2 = .15$ (see Figure 2). The Geisser-Greenhouse (1958) conservative F test was applied to this interaction and it was still significant, $p < .001$. Simple effects were performed to further examine this interaction. The simple effects results revealed significant differences between the differential accuracy of male and female jobs when rating masculine dimensions,
Figure 2. Interaction Effect of Job Gender x Scale Gender for the Differential Accuracy of the Post Hoc Gender Dimensions.
E(1,130) = 13.66, p < .01, and neutral dimensions, E(1,130) = 14.66, p < .01. Examination of the means shows that masculine dimensions exhibited greater differential accuracy for male jobs (M = .70) versus female jobs (M = .56). Neutral dimensions, however, exhibited greater differential accuracy for female jobs (M = .73) versus male jobs (M = .58). The simple effects analyses also demonstrated significant differences of differential accuracy between gender dimensions for both male sex-typed jobs, F(2,156) = 52.40, p < .001 and female sex-typed jobs, F(2,156) = 49.43, p < .001. Tukey’s A was then performed and revealed that masculine dimensions exhibited greater differential accuracy by raters than neutral dimensions for male sex-typed jobs at the .01 alpha level. Neutral dimensions were found to exhibit greater accuracy than masculine and feminine dimensions for female sex-typed jobs at the .01 alpha level.

In summary, the ANOVA for the post hoc gender dimensions demonstrated no significant differences between gender self-schematic’s rating accuracy for sex-typed jobs and gender dimensions. Self-schematics rated jobs and dimensions similarly. Although raters made similar evaluation ratings, they exhibited rating accuracy differences for gender dimensions when rating either male or female jobs. It was specifically found that masculine dimensions were rated more accurately when rating male versus female jobs. Neutral dimensions were rated more accurately when rating female versus male jobs. Furthermore,
masculine dimensions showed greater differential accuracy than neutral dimensions for male jobs. Neutral dimensions exhibited greater accuracy than masculine and feminine dimensions for female jobs.

Additional Analyses

As an exploratory analysis, a 3 (masculine, feminine, androgynous schematics) x 2 (male, female sex-typed jobs) x 3 (post hoc gender scales; masculine, feminine, neutral) ANOVA with the third factor as the repeated measures variable was conducted with mean job evaluation ratings as the dependent variable. Assumptions of ANOVA were met by using independent random samples, random assignment, and interval data. Cochran's test for homogeneity of variance was also calculated.

ANOVA of the Mean Ratings for the Post Hoc Gender Dimensions

Cochran's test for homogeneity of variance was first performed in order to test the homogeneity of variance assumption of ANOVA. Cochran's revealed nonsignificant effects for the masculine dimensions, $C(13,6) = .31$, n.s., feminine dimensions, $C(13,6) = .25$, n.s., and the neutral dimensions, $C(13,6) = .31$, n.s.. Thus, no significant differences between treatment error effects were found, supporting the homogeneity of variance assumption of ANOVA.

As an exploratory analysis, subjects' job evaluation mean ratings were examined. Differences of mean job
evaluation ratings within job conditions and between gender
dimensions within job conditions would demonstrate job
evaluation rating biases toward sex-typed jobs and gender
dimensions. Results from the ANOVA, however, revealed no
significant differences between the mean ratings of gender
self-schematics for jobs or dimensions. The gender
self-schema x job gender interaction, $F(2,78) = 2.78, \text{n.s.}$
and gender self-schema x job gender x scale gender
interaction, $F(4,156) < 1, \text{n.s.}$, were found not to be
significant. From these results, one can conclude that
there were no significant differences between the mean
ratings of masculine, feminine, and androgynous schematics.
Thus, any potential rating differences toward job or
dimension gender by the three types of schematics were not
present in this study.
Chapter IV

Discussion

Previous research on gender self-schematics conducted by Markus, Smith, and Moreland (1985) found that gender self-schematics, specifically masculine self-schematics, possessed "cognitive consequences" of expertise toward gender relevant information involving social perception. Theoretically, it was hypothesized that gender self-schematics' "cognitive consequences" of expertise could potentially generalize to the perception of gender relevant job information in the context of job evaluation. This would result in higher levels of job evaluation rating accuracy by gender schematics for gender relevant jobs and dimensions. The present study predicted that gender self-schematics would exhibit greater job evaluation rating accuracy for gender relevant job descriptions and job evaluation instrument dimensions than nonrelevant descriptions and dimensions.

The ANOVA conducted on the post hoc gender dimensions revealed no support for the proposed hypotheses. However, results revealed some consistency with hypothesis two. Androgynous schematics were found to demonstrate no rating accuracy differences between male and female sex-type jobs. Thus, masculine and feminine self-schematics were found not to differentially rate jobs or dimensions similar, to
androgynous self-schematics. An exploratory analysis revealed an interesting scale gender x job gender interaction. Results showed that subjects rated masculine dimensions more accurately for male jobs and neutral dimensions more accurately for female jobs. Furthermore, the ANOVA performed on the mean job evaluation ratings as the dependent measure demonstrated that gender self-schematics did not exhibit mean rating differences between male and female jobs or gender dimensions.

Compromise of Bem (1981) and Markus et al. (1982)

One possible explanation for the absence of rating accuracy differentiation among gender schematics is that the gender content and processing capabilities of the three types of schematics are similar in the context of job evaluation. Bem’s gender schema theory classified masculine and feminine schematics as sex-typed schematics (Bem, 1981). These schematics share the same processing capabilities with respect to gender. These individuals exhibit a greater salience to gender connotations of information. They tend to categorize information by gender. Thus, they divide the world according to masculinity and femininity information. Bem stated that androgynous schematics are nonsex-typed schematics. These individuals do not have processing capabilities with respect to gender as sex-typed schematics do.
Markus et al.'s self-schema theory differed from Bem's theory (Markus et al., 1982). They stated that masculine schematics have greater content and processing capabilities with respect to masculine information. Feminine schematics, hence, possess greater content and process efficiency to only feminine information. Crane and Markus (1982) view androgynous schematics as having knowledge content and process efficiency to both masculine and feminine information. Androgynous schematics, according to Crane and Markus, are similar to Bem's nonsex-typed schematics.

Results from the present study showed that masculine and feminine schematics did not exhibit differences in rating accuracy or mean ratings as might be predicted by self-schema theory. In addition, sex-typed and nonsex-typed schematics did not exhibit differential rating accuracy or mean ratings as might be predicted by Bem's theory. The results suggests several possible conclusions regarding the role that gender self-schema plays in the rating process in job evaluation.

Examining the results from gender schema theory, one may conclude that the information processing characteristic "saliency to gender connotations" or "cognitive availability" to gender attributes does not affect the accuracy or mean ratings of job evaluations. In order for this processing characteristic to have an effect, sex-typed schematics (masculine and feminine schematics) should have
differentially rated jobs and dimensions in comparison to nonsex-typed schematics (androgynous schematics). This did not occur.

The results, however, somewhat support Bem’s theory from another perspective. Bem states that the theory does not "preclude the androgynous individual from having more highly differentiated knowledge than the undifferentiated (aschematic) individual in both the masculine and feminine domains" (p.1194). Even though she clearly points out that gender schema theory is not a theory about gender content, she indirectly suggests that masculine, feminine, and androgynous schematics have similar gender knowledge content. The similar gender knowledge content among the raters may account for the rating similarity among the gender schematics. Thus, the present results, in the context of job evaluation, seem to be more consistent with gender schema theory regarding the gender knowledge content characteristic of the theory.

From the perspective of self-schema theory, the incorporation of individuals’ gender identity into their self-concept has been indirectly proposed to affect the perception of "stimuli" and to "influence cognitive behavior". In order for these information processing characteristics to have an effect, masculine and feminine self-schematics should have differentially rated (cognitive behavior) the sex-typed job information (stimuli). Because
there were no differences found in the accuracy or mean evaluation ratings among self-schematics one may conclude that content and processing efficiency of gender relevant knowledge does not affect evaluation ratings.

Past research has empirically demonstrated that these characteristics are present in schematics. Therefore, a more plausible conclusion in the context of job evaluation is that the results seem to compromise the theoretical positions of Bem (1981) and Markus et al. (1982). Bem (1982) previously stated:

"Clearly, gender schema theory and self-schema theory make contradictory-sounding claims about the schematicity of both sex-typed and androgynous individuals. Because the two theories do not share the same definition of what it means to be schematic, however, their claims do not directly contradict one another. In principle, moreover, both sets of claims could be correct", (p. 1193).

Raters made ratings as would be predicted by the characteristics of Markus et al.'s androgynous schematic and Bem's sex-typed schematic. Thus, one may conclude that masculine, feminine, and androgynous schematics possess the same job gender content and processing capabilities in the context of job evaluation. The author concurs with Bem's view that gender schema and self-schema theory are not in direct opposition to each other. Furthermore, the author concludes that schematics do possess similar content, consistent with gender schema theory, and information processing characteristics for gender information in the
context of job evaluation. A limitation of the present study which could possibly shed further light on this issue is the absence of evaluation ratings made by aschematic evaluators. Aschematic raters would be predicted to exhibit significantly less rating accuracy than gender schematics. Further research investigating the accuracy of aschematic job evaluation ratings would provide evidence for this explanation.

Generalizability of Markus, Smith, and Moreland (1985)

Another possible explanation for the lack of support for the predicted differences among gender schematics’ rating accuracy is that the present study’s theoretical premise is not generalizable to the context of job evaluation. Markus, Smith, and Moreland (1985) examined masculine self-schematics’ "information processing consequences of expertise [in the context of] the perception of others", specifically behaviors of others (p. 1494). Their study examined masculine schematics’ perception of the quantity of meaningful units of action of schema-relevant or stereotypical masculine behaviors of a male actor in a film (i.e., lifting weights, drinking beer, watching a baseball game). Subjects were either instructed to indicate the number of units of action that were meaningful to them, to concentrate on the details of the film, or were given no instructions. In all three conditions masculine self-schematics perceived a greater number of behavior units than aschematics.
The present study, however, examined the expert information processing consequences for masculine, feminine, and androgynous schematics in the context of the perception of job information, specifically job descriptions and job evaluation instrument dimensions. Subjects were asked to attend to sex-typed job descriptions and job evaluation dimensions very carefully after training and to rate each job on the job evaluation dimensions. The present study's task is similar to Markus et al. (1985) by having subjects attend to sex-typed information. This could be questioned because not all jobs and dimensions were strongly perceived as sex-typed as was expected. Thus, it could be argued that the sex stereotyped information that was perceived by the subjects in this study was not as strongly stereotypical as the social information in Markus et al.'s study. Also, the present study differed from Markus et al. by having subjects attend to job evaluation information versus social information. Person perception may be involving the self-concept cognitive structure more than job information perception.

