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**AN EXTENSION OF THE JOB CHARACTERISTICS  
MODEL FOR A SERVICE ECONOMY**

by

**MARY CRABTREE TONGES**

**A dissertation submitted to the Graduate Faculty in Business  
in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy, the City University of New York**

**1997**

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This manuscript has been read and accepted for the Graduate Faculty in Business in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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**Abstract****AN EXTENSION OF THE JOB CHARACTERISTICS  
MODEL FOR A SERVICE ECONOMY****by****Mary Crabtree Tonges****Adviser: Professor Hannah Rothstein**

The Job Characteristics Model (JCM) developed by Hackman and his colleagues (Hackman and Lawler, 1971; Hackman and Oldham, 1976) is the most influential paradigm in contemporary job design research. It is important to note, however, that the JCM grew out of research with industrial workers. As a result, our current understanding of job design is primarily rooted in the study of goods-related jobs. Yet most American workers are now employed in service jobs, and manufacturing and service organizations differ on dimensions that have important implications for job design.

The purpose of this study was to extend the limits of job design theory by building on the JCM to develop a theoretical framework that is more specific, comprehensive, and applicable to professional service jobs. Based on this model, the study also investigated differences between the characteristics of Staff Nurse (SN) and Nurse Case Manager (NCM) jobs. Hypothesized differences included both intended

positive and unintended negative effects associated with changes incorporated in the NCM job.

A sample of 413 registered professional nurses responded to the questionnaire designed for this study. Hypotheses were tested with hierarchical regression analysis, yielding the following key findings:

(1) Characteristics of interpersonal relationships and work roles explain significant increases in variance beyond that explained by the core dimensions of the JCM in general and growth satisfaction, burnout, and job stress; (2) A new psychological state, experienced attachment to coworkers explains small, but meaningful and significant increases in variance, beyond that explained by the original psychological states of the JCM, in general and growth satisfaction; and (3) NCMs reported significantly higher levels of autonomy, job identity, feedback from agents, and collaboration with physicians than SNs; however, they also reported higher levels of negative characteristics, including required interaction and role conflict, ambiguity, and overload.

In summary, characteristics of the interpersonal aspects of nurses' jobs, in addition to the work itself, are important explanatory variables for work-place well-being. Moreover, findings highlight the need to learn more about the combined effects of job design changes.

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On a personal note, I gratefully dedicate this work to my mother, Mrs. Marion Crabtree, and the memory of my father, Mr. John Crabtree: to Mom for always thinking what I do is terrific, and to Dad for always refusing to accept my predictions that I couldn't do it.

Last, but never least, love and deepest thanks to Jim for giving me the opportunity to do this work and helping me through it. And finally, to Christina and Jack, who thought I'd be finished when pigs could fly: Well, guess what? Heads up!

MCT

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## CHAPTER 1. PURPOSE AND ORGANIZATION

What makes a job intrinsically motivating? Job design theorists have devoted over 30 years of theoretical and empirical work to the search for answers to this question (Hackman and Lawler, 1971; Hackman and Oldham, 1976, 1980; Herzberg, Mausner, and Snyderman, 1959; Turner and Lawrence, 1965). The Job Characteristics Model (JCM) developed by Hackman and his colleagues is considered the most influential paradigm in contemporary job design research (Fried and Ferris, 1987; Johns, Xie, and Fang, 1992; Taber and Taylor, 1990). Meta-analytic reviews of this extensive literature have indicated that specified motivational characteristics of jobs are reliably related to personal and work outcomes (Berlinger, Glick, and Rodgers, 1988; Fried and Ferris, 1987).

It is important to note, however, that the JCM grew out of research with industrial workers. Thus, our current understanding of job design is rooted primarily in the study of goods-related jobs. Yet most American workers are now employed in service jobs (Aley, 1995; Norwood, 1985), and manufacturing and service organizations are thought to differ on dimensions that have important implications for job design (Mills, Hall, Leidecker, and Margulies, 1983; Schneider and Bowen, 1985). Given the dramatic transformation to a postindustrial economy, our knowledge of job design may no longer provide an adequate explanation of

relationships between job characteristics and workers' responses.

### **Significance of the Issue**

Job design theory directs "the design of the work itself -- that is, changing the actual structure of the jobs that people perform" (Hackman and Oldham, 1980: p. 44). These changes are intended to increase both the quality of employees' work experience and their productivity (Hackman, 1977). Many adults spend most of their waking hours at work, and work-place well-being has important personal consequences (Locke, 1983; Maslach, 1982; Motowidlo, Packard, and Manning, 1986). From an organizational perspective, work-place well-being constructs, including dissatisfaction (Diamond and Fox, 1958; Price and Mueller, 1981, 1986) and burnout (Maslach, 1982), are linked to turnover. Moreover, stress (Motowidlo et al., 1986) and burnout (Maslach, 1982) are negatively related to employee performance, a key factor in operational effectiveness.

A revolution is occurring within the domain that job design theory seeks to explain (Cascio, 1995). Important trends in the changing world of work include: (1) the shift from manufacturing to service employment (Aley, 1995; Norwood, 1985); (2) increased instability in the job market (Bridges, 1994); and (3) redesign of existing jobs in the wake of business process reengineering (Davenport and Nohria, 1994; Hammer and Champy, 1993).

### The Transformation to a Service Economy

The nature of business activity in the United States has undergone a striking transformation. Cascio (1995) has described this transformation as a "change in the paradigm of doing business from making a product to providing a service" (p. 930). By the mid-eighties, seven out of ten American workers were employed by service-producing firms, while only two out of ten worked in factories (Norwood, 1985). This trend has continued into the nineties, and Fortune's list of the top 20 job growth industries is dominated by service businesses, such as personnel agencies, hospitals, and consulting firms (Aley, 1995). Mills and Moberg (1982) provided a succinct description of the change to a service economy and its potential implications:

The growth in the service sector in the U.S. economy is well documented...and predictions of further increases are common. Yet, the growth of knowledge specifically pertinent to the operations of services has not kept pace with these developments. What is known is that caution should be exercised in applying models derived from and for manufacturing to service operations (p. 467).

Among the defining attributes of service work, the nature of client-firm interaction is thought to be the seminal element (Mills et al., 1983). Because the essence of service work is so interpersonal, relationships with

others would seem to have important motivational consequences. Yet the JCM places little importance on the interpersonal aspects of work, relegating required interaction with others to a supplementary element that is not included in the motivational theory itself.

#### An Unstable Job Market

A job market characterized by restructuring, downsizing, and massive layoffs may lead one to question the relevance of job enrichment as an organizational issue. Handy (1995) has suggested, "There is a seductive formula driving the corporate world today -- '1/2 x 2 x 3' -- 'half as many people as we have now, paid twice as well, producing three times as much.'" As a result, half of the labor force is working harder than ever, while the other half is unemployed.

Taking this argument a step further, Bridges (1994) proposed that the job, as a way of organizing work, is a social artifact that has outlived its usefulness. He suggested that the job concept grew out of the industrial revolution and is too rigid to meet the demands of today's fast-moving economy. Yet his description of the "post-job" organization still involved hiring people, albeit within a project team structure, in which responsibilities and tasks change over time with different project assignments. In this scenario there would be a need to understand how best to shape temporary project assignments, rather than

traditional jobs. Given that assignments would change frequently, opportunities to design short-term "jobs" would arise on a regular basis. Knowledge about job characteristics that affect satisfaction and performance would therefore be equally, if not more important in this type of structure. Bridges' (1994) view of the future also suggests the need to focus more on work roles, rather than tasks.

Finally, the job loss phenomenon is not universal. Although jobs are being eliminated on the manufacturing side of the economy, millions of new jobs are being created in high growth service industries (Aley, 1995).

#### The Reengineering Movement

Reengineering is another force that is creating changes in jobs. As competition intensifies, the quest for productivity improvement is generating waves of business process reengineering. Defined as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvement" (Hammer and Champy, 1993: p. 32), this technique uses information technology innovations to create new ways to do work. A process is described as a collection of activities that cuts across functional and organizational boundaries (e.g., procurement, product development, or credit issuance) (Hammer and Champy, 1993). Process redesign comes first and is followed and supported by job redesign.