The results revealed no rating accuracy differentiation among the three types of gender schematics. Markus et al.'s theoretical assumption that gender self-schematics demonstrate expertise in social perception seems to not be generalizable to the perception and evaluation of sex-typed job information. Thus, another potential conclusion is that gender self-schematics do not possess differential expertise
to gender relevant job and dimension information in the context of job evaluation.

A second potential explanation concerning Markus, Smith, and Moreland's (1985) theory is that gender self-schematics were not using the self as their referent point during the job evaluation process. Markus et al. theorized that the self concept plays an important role in the organization of "schema relevant behavior of others" (p. 1494). It was proposed that subjects would use their gender self-schema when making job evaluation ratings. Gender schematics may have not used their self-concept but the information presented in the training session and the job evaluation instrument as their referent points when determining a dimension rating for the job descriptions. Markus and al. state that strong stimuli tend "to activate cognitive structures that are quite independent of self structures" resulting in schematic processing which is "stimulus driven" (p. 1508). Thus, the job evaluation rating rules presented in the training session and the job evaluation dimension definitions and anchor points possibly served as the referent points for raters. Therefore, the gender self-schema involvement in the job evaluation process was minimized.

Job Evaluation Training

Another explanation for the absence of rating differentiation among the gender schematics is that job
evaluation training and the job evaluation instrument standardized the subject's rating process. Job evaluation training and a job evaluation instrument with well defined dimensions and anchor points may have established a common cognitive set across the raters, minimizing the involvement of the self-schema in the rating process. This is somewhat suggested by the moderately high average correlations attained across raters' job total point scores for both male and female jobs. The training content of the present study was adapted from Doverspike (1983). The training included four components which Smith (1986) found to be necessary for accurate ratings of performance appraisals. These four components were lecture, discussion, practice, and feedback. Five learning points, similar to Decker's (1980) rule codes were also presented on a flip chart for the raters when they were making job description ratings. These rating rules may have focused the raters' attention to carefully read the descriptions and dimensions, to rate each description and dimension independently, to avoid possible rating errors, and to justify their ratings based on the task statements in the job description and dimension anchor point. Thus, the job evaluation training session employed in the present study may have created and elicited common cognitive structures that served as referent points for the raters. This would have minimized the role of the self-schema as the referent point, hence, eliminating gender self-schematic rating differences. This could emphasize the importance of job evaluation training and a well designed job evaluation instrument in job evaluation.
Accuracy Bias of Scales

An interesting and important finding in the study revealed that rating accuracy of gender dimensions interacted with the sex-type of the jobs which subjects rated. Masculine dimensions exhibited greater differential accuracy for male jobs and neutral dimensions exhibited greater differential accuracy for female jobs. This demonstrates that certain compensable factors are more accurately rated when rating male or female sex-typed jobs. This becomes an important issue when selecting compensable factors for the development of a job evaluation instrument.

The CJET was developed with the inclusion of potential scales which interacted with the sex-type of jobs, specifically systematic job sex bias (Doverspike & Barrett, 1984). Job evaluation instruments should include an equal representation of factors that are suggested and found to be biased in favor of male or female jobs. Thus, the results of the present study place additional importance on the selection considerations of compensable factors for inclusion in a job evaluation instrument. Besides sex bias, compensable factors should be examined for possible accuracy bias towards male and female jobs. Factors which exhibit rating accuracy differences between male and female jobs need to be determined. Thus, when developing a job evaluation instrument, the instrument should include an equal representation of factors which exhibit more rating
accuracy for male jobs and factors which show more accuracy for female jobs. A job evaluation instrument, however, which included only factors which were unbiased would be preferred. This would decrease job evaluation accuracy bias for the 600 sex-typed jobs that were found in Doverspike and Barrett's (1984) study.

One possible explanation for this finding is that when subjects rated gender scales which were matched with the same gender for the jobs, the commonality of the information content and processing characteristics resulted in an increase in the rating accuracy for those scales. This explanation is consistent with the present finding that masculine dimensions were rated more accurately for male versus female jobs. Masculine dimensions were also rated with the most accuracy compared to feminine and neutral dimensions within the male job condition. Neutral dimensions and not feminine dimensions, however, were found to exhibit greater differential accuracy for female jobs contrary to this explanation. Thus, alternative explanations for the presence of accuracy bias are needed. Ambiguity of the scale definitions, simplicity or difficulty of rating scales which are more similar or dissimilar to jobs, and low rater familiarity with scales may serve as possible explanations for the accuracy bias of scales towards sex-typed jobs. Hence, these findings demonstrate the need for a greater awareness that compensable factors
can be rated with more or less accuracy depending on the sex-type of the jobs. These findings, however, must be considered with caution due to the low average correlation among raters for several of the scales.

Contribution to the Field of Industrial/Organizational Psychology

The contribution of the present study to the field of Industrial/Organizational Psychology is threefold. First, Schwab and Grams (1985) concluded that if sex biases did exist in job evaluation, sex biases "generalize across the sexes of those making the judgements" (p.538). The present study attempted to look beyond the biological classification of sex and examine the effect of rater's cognitive structures with respect to gender or their gender self-schema. The results are consistent with Schwab and Grams findings. No differences were found among gender self-schematic rating accuracy or mean ratings for sex-type jobs or gender dimensions.

Secondly, the present study's rater sample consisted of individuals who had a very high self report of being extremely masculine, feminine, or androgynous. The lack of differentiation among these three types of schematics' evaluation ratings could be attributed to the job evaluation training employed in the study. Training possibly served to establish a common cognitive set or frame of reference
across the raters which is suggested by the moderately high
average correlation among raters’ job total point scores.
Training along with a well designed job evaluation
instrument also may have transferred rater’s referent points
from the self to rating rules and job evaluation dimensions
and anchors. The results of the present study demonstrate
the importance of employing training for job evaluation
programs and to other rater programs such as performance
appraisal.

Finally, subjects were found to rate masculine and
neutral dimensions more accurately for male and female jobs
respectively. One threat to the external validity of this
finding is that raters were gender self-schematics and
college students. Thus, the specific dimensions found to
have accuracy bias towards the specific sex-typed jobs in
this study have a low probability of replication in the
general population. This finding does suggest that
dimensions may need to possibly be examined for accuracy
bias in addition to rating bias when developing a job
evaluation instrument. Dimensions shown to exhibit accuracy
bias towards male or female jobs in addition to dimensions
with rating bias should be equally represented in a job
evaluation instrument. A job evaluation instrument which
includes an equal number of factors that are potentially
biased towards male and female jobs will decrease the
systematic differentiation across job sex-type ratings.
In conclusion, the present study examined the effect of possible information processing and content characteristics on job evaluation ratings. It is advocated that further research be directed towards the investigation of the role of cognition in other rating processes such as performance appraisal and job analysis. Examining the effects of cognitive components on rating processes will hopefully lead to a decrease in rating error variance. Thus, more accurate ratings could be attained.
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Appendix A

Personality Questionnaire
Instructions for the
Personality Questionnaire

Instructions: The following questionnaire consists of a list of personality traits. Each trait has two scales in which you are to rate. Please rate the following traits very carefully, considering the extent you feel each trait personally describes you, using the first 11-point scale. Also carefully rate the following traits, considering the extent you feel each trait is important to your overall self-evaluation, using the second 11-point scale. Indicate your choice by circling a number on each of the two rating scales under each personality trait. Your ratings will only be seen by the researcher and will remain confidential. Please write your name, phone number, and the best time to reach you on the last page of the personality questionnaire (in the event the researcher needs to contact you about further research participation) and return it to the researcher, John Curtis, in room 114 ASH.
**PERSONALITY QUESTIONNAIRE**

**First rating scale:**

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2. **Emotional**

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3. **Reliable**

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4. **Masculine**

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5. **Conceited**

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First rating scale:

1 2 3 4 5 6 7 8 9 10 11
does not describe me
describes me

Second rating scale:

1 2 3 4 5 6 7 8 9 10 11
not at all important to me
very important to me

6. Moody

1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11

7. Helpful

1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11

8. Unpredictable

1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11

9. Happy

1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11

10. Feminine

1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11
First rating scale:
1 2 3 4 5 6 7 8 9 10 11
does not describe me

Second rating scale:
1 2 3 4 5 6 7 8 9 10 11
not at all important to me

11. Dominant
1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11

12. Gentle
1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11

13. Likable
1 2 3 4 5 6 7 8 9 10 11
1 2 3 4 5 6 7 8 9 10 11

14. Acts as a Leader
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15. Conventional
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18. Friendly

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19. Aggressive

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20. Truthful

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Name: ________________________________

Sex.: ________________________________

T.A.: ________________________________

Phone number: ________________________

Best time to reach you: __________________________
Appendix B

Questionnaires for the Manipulation Check of Job Gender
QUESTIONNAIRE 1

Please estimate the percentage of males and females that are employed in each of the 8 jobs that you have rated. Write in the job title and the percentage of males and females that you think are employed for that job in the spaces provided.

1. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________

2. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________

3. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________

4. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________

5. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________

6. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________

7. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________

8. Job title: _____________________
   % of males employed : ____________
   % of females employed:___________
QUESTIONNAIRE 2

Please rate each of the 8 jobs that you have rated, using the two rating scales below. Write in the job title in the space provided and rate each job on the extent you feel the job is masculine, using the masculine 11-point scale, and on the extent you feel the job is feminine, using the feminine 11-point scale. Indicate your choices by circling a number on each of the two rating scales for each job.

**Masculine scale:**

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1. Job title: ________________________

   M. 1 2 3 4 5 6 7 8 9 10 11
   F. 1 2 3 4 5 6 7 8 9 10 11

2. Job title: ________________________

   M. 1 2 3 4 5 6 7 8 9 10 11
   F. 1 2 3 4 5 6 7 8 9 10 11

3. Job title: ________________________

   M. 1 2 3 4 5 6 7 8 9 10 11
   F. 1 2 3 4 5 6 7 8 9 10 11

4. Job title: ________________________

   M. 1 2 3 4 5 6 7 8 9 10 11
   F. 1 2 3 4 5 6 7 8 9 10 11
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5. Job title: _____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11

6. Job title: _____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11

7. Job title: _____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11

8. Job title: _____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11
Appendix C

A Questionnaire for the
Manipulation Check of Scale Gender
QUESTIONNAIRE 3

Please look at the job evaluation dimensions given to you and read each definition carefully. Write in the dimension you are rating in the space provided and rate it on the extent you feel the dimension is masculine, using the 11-point masculine scale, and on the extent you feel the dimension is feminine, using the 11-point feminine scale. Rate all 15 dimensions. Indicate your choice by circling a number on each of the two rating scales for each dimension.