Based on a growing recognition of the need to focus on business processes rather than functional activities, many firms are reorganizing to enable one individual to ensure continuity in the performance of a series of tasks (e.g., fulfillment of a customer's order from beginning to end) (Davenport and Nohria, 1994; Hammer and Champy, 1993). This new approach, known as case management, redesigns business processes at the customer interface (Davenport and Nohria, 1994), and is characterized by the creation of a quintessential service role, in which case managers (CMs) buffer clients from the difficulties of dealing with complex organizational structures and processes (Hammer and Champy, 1993).

Davenport and Nohria (1994) pointed out that the case manager job includes a number of elements, such as autonomy, that work motivation theorists identify as desirable. Yet they cautioned that the potential for satisfaction in these jobs may be paradoxically low. Potential sources of dissatisfaction identified include conflict with functional departments and existing procedures, and a loss of face-to-face interaction in jobs mediated through a telephone or computer workstation. The suggestion that loss of face-to-face contact is a source of dissatisfaction underscores the potential importance of interpersonal relationships in service jobs. Moreover, what these authors described is a common, yet under-researched phenomenon. Although real life

job design changes are often complex and may not create simple effects, our knowledge of how job dimensions combine to influence perceptions and reactions to work is limited.

### Theoretical and Practical Importance

Studying the motivational characteristics of service jobs is significant at both a theoretical and applied level. Jobs in service organizations and manufacturing firms are thought to differ in important ways. Key differences of service organizations and related implications for job design include:

1. Indispensable personal interaction between producer and consumer -- The client cannot be separated from the process; therefore, the work is highly interpersonal.

2. Intangible output -- The nature and sources of feedback from work may be different in a job that generates intangible services as compared to a job that produces physical goods.

3. Information processing properties -- Because the work focuses on people rather than things, service delivery technologies must include communication, knowledge, and energy. As a result, service workers cannot be shielded from customer-induced uncertainties (Mills et al., 1983).

Differences in task dimensions like feedback correspond to specific job design elements thought to have meaningful consequences. Less is known about effects of the interpersonal elements inherent to service jobs because

these factors have received little attention in job design theory and research. Reengineering into the case management format also presents a theoretically interesting opportunity to evaluate the job characteristics of a new job design that is expected to have mixed motivational consequences.

At an applied level, the effects of motivational characteristics of service jobs on work-place well-being and performance have major implications for the quality of work life of individual workers and the organizational effectiveness of the firms that employ them. Cascio (1995) has suggested that the dramatic changes affecting the world of work raise important questions for industrial and organizational psychology, including the following:

- Does identification of the environmental, contextual, and social dimensions of work become more important in a process-based structure?
- Will emphasis shift from describing jobs to describing roles (p. 932)?

He concluded that the revolution occurring in the work-place offers "great opportunities for industrial and organizational psychologists to contribute to the betterment of human welfare...To lead change rather than to follow it, however, will require a break with traditional practices, and a focus on rigorous research that addresses emerging trends" (p. 937).

### **Need for the Study**

The Job Characteristics Model of work motivation identifies five core job dimensions (skill variety, task identity, task significance, autonomy, and feedback) that evoke three critical psychological states (experienced meaningfulness of the work, experienced responsibility for outcomes of the work, and knowledge of the actual results of the work activities), which in turn lead to four desirable personal and work outcomes (high levels of internal work motivation, growth satisfaction, general job satisfaction, and work effectiveness) (Hackman and Oldham, 1976, 1980). The first three core dimensions (variety, identity, and significance) relate to experienced meaningfulness, autonomy is linked to experienced responsibility, and feedback influences knowledge of results. Relationships between the core dimensions and the critical psychological states (CPS) and between the CPS and outcomes are moderated by employee knowledge and skill, growth need strength (GNS), and satisfaction with contextual issues such as pay and supervision.