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<td>not</td>
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1. Dimension name: ______________________
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   F. 1 2 3 4 5 6 7 8 9 10 11

2. Dimension name: ______________________
   M. 1 2 3 4 5 6 7 8 9 10 11
   F. 1 2 3 4 5 6 7 8 9 10 11

3. Dimension name: ______________________
   M. 1 2 3 4 5 6 7 8 9 10 11
   F. 1 2 3 4 5 6 7 8 9 10 11

4. Dimension name: ______________________
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<td>no, is definitely not masculine</td>
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11. Dimension name: ____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11

12. Dimension name: ____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11

13. Dimension name: ____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11

14. Dimension name: ____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11

15. Dimension name: ____________________

M. 1 2 3 4 5 6 7 8 9 10 11
F. 1 2 3 4 5 6 7 8 9 10 11
Appendix D

The Job Descriptions
BILLING CLERK (Practice Rating)

Compiles data and operates typewriter to prepare invoices and bills of lading: Computes to compile amounts due from records, such as purchase orders, sales tickets, and charge slips, using adding or calculating machine. Types invoices, listing items sold, amounts lists weight and serial number of items sold, using specifications book. May type shipping labels. May type credit memorandums to indicate returned or incorrectly billed merchandise. May type credit forms for customers or finance companies.
WORD PROCESSING SUPERVISOR (Practice Rating)

Supervises and coordinates activities of workers engaged in preparing correspondence, records, reports, insurance policies, and similar clerical matter and in operating specialized typing machines, such as magnetic-tape typewriting and composing machines: Advises other departmental personnel in techniques and style of dictation and letter writing. Recommends changes in procedures to effect savings in time, labor, costs, and to improve operating efficiency. Assigns new workers to experienced workers for training. Assists subordinates in resolving problems in nonstandard situations. Evaluates job performance of subordinates and recommends appropriate personnel action.
FLYING INSTRUCTOR

Instructs student pilots in flight procedures and techniques: Accompanies students on training flights and demonstrates techniques for controlling aircraft during taxiing, takeoff, spins, stalls, turns, and landings. Explains operation of aircraft components, such as rudder, flaps, ailerons, compass, altimeter, and tachometer. May give student proficiency tests at termination of training. Is required to hold Commercial Pilot’s Certificate, with Instructor’s Rating, issued by Federal Aviation Administration.
METER READER

Reads electric, gas, water, or steam consumption meters and records volume used by residential and commercial consumers: Walks or drives truck over established route and takes readings of meter dials. Inspects meters and connections for defects, damage, and unauthorized connections. Indicates irregularities on forms for necessary action by servicing department. Verifies readings to locate abnormal consumption and records reasons for fluctuations. Turns service off for nonpayment of charges in vacant premises, or on for new occupants. Collects bills in arrears (behind in paying a debt). Returns route book to business office for billing purposes.
RESEARCH MECHANIC

Sets up and operates equipment to test metal aircraft structural, hydraulic, and pneumatic parts, assemblies, and mechanisms, according to standard procedures, to discover faults of design and fabrication: Installs units, such as rib assemblies, struts, landing gears, valves, ducts, universal joints, gears, and motors, in testing equipment and machines, and connects wiring, tubing, couplings, and power sources, using handtools. Operates test equipment and machines to determine factors, such as stress, strain, pressures, turbulences, velocities, flow of fuel, oil and air, wear, and usability of installed units, under conditions of heat, cold, high speeds, torque, and load. Measures induced variations from normal with precision instruments, such as micrometers, verniers, calipers, manometers, pressure gages, flowmeter, strain gages, and dynamometers, and records results for analysis by engineering department. May develop devices, such as flat patterns, contour templates, and forming blocks, using handtools and machine tools, to make mechanical, sheet metal, and plumbing parts and assemblies for experimental test projects.
SCHOOL-PLANT CONSULTANT

Formulates and enforces standards for construction and alteration of public school facilities throughout State: Develops legislation relative to school building sites and school design and construction. Guides school districts in development of long range comprehensive master plans, including such factors as site selection and expected population growth and mobility, and school finance and specifications. Coordinates activities, jurisdictions, and responsibilities of adjacent school districts and evaluates entire systems of schools. Provides technical information and advice to local school authorities considering construction or renovation of school plant. Inspects proposed sites and schools under construction or undergoing alteration to enforce applicable standards. Prepares factors as climate, construction costs, availability of materials, and accepted principles of institutional construction. Reviews plans for construction and renovation of school buildings and approves or disapproves plans in accordance with standards and policies of department. Confers with representatives of school boards, educators, and architects to explain and reach agreement on design concepts and construction standards. Arbitrates difficult and unusual construction disputes. Conducts special research studies concerned with lighting, heating, ventilation, air conditioning, and acoustics. Prepares reports for State Education Department and State Legislature.
SHIP MASTER

Commands ship to transport passengers, freight, and other cargo across oceans, bays, lakes, and in coastal waters: Sets course of ship, using navigational aids, such as charts, area plotting sheets, compass, and sextant, and orders crew worker at helm to steer ship. Determines geographical position of ship, using loran or azimuths of celestial bodies. Inspects ship to insure that crew and passengers observe regulations pertaining to safety and efficient operation of ship. Coordinates activities of crew members responsible for signaling devices, such as ship's whistle, flashing lights, flags, and radio, to signal ships in vicinity. Calculates landfall (sighting of land), using electronic sounding devices and following contour lines on chart. Avoids reefs, outlying shoals, and other hazards to shipping, utilizing aids to navigation, such as lights, lighthouses, and buoys. Relinquishes command of ship to Ship Pilot to guide ship through hazardous waters. Signals Tub Boat Captain to berth (a place ship anchors) ship. Maintains ship's log. Must be licensed by U.S. Coast Guard for steam, motor, or sail ship according to waters navigated and tonnage of ship.
STEREO- PLOTTER OPERATOR

Draws topographical maps from aerial photographs, using instruments that produce simultaneous projections of two photographs, taken from different positions, in manner that permits stereoscopic viewing for delineation of planimetric detail and drawing of contours: Orients plotting instruments to form three dimensional stereo image. Views stereoscopic image by using anaglyphic, binocular, or image alternator techniques. Determines contour interval and vertical scale of image, using mathematical table. Traces contours and topographical details to produce map.
SUBMERSIBLE PILOT

Pilots submersible craft to conduct research in fields of oceanography or marine biology, test capabilities and performance of craft and auxiliary equipment, or perform underwater activities, such as exploration, mapping photography, or construction, salvage or rescue work. Plans and develops operational procedures or techniques in order to investigate and test theories, or carry out specific underwater activities. Conducts predive operational tests on craft, life support systems, and other equipment. Pilots and controls craft to carry out mission in accordance with operational plans. Conducts scientific tests on effect of underwater life, life support systems, and habitats on human or other animals. Performs maintenance and repair on underwater facilities, well-heads, or pipelines. Carries out specific salvage or rescue operations. May perform activities outside of craft, using scuba equipment. May prepare technical reports or provide data for use by scientific or engineering personnel.
TESTER

Measures tensile strength, hardness, ductility, or other physical properties of metal specimens, following a prescribed series of operations on various types of testing machines: (1) Determines tensile strength on tension-testing machines. Measures dimensions of specimen with scales and micrometers and records measurements. Screws or clamps specimen in holders on machine. Clamps extensometer onto specimen and connects wire from extensometer to automatic stress-strain recorder. Turns handwheels or moves levers to apply tension to specimen at specified rate. Notes reading of indicator dial on control panel of machine or observes stress-strain curve (curve obtained by plotting applied tension against resultant elongation) being drawn by recorder to determine yield point and tensile strength of specimen. Removes pieces of broken specimen form machine, fits them together, and measures the amount of elongation. Makes simple calculations of values, such as unit tensile strength and percentage elongation, using tables. Records readings and calculations on special forms. (2) Measures hardness of specimens. (3) Measures ductility of sheet-metal testing machine. May test specimens for plasticity and compression. May specialize in testing iron or steel sheets for ductility and be designated Sheet Tester.
CENTRAL-OFFICE OPERATOR

Operates telephone switchboard to establish or assist customers in establishing local or long-distance telephone connections: Observes signal light on switchboard, plugs cords into trunk-jack, and dials or presses button to make connections. Inserts tickets in calculagraph (time-stamping device) to record time of toll calls. Consults charts to determine charges for pay-telephone calls, and requests coin deposits for calls. May give information regarding subscribers' telephone numbers. Calculate and quotes charges on long-distance calls. May make long-distance connections.
COMMODITY-LOAN CLERK

Keeps records of loans in foreign department secured by commodities (as collateral) in warehouses. Makes periodic physical check of commodities in warehouses to insure that loans made will not exceed collateral value. Types replies to general correspondence relating to loans, and maintains correspondence files.
CONSULTANT NURSE

Advises hospitals, schools of nursing, industrial organizations, and public health groups on problem related to nursing activities and health services: Reviews and suggests changes in nursing organization and administrative procedures. Analyzes nursing techniques and recommends modifications. Aids schools in planning nursing curriculums, and hospitals and public health nursing services in developing and carrying out staff education programs. Provides assistance in developing guides and manuals for specific aspects of nursing services. Prepares educational materials and assists in planning and developing health and educational programs for industrial and community groups. Advises in services available through community resources. Consults with nursing groups concerning professional and educational problems. Prepares or furnishes data for articles and lectures. Participates in surveys and research studies.
DIETETIC TECHNICIAN

Provides services in assigned areas of food service management, teaches principles of food and nutrition, and provides dietary counseling, under direction of Dietitian:

Plans menus based on established guidelines. Standardizes recipes and tests new products for use in facility.