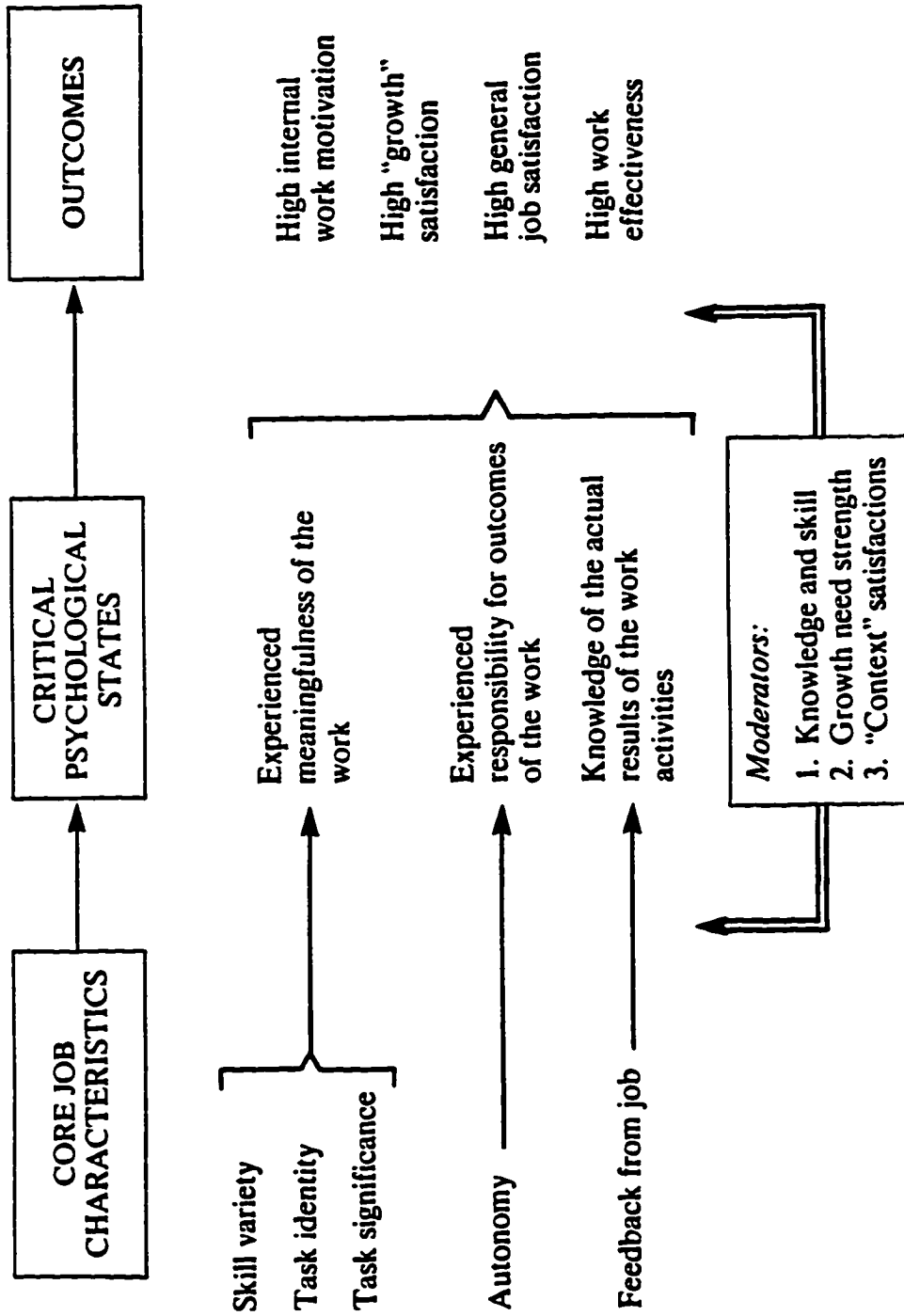
Of the three moderating variables, GNS was included in the original version of the JCM (Hackman and Oldham, 1976) and has been evaluated in numerous studies (Fried and Ferris, 1987). Context satisfactions and knowledge and skill were added in Hackman and Oldham's (1980) most recent modification of the JCM, and neither has received much

research attention. A few studies have investigated the fit between job characteristics and employee context satisfactions (e.g., Champoux, 1981; Oldham, 1976), but the moderating effects of employee knowledge and skill have not been directly tested (Johns et al., 1992; Kulick, Oldham, and Hackman, 1987).

The JCM is generally a well-supported theory (Berlinger et al., 1988; Fried and Ferris, 1987; Loher, Noe, Moeller, and Fitzgerald, 1985; Taber and Taylor, 1990); however, theory development is an evolutionary process, and a number of authors have recommended that job characteristics theory be modified or extended. Beginning at the left with characteristics and moving across the model (see Figure 1), key recommendations concerning each set of constructs are summarized below.

#### Task Characteristics

Many researchers have suggested and/or found evidence that the five core dimensions of the JCM may not represent an exhaustive list of possible attributes (Griffin, 1983; Sims, Szilagyi, and Keller, 1976; Stone and Gueutal, 1985; Taber and Taylor, 1990). Examples of additional job content characteristics that appear to have consequences for motivation and redesign efforts include speededness, time, and physical danger (Jermier, Gaines, and McIntosh, 1989), as well as safety and a service versus production orientation (Stone and Gueutal, 1985).



J. R. Hackman/G. R. Hackman, *Work Redesign*, (p. 90). ©1980 by Addison-Wesley Publishing Co., Inc. Reprinted by permission of Addison Wesley Longman, Inc.

**Figure 1. The Complete Job Characteristics Model**

Other authors have called for an integration of job characteristics theory with role theory (Abdel-Halim, 1981; Tumulty, 1990, 1992). Specifically, Tumulty (1990, 1992) integrated task characteristics with role conflict, ambiguity, and deprivation to create a role characteristics model. Hackman and Oldham (1980) also identified the need to create a hybrid of the behavioral, job characteristics approach and sociotechnical systems theory that would link work to the organizational environment and give adequate attention to technical operations and group relations.

#### Mediating Psychological States

Investigators have proposed that other psychological states, not specified by the JCM, may mediate relationships between the characteristics and outcomes (Fried and Ferris, 1987; Renn and Vandenberg, 1995). Additional psychological states that have been suggested include arousal level (Gardner and Cummings, 1988) and perceived impact (Thomas and Velthouse, 1990).

#### Outcomes

Several authors have investigated relationships between job characteristics and/or psychological states and dependent variables that are not included in the JCM. For example, Riordan and Griffeth (1995) found that friendship opportunities at work were strongly related to job involvement. Wall and colleagues (1978) evaluated mental health as a dependent variable and found that it was

meaningfully related to the three CPS, especially experienced meaningfulness ( $r = .39$ ).

Griffin and McMahan (1994: p. 32) have developed an integrated model of job design that proposes three "external /expressed states" as outcomes: (1) emotive expressions of task and job role evaluations and perception, (2) affective expressions of feelings toward task and job role elements, and (3) actual exhibited behaviors. Many different potential dependent variables could be identified within these broad categories of outcomes.

#### Moderators

Numerous alternatives to GNS have been suggested, including the Protestant work ethic, need for achievement (Nach), intrinsic versus extrinsic work values, and need for autonomy or independence (Hackman and Oldham, 1980; Morris and Snyder, 1979; Orpen, 1985; Stone, Ganster, Woodman, and Fusilier, 1979).

#### Response to Potential Limitations of the JCM

This study tested a theoretical model that addresses hypothesized limitations of the JCM in four areas: (1) incomplete specification of job characteristics, particularly characteristics of work-related interpersonal relationships and roles; (2) lack of a specific CPS to anchor and mediate the effects of coworker relationships; (3) limited set of outcomes; and (4) problems with GNS as a broad, yet deficient moderator.

In addition to the five characteristics of the work itself specified by the JCM, this research evaluated the effects of an expanded set of interpersonal relationship and work role characteristics, thought to be especially relevant in service jobs (Mills et al., 1983). A new psychological state, experienced attachment to coworkers, was proposed to link the effects of close, supportive relationships with coworkers to outcomes.

This study also explored the relationships of job characteristics and CPS with an expanded set of dependent variables. Specifically, in addition to general job and growth satisfaction, additional emotive and affective outcomes were investigated: perceived stress and burnout. These two work-place well-being constructs are particularly salient to the study of human service professionals (Maslach, 1982; Motowidlo et al., 1986) and enhance our understanding of this type of job.

Evidence has suggested GNS may be a broad construct which encompasses a number of more specific needs that are not strongly related (Steers and Spenser, 1977); therefore, this study investigated the moderating effects of two distinct dispositional needs. Specifically, the effects of need for influence (Ninf) and need for affiliation (Naff) on relationships between characteristics of interpersonal relations and the CPS were evaluated. Because interpersonal relationships have not been a major factor in job design

theory, little attention has been given to the potential moderating effects of these constructs in previous conceptual and empirical work.