Supervises food production and service. Selects, schedules, and conducts orientation and in-service education programs. Develops job specifications, job descriptions, and work schedules. Assists in implementing established cost control procedures. Obtains and evaluates dietary histories of individuals to plan nutritional programs. Guides individuals and families in food selection, preparation, and menu planning, based upon nutritional needs. Assists in referrals for continuity of patient care.
HEAD NURSE

Directs nursing activities and instructs nurses in organized hospital unit: Assigns duties and coordinates nursing service. Evaluates nursing activities to insure patient care, staff relations, and efficiency of service. Observes nursing care and visits patients to insure that nursing care is carried out as directed, and treatment administered in accordance with Physician's instructions. Directs preparation and maintenance of patients' clinical records. Inspects rooms and wards for cleanliness and comfort. Accompanies Physician on rounds, and keeps informed of special orders concerning patients. Participates in orientation and instruction of personnel. Orders, or directs ordering of drugs, solutions, and equipment, and maintains records on narcotics. Investigates and resolves complaints, or refers unusual problems to superior.
INFORMATION CLERK

Answers inquiries of persons coming into establishment: Provides information regarding activities conducted at establishment, and location of departments, offices, and employees within organization. In retail establishment informs customer of location of store merchandise. In hotel supplies information concerning services, such as laundry and valet services. Receives and answers requests for information from company officials and employees. May call employees or officials to information desk to answer inquiries. May keep record of questions.
NURSE-MIDWIFE

Provides medical care and treatment to obstetrical patients under supervision of Obstetrician, delivers babies, and instructs patients in prenatal and postnatal health practices: Participates in initial examination of obstetrical patient, and is assigned responsibility for care, treatment, and delivery of patient. Examines patient during pregnancy, utilizing physical findings, laboratory test results, and patients's statements to evaluate condition and insure that patients's progress is normal. Discusses case with Obstetrician to assure observation of specified practices. Instructs patient in diet and prenatal health practices. Stays with patient during labor to reassure patient and to administer medication. Delivers infant and performs postpartum examinations to insure that patient and infant are responding normally. When deviations from standard are encountered during pregnancy or delivery, administers stipulated emergency measures, and arranges for immediate contact of Obstetrician. Visits patient during postpartum period in hospital and at home to instruct patient in care of self and infant and examine patient. Maintains records of cases for inclusion in establishment file. Conducts classes for groups of patients and families to provide information concerning pregnancy, childbirth, and family orientation. May direct activities of other workers. May instruct in midwifery in establishment providing such training.
TYPIST

Types letters, reports, stencils forms, addresses, or other straightcopy material from rough draft or corrected copy. May verify totals on report forms, requisitions, or bills. May operate duplicating machines to reproduce copy.
Appendix E

The CJET Rating Form
CJET Rating Form

I.D. # __________________
Job: ___________________

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Your Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Education</td>
<td></td>
</tr>
<tr>
<td>2. Time to Proficiency</td>
<td></td>
</tr>
<tr>
<td>3. Previous Experience</td>
<td></td>
</tr>
<tr>
<td>4. Mental Effort</td>
<td></td>
</tr>
<tr>
<td>5. Visual Attention</td>
<td></td>
</tr>
<tr>
<td>6. Physical Effort</td>
<td></td>
</tr>
<tr>
<td>7. Manual Dexterity</td>
<td></td>
</tr>
<tr>
<td>8. Supervisory Responsibility</td>
<td></td>
</tr>
<tr>
<td>10. Safety of Others</td>
<td></td>
</tr>
<tr>
<td>11. Counseling and Teaching</td>
<td></td>
</tr>
<tr>
<td>12. Negotiating and Influencing</td>
<td></td>
</tr>
<tr>
<td>13. Surroundings</td>
<td></td>
</tr>
<tr>
<td>14. Hazards</td>
<td></td>
</tr>
<tr>
<td>15. Monotony</td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

The Instructions and Lecture
I. Purpose of Experiment

"The purpose of this experiment is to examine the way in which people rate jobs utilizing a point method job evaluation instrument. In front of you, you will find a consent form. Please read the consent form and if you agree to participate in the experiment please sign it and indicate today's date. Are there any questions?"

II. CJET Training Manual

"Right now, I am going to pass out a training manual to you titled "A Rater Training Manual to Accompany the Comprehensive Job Evaluation Technique". This manual will describe the purpose, process, and techniques of job evaluation and give instructions on how to use a job evaluation instrument. I want you to read this manual. I am going to give you 30 minutes. As you are reading, I want you to concentrate on the following questions". Questions were displayed in a flipchart.

1. What is job evaluation?
2. What are compensable factors?
3. What are the different methods of job evaluation?
4. What is a point method job evaluation instrument?
5. What is a job specification and job description?
6. What is the CJET?
We will go over these questions when you have finished reading the manual. Are there any questions? Please go ahead and read the training manual and I will stop you in 30 minutes.

III. Lecture

A. Job Evaluation in General

"At this point I would like to tell you a little bit about the process and function of job evaluation. Employees of an organization expect to receive pay that is adequate and equitable in return for the skill, effort, and responsibility required to perform their jobs. Employees expect that their pay will be equitable in comparison to other jobs in the organization as well as to other jobs in other organizations. If an organization wishes to retain its employees, then the organization must establish pay policies which encourage the development of perceptions of pay equity. The purpose of job evaluation instruments is to measure job worth. Job worth is defined in terms of the internal compensable factors of work that an organization values. The most common and major compensable factors of job evaluation instruments are: Skill, Effort, Responsibility, and Working Conditions."
B. The Point Method

"The point method is a specific type of job evaluation instrument and is probably the most widely used technique in industry today. The concept behind the point method is simple; jobs can be broken down into a number of compensable factors which are of value to the organization. This method allows jobs to be directly rated on these compensable factors which are further divided into levels or degrees. Thus, a rater can choose the level of each compensable factor in which he or she feels makes up that job. For example, a compensable factor could be Education. One level of this factor could be "requires a high school education" and another level could be "requires a college education". The following example was displayed on a flipchart.

<table>
<thead>
<tr>
<th>Level</th>
<th>Requires</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Less than High School</td>
</tr>
<tr>
<td>2</td>
<td>High School</td>
</tr>
<tr>
<td>3</td>
<td>2-year College</td>
</tr>
<tr>
<td>4</td>
<td>College</td>
</tr>
<tr>
<td>5</td>
<td>Graduate School</td>
</tr>
</tbody>
</table>

The point method assigns points for each of these levels for each factor. Once a rater has rated each compensable factor, the points of each factor level are summed to arrive at a total point value for that particular job. This total
point value represents the worth of that job. Each job within the organization is rated and given a total point value which is then translated into an equitable pay structure."

C. Job Analysis

"Job information from a specific job is what is actually being rated on job evaluation instruments such as the point method. A job analysis is performed on the job to be evaluated in order to collect the job information needed to rate the job. Job analysis consists of observing and interviewing the incumbents of the job and their supervisors. Job information is collected and the major duties, responsibilities, and tasks of the job are generated. The second step is to organize the job information into a usable manner. This involves writing a job description and job specification for the job."

D. Job Description

"The job description consists of a list of the major duties and tasks of a job. The job description may contain information on working conditions, tools used, and the relationship to other jobs (an example of the Billing Clerk job description was shown). Thus, the information collected
from the job analysis is organized into a job description that is evaluated by the rater using a job evaluation instrument."

E. Rating Errors

"When raters are rating job information such as job descriptions, they often make common rating errors. These common rating errors include: leniency, halo, first impression, and contrast effects. Research shows that rater’s knowledge of these rating errors decreases the frequency of them being made. Please turn to chapter 4 of your training manual". The experimenter read the description of each of the rating errors in the manual and discussed them using the following graphs which were displayed on a flipchart.

Graph 1: Leniency

```
 5 * * * * * * * *
 4 * * * * * * * * *
 3 * * * * * * * *
 2 * * * * * *
 1 * *
```

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
"It is commonly found that many rating tasks such as job evaluation is subject to a degree of rating error as was previously mentioned. To try to avoid this I would like to present a few suggestions that might help you make better ratings". The following suggestions were displayed on a flipchart and read aloud.

1. Read each job description carefully and completely.
2. Read each job evaluation factor carefully and completely.
3. Rate each job as independently as possible.
4. Rate each factor as independently as possible.
5. When you choose a rating for a particular factor make sure that it is justifiable from the statements on the job description."

F. The Comprehensive Job Evaluation Technique

"The point method job evaluation instrument in which you will be using is the Comprehensive Job Evaluation Technique or CJET. The CJET consists of 15 compensable factors. Please look at chapter 5 in the rater training manual and the CJET manual in front of you. Read each factor definition as I read them aloud. This will be done in order to give you a chance to ask any questions concerning each factor and their level definitions." Each factor definition of the CJET was read aloud by the experimenter. Also, subjects were asked if there were any questions concerning the factor’s definition and levels on each of the 15 factors.

IV. Practice Ratings

"For practice, I would like you to rate two sample job descriptions. After you rate each sample job there will be a group discussion of your sample ratings. First, take a
look at the job description of Billing Clerk that you have been given. You'll be rating this job on 15 factors, using the CJET manual. Turn to page one of the CJET. The factor, education, measures the minimum educational level required by the job. Minimum education level is defined as that level of education which an individual must possess prior to entry into a job in order to become proficient at the job duties within a reasonable amount of time. As you can see, level 1 is the scale value that you would select if the job required less than a high school education and the scale goes up to the graduate school level. After you read the job description, carefully choose the most appropriate scale value and mark it on the CJET rating form that you received. Be sure that your rating is in the space that corresponds to the factor that you are considering. When everyone has rated the Billing Clerk job description on all 15 factors, we will discuss your ratings. Are there any questions? Please go ahead and rate the Billing Clerk job description and when you are finished please turn over your rating forms."

(When subjects were finished) "Now we will go over the ratings that you gave the job of Billing Clerk. Factor one, education, should have been rated 1, since the job description specifies typing and addition as the major duties of the job in which an individual with less than a high school education could perform." The Experimenter then reviewed the remaining expert ratings for Billing Clerk and
a discussion was generated on subject ratings which were inconsistent with the expert ratings. After completing the second sample job, subject ratings were again compared with expert scores and discrepant ratings were discussed.

V. Actual Ratings

"Please pass in your practice ratings and sample job descriptions. Now I am going to give you eight job descriptions and their corresponding rating forms. Please go ahead and rate each job in the order they are presented. Only rate one job at a time. Do not look at the next job description until you have finished rating the job before it. This is important for the study. Please be sure to rate all 15 factors for each job. Remember, it is very important that you rate each job carefully and accurately. When you have rated all four jobs double check that you have rated each job on all 15 factors. Then turn your rating forms over. At this point I will pass out three questionnaires; "Questionnaire 1", "Questionnaire 2", and "Questionnaire 3" to you (manipulation checks for job and scale gender). Please follow the instructions and if you have any questions just raise your hand and I will come around to answer to them. Are there any questions? Please go ahead and rate the eight jobs". Rating forms and questionnaires were collected when subjects were finished and subjects were thanked for their participation and debriefed.
Appendix G
A Rater Training Manual to Accompany the Comprehensive Job Evaluation Technique
A Rater Training Manual to Accompany the
Comprehensive Job Evaluation Technique

Dennis Doverspike
Psychology Department
The University of Akron
Preface

This manual is designed to aid in the standardization of job evaluation ratings for the author's doctoral dissertation. The material contained in this manual is intended to foster the development of a similar frame of reference among the raters. The manual, therefore, does not include discussion of other issues relevant to the establishment and maintenance of a job evaluation system or a wage and salary administrative policy. Its primary function is simply to ensure an adequate understanding of both the job evaluation instrument and the process of rating jobs.
Introduction to Job Evaluation

Employees of an organization expect to receive pay which is adequate and equitable in return for the skill and training required, the effort expended, the responsibility exercised, and the hazardous conditions encountered on their jobs. Employees expect that their pay will be equitable in comparison to other jobs in other organizations. If an organization wishes to retain its employees, then the organization must establish pay policies which encourage the development of perceptions of pay equity.

Early History

Until early in this century, organizations were forced to rely on fiat or bargaining to establish rates of pay for jobs. However, periods of rapidly rising and declining prices caused by wars, technological advances, and government legislation, as well as the growing role of unions, led to increased dissatisfaction with traditional methods of determining pay. The problem faced by organizations was how to ensure equitable rates of pay under rapidly changing economic conditions.

The work of Frederick W. Taylor provided one solution. Taylor demonstrated in the late 1800s that it was possible to scientifically investigate the properties of jobs. At about the same time, others, including the United States Civil Service Commission, were developing primitive methods
of job evaluation and job classification. The purpose of these new methods was to arrive at rational orderings of jobs in terms of worth to the organization.

A number of methods for ordering jobs according to worth were soon developed. The earliest methods involved simple rankings of jobs and groupings into common grades. Later methods were developed which required rating or ranking jobs on factors. These factors were scales which were developed to reflect work characteristics which were perceived as compensable. Thus, different job evaluation types developed. These types are discussed in the next chapter.

**Major Characteristics**

Modern job evaluation systems consist of a number of elements. These elements may include: a job analysis, determination of job classes, a wage survey, a rate structure, a merit pay system, an incentive pay system, and the job evaluation instrument. Thus, the job evaluation instrument is but one part, albeit a very crucial part, of the total job evaluation system.

The purpose of the job evaluation instrument is to differentiate jobs based on the internal compensable characteristics of the job. Thus, by definition, job evaluation does not measure important job characteristics which are not compensable nor compensable characteristics which are not internal to the job. This explains why job evaluation instruments do not measure factors such as union membership and short-term labor supply, which, while
compensable, are not internal to the job.

The factors which have been found consistently to be both compensable and internal are: skill, effort, responsibility, and working conditions. These factors are defined in terms of the job, not the person holding the job. For example: a company may hire all college graduates to perform entry-level clerical jobs requiring a high school education. The job worth is based on the required high school diploma not the college diploma actually held by the incumbents. The possession of a college diploma may increased both performance and pay on the job, but it is not required by the job. Therefore, the extra education of the incumbent does not affect the job worth as measured by the job evaluation instrument, even though it may affect pay through performance bonuses.

**Summary**

In summary, job evaluation systems developed in response to pay inequities caused by rapidly changing economic conditions. The job evaluation instrument is one part of the job evaluation system. Job evaluation instruments measure job worth where job worth is defined in terms of the internal compensable characteristics of work. The major compensable characteristics are: skill, effort, responsibility, and working conditions. Four major types of job evaluation have been developed and are discussed in the next chapter.
Chapter 2

Methods of Job Evaluation

The four major types of job evaluation are: ranking, classification, factor comparison, and the point method. Both ranking and factor comparison involve comparing jobs to each other, while in the point and classification methods jobs are compared to a predetermined standard. The ranking and classification methods are similar in that the whole job is the subject of comparison, while the factor comparison and point methods are similar in that the job factors are the subject of comparison. The four methods will now be discussed in more detail.

Ranking

Ranking was one of the earliest methods of job evaluation. In the ranking method jobs are evaluated by comparison to each other based on overall worth. The raters are usually informed that judgments of overall worth are to be based on consideration of skill, effort, responsibility, and working conditions, but the judgments are still based on assessment of the whole job. Usually, the raters are asked to simply rank the jobs, although more complicated methods, such as paired comparison, do exist.

The main advantage of the ranking method is its simplicity. However, this advantage diminishes as the number of jobs to be ranked increases. The ranking method has a number of additional disadvantages including its
arbitrary nature, difficulties in applying the method to a large number of jobs, and problems in evaluating new jobs.

**Classification**

A second simple method of job evaluation is the classification method. In using this method, the first step is the development of a number of grades or categories. For each grade there is a description of typical factor levels and a listing of representative jobs. Each job is compared to the grade description, based on its overall worth, and assigned to the grade category which provides the closest match. A good example of a classification system is the United States Civil Service System.

A major advantage of the classification method is that it is rather simple to develop and apply. A major difficulty is that jobs may have characteristics congruent with more than one grade. Thus, jobs may not fit well into the coding scheme. Therefore, this method may require arbitrary decisions regarding classification.

**Factor Comparison**

This method is based on ranking jobs on individual factors. In addition, the concept of job pricing is also part of this method. These two concepts, ranking on factors and pricing, are the major characteristics of the original factor comparison methods.

As with point systems, to be discussed in detail next, a number of characteristics or factors are thought to underlie the worth of jobs. The number of factors on which the job is evaluated is usually smaller than the number used in
point systems. Frequently, there are three to five factors. For example, a factor comparison instrument might consist of the following five scales: skill, responsibility, physical effort, mental effort, and working conditions. Another frequently used factor comparison method consists of four scales: know-how, problem solving, accountability, and working conditions. Thus, the first step consists of the identification of the factors.

After the identification of the factors, all the jobs are ranked on the factors. If there are five factors, then the jobs are ranked five times. Once the jobs are ranked a number of "key jobs", usually 10 to 20 are identified. Among the characteristics of a key job are that it is well-established, it is regarded as fairly paid, and it is fairly stable over time. In addition, key jobs should be selected so as to cover the entire range of possible factor values. These key jobs are then once again ranked on the factors.

Once the key jobs are ranked they are then priced. The total pay for a job is broken down into the pay for each factor. For example, a janitor is paid $4 per hour. This $4 is broken down into $.20 for skill, or about 5%; $.20 for responsibility, or 5%; $1.60 for physical effort, or 40%; and $1.80 for working conditions, or 45%. This procedure is followed for each key job. Thus, the pay for each factor for each key job is established. Key jobs are then compared to ensure that the monetary values are reasonable. For example, if a manager ranks higher than a janitor on skill, then the manager should receive more than $.20 for skill.
If the system is found to be internally consistent it is then applied to all jobs. Jobs with skill requirements equivalent to janitors are allocated $.20 for skill. Rates of pay for other factors depend on how the requirements of the job match up with the key jobs. The factors are then added together to arrive at the rate of pay for the job.

The major advantage of the factor comparison method is that the value of the job is expressed directly in monetary terms. There is no need to translate the measure of worth into pay. However, there are a number of disadvantages to the factor comparison method. The system is complex and must be professionally tailored to each organization. Furthermore, both the selection of key jobs and the ranking method introduce a good deal of subjectivity, more than that usually found in point methods, into the system. Finally, with recent concerns over comparable worth of male and female jobs, the identification of any job as properly paid may be highly controversial.

The preceding description of a factor comparison method describes the technique as originally developed. However, contemporary factor comparison methods often represent hybrids of factor comparison and point systems. These revisions attempt to resolve some of the problems with factor comparison methods.

**Point Methods**

Point methods or point plans are probably the most widely used job evaluation technique. The concept behind the point method is simple; jobs can be broken down into a
number of compensable factors. However, unlike the factor comparison method, in the point method jobs are rated directly on the factors.

In using the point method, then, a number of factors are chosen. The number of factors can range from 1 to 40. Traditionally, there have been four major factors. These are: skill, effort, responsibility, and job conditions. These factors are then further divided into more specific factors. For skill, representative factors include education, experience, ability, and initiative. For effort, representative factors include mental effort and physical effort. For responsibility, representative factors include supervisory responsibility, financial responsibility, and responsibility for the safety of others. For job conditions, representative factors include working conditions, hazards, and location.

After the specific factors are chosen, they are further divided into levels or degrees. For example, for education one degree might be "requires a high school education". Another degree for education might be "requires a college education". These degrees are then assigned points. The points may increase in a simple arithmetic progression or in a more complex geometric progression.

Thus, a point method job evaluation instrument consists of a number of factors defined in terms of a number of degrees with corresponding point values. Each job is rated on each of the factors. The worth of the job is the total point score for the job. These point values are then translated into a pay structure.
Obviously the total point value will depend on the weights given to the factors. There are two major methods of arriving at factor weights. First, a committee may rate the importance of factors. Second, the weight may be determined through how well the factors predict pay. This requires the use of statistical techniques, in particular multiple regression. Regardless of the method used to determine weights, the impact of each factor on the distribution of total point scores depends on the range of factor values actually obtained and on the reliability of the factors.

As previously indicated, the point method is perhaps the most popular job evaluation method. There are a number of excellent reasons for its popularity. Ratings made by the point method are reliable and valid. Jobs are evaluated independent of economic trends, changing wage rates, and market values. Finally, the method is easily understood and easily adapted to new situations. There are, however, criticisms of point methods. A major criticism is that similar results can be achieved with much simpler systems. Another criticism is that any other method of job evaluation the point method is basically subjective.

**Summary**

There are four major methods of job evaluation: ranking, classification, factor comparison, and the point method. Ranking involves global relative comparisons of the whole job. Classification involves matching whole jobs to grade descriptions. Factor comparison involves the ranking of
jobs on factors. The point method involves rating jobs on factors. Of the four methods of job evaluation, the point method is the most popular. In addition, there are a number of advantages to the point method compared to other methods. Foremost, the point method is relatively objective and is also independent of market values. The next chapter describes the basis of job evaluation—the job analysis.
Accurate job evaluations depend upon the availability of accurate, detailed job information. Job information is collected through a personnel function referred to as job analysis. In addition to forming the basis of job evaluations, job analysis serves as a source of information for performance appraisal, employee selection, and training.