In summary, the change to a service economy and the development of new job designs through business process reengineering have created a job market that is dominated by jobs requiring a great deal of interpersonal interaction. The JCM grew out of work in the sixties and seventies that preceded these changes and sought to identify the most salient characteristics of industrial jobs. Characteristics of interpersonal interactions and relationships were not found to be as consistently related to outcomes as characteristics of the work itself in industrial settings; therefore, interpersonal job dimensions were considered to be of secondary importance. Although the interpersonal aspects of jobs have been greatly expanded, the JCM remains the most popular framework for job design research. This has created a situation in which the dominant theoretical paradigm no longer maps the domain of interest as well as it originally did, making a compelling case for the development of job design theory for a service economy.

#### **Approach and Purpose of This Research**

There are four major bodies of theory related to job design. Traditional approaches, such as scientific management (Taylor, 1911), are derived from classical organizational theory and represent an industrial

engineering, mechanistic perspective. Behavioral approaches, such as Herzberg's (1959, 1966) Motivator-Hygiene theory of work motivation and the JCM, are rooted in organizational psychology and focus on the effects of jobs on the people performing them. Sociotechnical systems theory (Emery and Trist, 1970) considers interrelationships among networks of jobs in large organizational units. Finally, the Social Information Processing (SIP) model (Salancik and Pfeffer, 1978) suggests a very different explanation in which the relationship between affective outcomes and perceived characteristics is reversed. The SIP perspective proposes that people use social information about past behavior and what others think in developing statements about their attitudes and job characteristics.

#### Extending the JCM for Service Jobs

The theoretical framework for this study is drawn from the behavioral and system perspectives and focuses on the motivational characteristics of the work entailed in performing a job within the social system of an organization. In accordance with the sociotechnical approach, characteristics of interpersonal relationships in the work-place are an important element of this research. Studies of job-related interpersonal constructs, such as opportunities for friendship and required interaction with others in the work-place, have supported the importance of these dimensions. Specifically, Riordan and Griffeth (1995)

and Sims and Szilagyi (1976) found that these characteristics were as strongly correlated with satisfaction and performance as the core characteristics of the JCM. This empirical support suggests that further study of interpersonal job characteristics is merited.

This research posits that the quality of interpersonal relationships has a major effect on the critical psychological states, and thus the personal and work outcomes, of individuals working in jobs that require a great deal of interaction. Perhaps because Hackman and his colleagues based the development of their job characteristics theory primarily on research with industrial workers, the measures they created mainly focus on whether or not interpersonal relationships exist, rather than tapping other dimensions of these relationships. For example, items from the Job Diagnostic Survey's (Hackman and Oldham, 1975) dealing with others scale ask about the extent to which the job requires the employee to work closely with or cooperate with others. Similarly, Hackman and Lawler's (1971) friendship opportunities items ask about the extent to which the job allows the individual to talk and establish informal relationships with other employees at work.

A central thesis of this research is that the primary importance of interpersonal relationships at work is not related to increasing human contact for employees in solitary jobs. Instead, I think interpersonal job

characteristics are important because individuals doing jobs that demand interaction with others experience the quality of these relationships as critical antecedents of work-place well-being and performance. Thus, to more fully capture the effects of interactions and relationships with others at work, we must move beyond a determination of the extent to which an individual has contact with others, and focus on a more specific assessment of what these interactions are like.

Selected factors that may enhance our understanding of interpersonal job dimensions include the following:

1. Interpersonal control -- Autonomy, a core dimension of the JCM, deals with the degree of control individuals can exercise in relation to their own job content; however, this characteristic represents only one aspect of situational control. In interactive jobs, it is necessary to work interdependently with a network of other personnel, and these relationships may be another important source of experienced control. Specifically, the levels of collaboration and influence workers feel they have with colleagues in their network may be significant issues (Parker, 1993; Weiss and Davis, 1982).

2. Social integration -- Moving beyond the opportunity for social interaction at work to the question of whether friendships develop, the social integration construct is defined as the degree to which an individual has close

friends among organizational members within the immediate work unit (Price and Mueller, 1986). Findings from studies of service professionals have suggested that social integration is an important antecedent of job satisfaction (Gaynor, Verdin, and Bucko, 1995; McCloskey, 1990; Price and Mueller, 1986).