Job analysis is a cyclic, iterative process involving the continual collection and updating of job information. There are two major steps in the job analysis process. The first step involves collecting the job information. This step involves defining the appropriate level of specificity in terms of jobs and tasks and deciding upon the method of data collection. The second stage involves organizing the collected information in a usable manner. This step involves writing the job description and job specification.

Defining Jobs

A job is an abstract concept. It is an abstract concept in that it represents a collection of physical and mental activities performed by a number of different individuals. Thus, what activities are considered to be part of a job is somewhat arbitrary. A major problem in job analysis is at what level of specificity to write the job analysis. In preparing a job analysis, it is useful to distinguish between elements, tasks, duties, positions, jobs, and occupations.
The "element" is the most specific work activity. The study of elements is usually the subject matter of time study analysis rather than job analysis. An element is the smallest step into which a work activity can be divided, without considering the separate movements made. An "elemental motion" is sometimes distinguished from an element, where the elemental motion is the very specific movements made in performing the job.

A "task" consists of one or more elements. It is a distinct, discrete unit of work. A task occurs whenever effort, mental or physical, is exerted to achieve a goal. Tasks are the proper subject matter of job analysis. A task statement usually consists of a specific action verb and a specific object. An example of a task is "reads job evaluation training manuals". Task statements are discussed in more detail under Job Specifications.

A "duty" is very similar to a task. Duties are defined as major tasks or major activities consisting of several tasks. For example, for a secretary a major duty is "types manuscripts".

A "position" is a collection of duties or tasks. The total collection of activities performed by an individual is a position. The number of positions in the country is equal to or greater than the number of workers in the country. This is because some workers may hold more than one position. In addition, some positions may be temporarily vacant. However, there is at least one position for every worker.
A "job" is a group of positions where the positions are judged to be sufficiently similar in their major tasks to be grouped together. A job may consist of one or more position.

An "occupation" is a general class of jobs. The significant attribute of an occupation, as compared to job, is that an occupation crosses organizational lines. Thus, "secretary" is and occupation if there is no reference to where the secretarial activities are performed.

In job analysis, the concern is with describing jobs, although occupational analyses are also a possibility. The jobs are described in terms of the tasks and duties performed. The collection of the task information can be completed through a number of methods. These methods are described in the next section.

Methods

There are a number of options available in collecting job analysis information. Options include the technique to be used and from whom the information will be obtained.

Popular methods of collecting job information include the interview, observation, and questionnaires. Questionnaires provide a quick, standardized method of job analysis. However, the most popular technique of job analysis is probably the interview. The interview usually is conducted according to a standardized form. Use of the interview method allows the job analyst to vary the specificity of questions. Thus, the interview can clarify questions which are ambiguous in the questionnaire method.
An important issue, regardless of method used, is who should provide the job information.

Job analysis information may be provided by a number of sources including the incumbent, the analyst, and the supervisor. The use of the incumbent as the source of job information has some disadvantages for job evaluation. In particular, the incumbent may exaggerate the complexity of jobs, so as to increase the pay level of the job. The quality of the supervisor's evaluation will depend on his or her opportunity to observe the job activity. In practice, both the supervisor and incumbent usually serve as sources of job information.

Once the job information is collected, it must be converted into useful form. Fairly standard procedures have been developed for translating job analysis information into standard form. The written job analysis usually consists of two major parts, the job description and the job specification.

**Job Description**

The job description consists of a listing of those tasks which constitute the job. Thus, the job description consists of a section detailing major duties and a section detailing all the tasks performed. The job description may also contain information on working conditions, tools used, the relationships to other jobs.

A standard format is available for writing job descriptions. First, the tasks are usually organized according to either relationships to major duties or
temporal sequences. If neither of the above apply to the job tasks, the tasks are organized according to importance.

There is also a standard sentence structure for describing the tasks. Sentences are kept simple. The subject is often omitted. The framework for the sentences is verb and then immediate object. The object may be followed by an infinitive phrase.

For example, a task statement for a receptionist might be "answers telephone to take messages". The verb "answers" identifies the worker function. The immediate object "telephone" identifies the data, person, or thing which is the object of the work activity. Finally, the infinitive phrase is "to take messages". The infinitive phrase in this case modifies the object; the infinitive phrase may also identify the work field.

A job description may be very detailed or very brief depending on the complexity of the job being evaluated. Regardless of the complexity of the job, the general format for the job description is the same. Careful preparation of the job description is critical to the next phase of the job analysis, for the job description provides the basic data for the job specification.

Job Specification

The job specification gives the personal requirements or personal demands of the job. The job specification may include information on skill, effort, and responsibility required by the job, as well as the working conditions encountered on the job. The correspondence between the
information provided by the job specification and the information required by the job evaluation should be obvious. The job specification provides the basic information for the job evaluation.

As with the collection of the job analysis information, job specifications may be developed through a number of methods. A simple method is to have the supervisor state the job requirements. However, the supervisor may often over-estimate the job requirements. A second method is to have the job analyst revise the supervisor’s or incumbent’s estimates of the job requirements. A third method is to have the job analyst develop the job requirements through consideration of the job description and the analyst’s knowledge of general occupational information. Regardless of the method used to generate the job specifications, they should be logically consistent with the job descriptions. It should be possible to identify the relevant task statements of each job requirement.

Summary

Job analysis provides the source of task information for the job evaluation. The two major steps in job analysis are collecting the job information and organizing task information into usable form. The first step involves deciding on a method for collecting job information and deciding on who will provide the information. The second step consists of writing the job description and job specification. The job description and job specification should be internally consistent. The job specification provides the basic data for the job evaluation.
Chapter 4

Rating Errors

Research studies suggest that knowledge of rating errors may eliminate frequently made rating errors. Rating errors have been suggested as a possible source of the high intercorrelations obtained for job evaluation scales. Therefore, this chapter consists of a review of common rating errors. These errors include: leniency, halo, first impression, and contrast effects.

Leniency

Leniency, along with strictness and central tendency, involves the tendency to use only a part of the total rating scale. For example, in rating jobs an analyst rates all jobs toward the upper end of the scale, regardless of their actual value. This is a leniency error, since the jobs actually vary widely in their scale values. Similarly, a rater could use primarily the center value on a scale, central tendency, or the lower end of the scale, strictness. In practice, leniency errors are far less likely to occur in job evaluation than in performance appraisal.

Halo

Halo refers to the tendency to generalize inappropriately from one job factor to another job factor. Thus, it involves rating one factor too high, or too low, because another factor is rated high or low. It would be an
example of halo error to rate a job high on previous experience merely because education was rated high. Of the various rating errors, halo may be the most critical in job evaluation ratings. To reduce halo error, consider the factor definitions and level definitions carefully and attempt to rate each factor as independently as possible.

First Impression Error

If in rating a job an analyst allows initial information to distort subsequent information, then the analyst is making a first impression error. For example, an analyst might allow the job title to determine job requirements rather than the task descriptions. In job evaluation, this error can be avoided by carefully considering the entire job description.

Contrast Effects

Contrast effects refers to errors made when a job is compared to other jobs. For example, an analyst might rate a simple job lower if he or she had just finished rating two very complex jobs. Thus, the job is devalued because it was compared to other jobs. Contrast effects can be reduced by carefully reading each job description and each factor description.

Suggestions

Some suggestions for reducing rating errors are as follows:

1. Read each job description carefully and completely.
2. Read each job evaluation factor carefully and completely.
3. Rate each job as independently as possible.

4. Rate each factor as independently as possible.

5. Rate each factor in terms of relevant task statements.

In addition, it is important to note that not all leniency, halo, first impression effects, or contrast effects are errors. By their nature, job evaluation scales should be correlated. Furthermore, contrast effects provide useful information. Differences between jobs should be reflected in factor differences and raters may use jobs to help define numeric scale values. Thus, concern with rating errors should not overshadow the use of valid job information.

Summary

Rating errors may affect the validity of job evaluations. Common rating errors include leniency, halo, first impression, and contrast effects. Rating errors in job evaluation may be reduced by reading job and factor descriptions completely and carefully, rating jobs and factors independently, and tying job evaluation ratings to task statements. However, a concern with ratings errors should not blind the rater to valid job information.
Chapter 5

Comprehensive Job Evaluation Technique

The job evaluation instrument you will be using to rate jobs is the Comprehensive Job Evaluation Technique (CJET). The CJET is of the point method type of job evaluation. It consists of 15 scales. These 15 scales will now be discussed in detail.

Education

This factor measures the minimum educational level required by the job. The minimum educational level is defined as that level of education which an individual must possess prior to entry into a job in order to become proficient at the job duties within a reasonable time period. In evaluating this factor consider what is the basic knowledge required by the job, where this knowledge can be obtained, and whether specific education or specialized training is needed.

Time to Proficiency

This factor measures the average time required for an individual to reach proficiency in the job duties, given that the individual is minimally qualified for the job. Thus, take into consideration the education and previous experience required by the job. In rating this factor consider the level of proficiency required by the job, length of work cycles, amount of specific knowledge of the company or company techniques required, and both on the job and orientation training.
Previous Experience

This factor measures the minimum amount of time an individual must have spent working at a related function, given the required level of minimum education, prior to entry into the job so as to become proficient at the job duties within a reasonable time period. In evaluating this scale consider normal career paths and time to proficiency requirements for earlier jobs. For example, a supervisor’s job will normally require experience at least equivalent to the time required to become proficient at the subordinate’s job.

Mental Effort

This scale measures the degree to which the position requires unusual mental effort, mental strain, or mental stress due to workload, deadlines, or the strain of interpersonal relationships. This factor should not be confused with visual attention and responsibility. This characteristic is defined by the pace of work, detail involved, distractions involved, and emotional stresses involved.

In rating mental effort, the term "occasional" implies that the related task occurs infrequently; the task takes up less than 10% of the total work time. "Frequently" implies that the task occurs in almost every work cycle or involves a major portion, over 10%, of the incumbent’s time. "Constant" implies that the related task is a major work activity, occurs in every work cycle, or involves over 80% of the incumbent’s time.
Visual Effort

This factor measures the degree of visual strain. It involves the duration, intensity, and relief from visual strain. It measures the degree to which the job requires the use of the eyes to observe or discover certain conditions. This factor measures quantity of work and attention not ability. Visual attention is not limited to processes, but may also be to products or prints.

In rating visual effort, the term "occasional" implies that the related task occurs infrequently. That is, it does not occur in every work cycle or involves less than 10% of the incumbent’s time. "Frequent" implies that the task occurs in almost every work cycle or involves a major portion, over 10%, of the incumbent’s time. "Continuous" implies that the task is a major work activity or involves over 80% of the incumbent’s time.

Physical Effort

This factor measures the degree to which the job requires unusual physical effort or exertion. In assessing this dimension the weight handled should be considered. Handled includes pulling, pushing, and lifting. In addition, this factor requires consideration of where in the work cycle handling occurs.

In rating physical effort, the term "consistently" implies that the handling of material is the major activity in the work cycle. "Frequently implies that handling is not the major activity by occurs in almost every work cycle. "Occasionally" implies that handling does not always occur in the work cycle but is a regular activity.
Manual Dexterity

This factor measures the ability to move the fingers, hands, arms, feet, legs quickly and accurately. Manual dexterity is involved in the quick and accurate handling of equipment, materials, tools, or machines. It involves judging accurately through the sense of touch and hearing and involves controlling accurately through the movement of the hands.

Supervisory Responsibility

This factor measures the extent to which the position requires supervision of others. This includes the assigning of tasks, outlining of work, checking work, and correcting the work of others. In rating this scale consider not only the job title, but also the actual duties performed. Consider both the level in the organization and the extent of supervision.

Financial Responsibility

This factor measures the extent to which individuals have responsibility for decisions and the likely loss to the company from an error in decision making. Exclude the effects due to gross negligence or intentional sabotage.

Responsibility for Safety of Others

This factor measures the degree to which the job requires responsibility for the safety of others and to which errors may lead to injury to others. In rating this factor consider the probability of injury to others, the severity of injury to others, and how attentive the incumbent must be to the possibility of injury to others.
Counseling and Teaching

This factor measures the degree to which counseling or teaching is required by the job. Counseling involves the giving of advice and guidance to others whether clinical, spiritual, professional, or personal. Teaching involves showing or demonstrating to others how to perform a function. In rating counseling and teaching consider the frequency and nature of the counseling or teaching. The terms "occasional" and "frequent" have the same definition as given for Mental Effort and Visual Effort.

Negotiating and Influencing

This factor measures the degree to which negotiating and influencing are required. Negotiating involves bargaining or discussing issues with others to reach an agreeable solution. Influencing involves attempts to induce an attitude change in others or sell a product or idea. In rating negotiating and influencing consider the frequency and nature of the negotiating or influencing. The terms "occasional" and "frequent" have the same definition as given for Mental Effort and Visual Effort.

Surroundings

This factor measures the surroundings or physical conditions under which the job is done. In evaluating this factor consider the presence and relative amount of exposure to dust, dirt, heat, fumes, cold, noise, vibration, and wetness. Consider the extent to which these conditions make the job disagreeable and the general stability of the environment.
Hazards

This factor measures the hazards associated with the job. In evaluating hazards consider both the extent and probability of accidents and occupational disease. Relevant variables include the work position, the type of material being handled, the machines or tools used, and the location where work is performed.

Monotony

This factor measures how frequently the same tasks or work cycle is repeated during the working day. This factor also considers the frequency and availability of rest pauses, the specificity of work pace, presence of repetitive activities, and freedom in scheduling.

Summary

This chapter consists of a description of the CJET. The CJET is a 15 scale, point method job evaluation instrument. Each of the 15 scales is discussed in detail.
Appendix H

The Comprehensive Job Evaluation Technique
COMPREHENSIVE JOB EVALUATION TECHNIQUE

(CJET)

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Factor 1. Education

This factor measures the minimum educational level required by the job. The minimum educational level is defined as that level of education which an individual must possess prior to entry into a job in order to become proficient at the job duties within a reasonable time period.

Level

1 Less than High School. No specific knowledge or education is required or education required is less than that equivalent to high school graduation. Job may require ability to read, write, perform simple computations, and operate simple office machines.

2 High School. Requires high school graduation or the equivalent. Knowledge of general high school subject matter, including mathematics and grammar is required. Job requires limited knowledge of fields such as stenography, elementary office machines, elementary accounting procedures, or shop mathematics. Job requires course in specific trade.

3 2-year College. Requires education equivalent to a two-year college or high school plus two years of specialized courses. Involves limited familiarity with specialized areas of study. May involve knowledge of accounting, drafting, manufacturing methods and techniques, complicated drawings and specifications, advanced math, broad trade knowledge, or electronics.

4 College. Requires the equivalent of a four year college degree. Involves comprehensive knowledge and understanding of specialized area of study. May involve knowledge of engineering, higher mathematics, statistics, advanced accounting, business administration, economics, or educational techniques.

5 Graduate School. Requires the equivalent of a Master's degree, Ph.D., M.D., or similar advance degree. Requires advanced study and intensive knowledge of a field. Requires independent research and highly creative work.
Factor 2. Time to Proficiency

This factor measures the average time required for an individual to reach proficiency in the job duties, given that the individual is minimally qualified for the job. Take into consideration the education and previous experience required by the job. In rating this factor consider the level of proficiency required by the job, length of work cycles, amount of specific knowledge of the company or company techniques required, and both on the job and orientation training.

Level

1  **None.** Does not require time to reach proficiency or time is negligible, such as less than two weeks. Major job duties are performed frequently and quickly. Requires limited on-the-job training and orientation time is limited. Requires knowledge of only the most basic company policies.

2  **1-3 months.** Requires form up to three months to reach proficiency. Critical job duties are performed monthly. Requires general knowledge of company policy relevant to own specific area of work.

3  **3-6 months.** Requires from three up to six months. Critical job duties are performed quarterly. Requires familiarity with company policies in a specific area.

4  **6-12 months.** Requires from six months up to a year to reach proficiency. Critical job duties occur semiannually. Requires comprehensive knowledge of company policies.

5  **Over 1 year.** Requires over one year to reach proficiency. Critical job duties occur very infrequently, once a year or less. Requires extensive and in-depth knowledge of company policies in many areas. Requires extensive and extended on-the-job training.
Factor 3. Previous Experience

This factor measures the minimum amount of time an individual must have spent working at a related function, given the required level of minimum education, prior to entry into the job so as to become proficient at the job duties within a reasonable time period. In evaluating this scale consider normal career paths and time to proficiency requirements for earlier jobs. For example, a supervisor's job will normally require experience at least equivalent to the time required to become proficient at the subordinate's job.

Level

1  **None.** Requires no previous experience.

2  **3 months.** Requires three months previous experience. Requires past experience in a related function where time to proficiency is limited. Requires past experience in one entry level position.

3  **6 months.** Requires six months previous experience. Requires past experience in a related function requiring 3-6 months to reach proficiency or a progression through two jobs requiring 3 months previous experience.

4  **1 year.** Requires one year of previous experience. Requires past experience in a related function requiring six months up to a year to reach proficiency. Requires progression through positions of increasing responsibility requiring 1-3 months of experience and 3-6 months of experience.

5  **More than 1 year.** Requires more than one year of previous experience in a related function. Requires past experience in a related function requiring over one year to reach proficiency or requires a progression through positions of increasingly greater responsibility such that previous experience is greater than one year.
Factor 4. Mental Effort

This factor measures the degree to which the position requires unusual mental effort, mental strain, or mental stress due to workload, deadlines, or the strain of interpersonal relationships. This factor should not be confused with Visual Attention and nor Financial Responsibility. This characteristic is defined by the pace of work, detail involved, distractions involved, and emotional stresses involved.

Level

1. **None.** Requires no special mental effort.

2. **Little.** Requires limited mental effort. Flow of work is intermittent. Deadlines arise occasionally but workload is such that deadlines can easily be met. Incumbents need not normally deal with customers, or employees who become abusive.

3. **Some.** Requires occasional deadlines, monthly or yearly during which the workload may be unusually heavy. Requires occasional phone or personal contact with customers or employees who may become verbally abusive where the incumbent must retain personal composure.

4. **Considerable.** Requires frequent concentration to a large volume of work which must be completed within a specified period of time. Involves daily or weekly deadlines with frequent periods of unusually heavy workload. Requires phone or personal contact with customer or employees who may become verbally abusive where the incumbent must retain personal composure. Position requires the frequent disciplining and firing of subordinates.

5. **Extreme.** Requires constant concentration to a very large volume of work which must be completed within an extremely limited period of time. Involves daily deadlines which are inflexible. Job is such that a feeling of mental pressure exists. Requires constant overtime and on call status. Requires frequently working longer than a normal day.
Factor 5. Visual Attention

This factor measures the degree of visual strain. It involves the duration, intensity, and relief from visual strain. It measures the degree to which the job requires the use of the eyes to observe or discover certain conditions. This factor measures quantity of work and attention not ability. Visual attention is not limited to processes, but may also be to products or prints.

Level

1  **None.** Does not require unusual eye strain. Operations involve nothing beyond casual watching.

2  **Little.** Requires normal visual attention. Involves frequent but not continuous observation. Involves inspection work where flaw is easily detectable. Requires occasional reading.

3  **Some.** Requires close visual attention to a process which is highly repetitive. Visual attention is frequent but not continuous. Requires frequent reading.

4  **Considerable.** Requires close visual attention to operation where attention is continuous. Requires visual attention to several processes at one time. Requires continuous concentration. Involves continuous or frequent reading of extremely small print.

5  **Extreme.** Requires constant eye strain or close figure work. Involves very close, exacting use of eyes on jobs where expecting coordination or observation is required.
Factor 6. Physical Effort

This factor measures the degree to which the job requires unusual physical effort or exertion. In assessing this dimension the weight handled should be considered. Handled includes pulling, pushing, and lifting. The term "consistently" implies that the handling of material is the major activity in the work cycle. "Frequently" implies that handling is not the major activity but occurs in almost every work cycle. "Occasionally" implies that handling does not always occur in the work cycle but is a regular activity.

Level

1. **None.** Requires little or no unusual physical effort. Requires normal physical exertion. Occasional walking or standing.

2. **Little.** Requires light physical effort. Light physical effort is defined as working frequently with material weighing 5-25 pounds or occasionally with material weighing 25-30 pounds. Frequent walking or standing.

3. **Some.** Requires moderate physical effort. Moderate physical effort is defined as working frequently with material weighing 25-30 pounds or consistently with material weighing 5-25 pounds. Requires frequently performing activities from an unusual postural position, such as kneeling, bending, or laying down.

4. **Considerable.** Requires considerable physical effort. Considerable physical effort is defined as working consistently with material weighing 25-50 pounds or frequently with material weighing over 50 pounds.

5. **Extreme.** Requires heavy physical effort. Works consistently with material weighing over 50 pounds. Requires constant physical strain.
Factor 7. Manual Dexterity

This factor measures the ability to move the fingers, hands, arms, feet, legs quickly and accurately. Manual dexterity is involved in the quick and accurate handling of equipment, materials, tools, or machines. It involves judging accurately through the sense of touch and hearing and involves controlling accurately through the movement of the hands.

Level

1. **None.** Requires no manual dexterity. Little or no coordinated motor activity.

2. **Little.** Requires the ability to perform the simplest repetitive manual action at a slow or easy pace.

3. **Some.** Requires the ability to perform repetitive manual routines in which some skill is required to maintain satisfactory output. Requires moderate degree of repetitive manual operation. Typical machines involved include adding machines and typewriters.

4. **Considerable.** Requires ability to coordinate a variety of manual operations at a moderate pace or a few operations at a rapid pace. Involves repetitiveness and high speed requirements.

5. **Extreme.** Requires a high degree of coordination of manual operations at a rapid pace and may involve a high degree of sensory discrimination.
Factor 8. Supervisory Responsibility

This factor measures the extent to which the position requires supervision of others. This includes the assigning of tasks, outlining of work, checking work, and correcting the work of others. In rating this scale consider not only the job title, but also the actual duties performed. Consider both the level in the organization and the extent of supervision.

Level

1  **None.** Requires no supervisory behaviors, but may occasionally show another employee how to perform a task or give instruction on performing a task.

2  **Lead Person.** Requires performance of supervisory behaviors equivalent to a lead person. Gives part-time supervision to a small group of employees. Spends majority of time performing same job behaviors as members of the group. Has little or no responsibility for costs, methods, or personnel.

3  **Close Supervision.** Requires close and immediate supervision over a group of employees. Involves assigning duties, giving instruction, checking and verifying work, handling subordinate complaints, and interpreting company policy to workers.

4  **General Supervision.** Requires supervision without maintaining a close check over the specific details of subordinate's work. Unusual problems or questions of policy are brought to incumbents for advice. Is responsible for ensuring that subordinates maintain satisfactory performance. Subordinates may supervise others. May involve supervision of a department.

5  **Direction.** Requires direction and coordination of two or more departments or a major function or division. Establishes standards of performance and develops company policy. Assigns goals rather than establishing specific methods for performing jobs.

This factor measures the extent to which individuals have responsibility for decisions and the likely loss to the company from an error in decision making. Exclude the effects due to gross negligence or intentional sabotage.

**Level**

1. **None.** The work is routine and errors are almost always discovered. Errors may result in minor clerical expense. Errors are usually discovered by the incumbent.

2. **Little.** The work is routine but errors may not be initially detected. However, they will usually be discovered in succeeding operations where preceding work is checked. Errors may result in limited financial loss.

3. **Some.** The work follows pre-established routines however it may involve some limited latitude for decision making. Errors are usually not detected until financial loss has been incurred.

4. **Considerable.** Errors are difficult to verify or discover. Incumbents may make recommendations to management on decisions or judgements. Errors may cause excessive costs, low production, reduce profits, or have a negative impact on the relationship with a customer account. Errors are likely to result in a substantial financial loss.

5. **Substantial.** The work requires decisions or judgements where errors are likely to lead to major financial loss due to equipment, material, or product failure, or the loss of a major customer account. Responsibility may include preparing reports or data for top management decisions or the decision making involving future company operations. Level 5 involves decisions which have a widespread impact on operations. Level 4 decisions involve decisions on a specific product or method.
Factor 10. Responsibility for Safety of Others

This factor measures the degree to which the job requires responsibility for the safety of others and to which errors may lead to injury to others. In rating this factor consider the probability of injury to others, the severity of injury to others, and how attentive the incumbent must be to the possibility of injury to others.

Level

1. **None.** Requires almost no responsibility for the safety of others. Errors will not normally result in injury to others.

2. **Little.** Requires only reasonable care to protect safety of others. Injuries if they do occur will be minor, cuts, bruises, or burns.

3. **Some.** Requires attention to ensure that actions do not create dangerous situations for others. Attention to possibility of injury by others will substantially reduce probability of injury. Injuries if they do occur will usually involve temporary disabilities.

4. **Considerable.** Requires constant attention to ensure that actions do not create dangerous situations for others. Others can do little to prevent accidents from occurring. However, injuries if they do occur, will usually involve temporary disabilities.

5. **Substantial.** Requires constant attention to ensure that actions do not create dangerous situations for others. Others can do nothing to prevent injury. Responsibility for safety of others depends entirely on correct actions and absence of others. Errors will result in death or permanent disability.
Factor 11. Counseling and Teaching

This factor measures the degree to which counseling or teaching is required by the job. Counseling involves the giving of advice and guidance to others whether clinical, spiritual, professional, or personal. Teaching involves showing or demonstrating to others how to perform a function. In rating counseling and teaching consider the frequency and nature of the counseling or teaching.

**Level**

1. **None.** Job does not require teaching or counseling.

2. **Little.** Requires occasional counseling or teaching of others. Requires counseling or teaching primarily one’s own work group. Involves simple or routine matters. Requires counseling or teaching in structured situations.

3. **Some.** Requires frequent counseling or teaching of others either within or outside the organization. Involves simple or routine matters. Requires counseling or teaching in highly structured situations.

4. **Considerable.** Requires frequent counseling and teaching of others within or outside the organization. Involves complicated or serious matters. Requires counseling or teaching in highly structured situations.

5. **Substantial.** Requires frequent counseling and teaching of others either within or outside the organization. Involves extremely complicated or serious matters. Involves highly unstructured settings where individuals may resist counseling or teaching.
Factor 12. Negotiating and Influencing

This factor measures the degree to which negotiating and influencing are required. Negotiating involves bargaining or discussing issues with others to reach an agreeable solution. Influencing involves attempts to induce an attitude change in others or sell a product or idea. In rating negotiating and influencing consider the frequency and nature of the negotiating or influencing.

Level

1  **None.** Job does not require negotiating or influencing.

2  **Little.** Requires occasional negotiation or influencing of others. Requires negotiation or influencing primarily one's own work group. Involves simple or routine matters. Requires negotiating or influencing in structured situations.

3  **Some.** Requires frequent negotiating or influencing of others either within or outside the organization. Involves simple or routine matters. Requires negotiating or influencing in highly structured situations.

4  **Considerable.** Requires frequent negotiating with or influencing of others within or outside the organization. Involves complicated or serious matters. Requires negotiating or influencing in highly structured situations.

5  **Substantial.** Requires frequent negotiating or influencing of others either within or outside the organization. Involves extremely complicated or serious matters. Involves highly unstructured settings where individuals may be resistant to negotiating or influencing.
Factor 13. Surroundings

This factor measures the surroundings or physical conditions under which the job is done. In evaluating this factor consider the presence and relative amount of exposure to dust, dirt, heat, fumes, cold, noise, vibration, and wetness. Consider the extent to which these conditions make the job disagreeable and the general stability of the environment.

Level

1 Excellent. Involves excellent working conditions. Absence of disagreeable conditions. Very stable environment. Comfortable levels of all environmental variables.

2 Good. Involves good working conditions. May be slightly dirty or involve occasional exposure to environmental factors. If present level of environmental factors is not normally identified as disagreeable.

3 Somewhat Disagreeable. Involves somewhat disagreeable working conditions due to exposure to one or more of the environmental variables. However, exposure is not consistent. Environment is fairly stable, but with uncomfortable levels of environmental variables.

4 Disagreeable. Disagreeable working conditions where several of the above elements are continuously present.

5 Severe. Involves continuous and intensive exposure to severely disagreeable elements. Very unstable environment.
Factor 14. Hazards

This factor measures the hazards associated with the job. In evaluating hazards consider both the extent and probability of accidents and occupational disease. Relevant variables include the work position, the type of material being handled, the machines or tools used, and the location where work is performed.

Level

1 **None.** Involves very limited probability of any injury. Probability of accident or health hazard is negligible. Does not require extensive travel.

2 **Minor.** Involves very limited probability of any serious injury, but possibility of minor injuries such as abrasions, bruises, and cuts does exist. Injuries are usually remedied by normal first aid procedures. Health hazards are negligible. Position requires extensive travel away from home.

3 **Severe.** Involves exposure to injuries which may result in loss of time due to severe injuries to hands or feet, loss of fingers or toes, eye injuries, burns, back injuries, and other similar injuries. Injuries may prevent worker from performing for a day or more. Job requires working and living for long periods in foreign countries.

4 **Severe and Partially Incapacitating.** Involves exposure to injuries which should they occur may result in partial incapacitation involving loss of arm or leg, loss of eyesight, or similar injuries. Requires exposure to incapacitating accidents or occupational diseases. Injuries result in amputations and permanent impairment of body function or loss of body member. Frequent minor injuries likely.

5 **Permanent Disability.** Involves exposure to injuries which will result in permanent disability or death. Requires exposure to severe accident or health hazards. Accidents happen frequently in spite of precautions. Injuries totally disable and prevent future employment.
Factor 15. Monotony

This factor measures how frequently the same tasks or work cycle is repeated during the working day. This factor also considers the frequency and availability of rest pauses, the specificity of work pace, presence of repetitive activities, and freedom in scheduling.

Level

1 **None.** Variety of tasks is such as to be considered interesting. Routine tasks are not an essential part of job. There is ample time and opportunity for rest breaks or stoppage of work for whatever causes.

2 **Little.** Task variety is not such that it might be considered interesting. There is limited task variety although there is ample time to alter work routine. There is ample time and opportunity for rest breaks or stoppage of work for whatever reason.

3 **Some.** Task variety is not such that it might be considered interesting. There is some task variety but there is no opportunity to alter work routine. Rest breaks are limited and inflexible, but there is some time for stoppage for discussions or to seek advice.

4 **Considerable.** Monotony of task is recognized as a factor. Must be at work place for considerable periods of time with little or no opportunity to vary tasks performed. Routine recognized as difficult part of job.

5 **Extreme.** Monotony is definitely a factor. Performs extremely repetitive and confining tasks. Must stay at work constantly with little opportunity for rest. Constant repetition of task with short cycle leads to extremely monotonous and confining job. Job requires continuous concentration on the work and the necessity of completion.