3. Role stressors -- A number of theorists have identified the need to integrate narrower considerations of task design with more global aspects of role design to gain a better understanding of employees' reactions to their work, particularly in the service sector (Abdel-Halim, 1981; Baird, 1975; Miner, 1980; Seybolt, 1980, Tumulty, 1992). Miner's (1980) professional role-motivation theory proposes that a set of specific role motives, as opposed to task characteristics, directs the behavior of professionals. Abdel-Halim's (1981) research suggested that employees working in complex, high-scope jobs in service organizations are most vulnerable to the negative effects of role stressors. This supports Tumulty's (1992) assertion that role dynamics may overshadow specific tasks in jobs of enlarged scope. Extending job characteristics theory through the integration of role conflict, ambiguity, and overload constructs may, therefore, improve our understanding of service job design.

## Professional Human Service Jobs

### As the Focus of This Research

Within the service sector, a range of different types of services and delivery systems can be identified. Sasser and his colleagues (1978) suggested a fairly simple classification scheme anchored by two extreme cases. At one end of the spectrum is the consumer service organization, characterized as a "firm comprised of a network of many standardized facilities offering a limited range of services delivered by a relatively low-skill workforce to a large aggregate market" (e.g., restaurants and retail stores) (Sasser, Olsen, and Wykoff, 1978: p. 400). At the other extreme is the professional service organization, described as a "firm comprised of a few nonstandardized branches, offering a broad range of services individualized for each customer and delivered by a relatively high-skilled workforce" (p. 400). Examples of professional service organizations include consulting firms, advertising agencies, and health care institutions.

Much of the growth in service jobs is occurring at the professional service end of this continuum. Based on industries' "knowledge ratio" -- the percentage of employees in an industry who are professionals, technicians, or other "knowledge workers" -- it is estimated that high-knowledge industries accounted for 43 percent of new employment growth in the last five years, even though only 28 percent of total

employment is in the high-knowledge segment (Aley, 1995).

This research focused on jobs within professional service organizations, particularly the type of organization Mills (1986) has described as "personal-interactive" service organizations (e.g., welfare agencies, health care, religious organizations, and psychological consulting or therapy). Given that five of the top 20 job-creating industries on Fortune's list are health care related, there appears to be an escalating need for knowledge about the characteristics of jobs in human service organizations.

#### Purpose of The Study

The purpose of this study was to extend the limits of job design theory by investigating: (1) the characteristics of one major family of service jobs; (2) links between these characteristics and specified psychological states; (3) relationships between characteristics and psychological states and work-place well-being, especially relationships between the new psychological state, experienced attachment to coworkers, and well-being outcomes; (4) the influence of dispositional difference moderators on the strength of interpersonal job characteristic-psychological state relationships, and (5) the characteristics of case management as a new job design that is expected to have mixed motivational consequences. The additional motivational factors that have been identified were included in the development of an extension of the Job

Characteristics Model with the goal of enhancing the explanatory power of job design theory in human service organizations.

My decision to limit the scope of this study to several of the less well-researched and the newly hypothesized aspects of the extended theoretical model was based on (1) the need to develop a proposal that was appropriate to the resources available, and (2) the potential incremental contribution of studying aspects of the model about which less is known. Although this study specifically focused on selected elements of the model, the full theoretical model is developed and presented to provide an explanatory context, as well as a framework for possible further research.

Relationships within the model that have been well-supported by previous research are taken as given and used as a basis for evaluating the less well-researched components and new extensions to the model. For example, relationships between the JCM's core dimensions and CPS were assessed to provide a baseline for evaluating the incremental contribution of additional job characteristics to explaining the CPS. Similarly, relationships between the critical psychological states of the JCM and well-being in the work setting were assessed as a basis for determining whether the new psychological state of experienced attachment to coworkers significantly increases explained

variance.

### Research Questions

This study evaluated the motivational characteristics of nursing as a professional human service job and sought information concerning the following research questions:

1. From the job characteristics and other theoretical perspectives, what characteristics of professional human service jobs are important in explaining work-place well-being?
2. In what ways do current theories of job design seem inadequate to capture important characteristics and outcomes of professional human service jobs?
3. Do specific characteristics have the predicted relationships with specified CPS?
4. Do specific CPS play the predicted mediating role in characteristic-outcome relationships?
5. Are there other CPS in addition to those identified by the JCM?
6. What are the combined effects of multiple characteristics on well-being outcomes?
7. Do dispositional differences other than Growth Need Strength (i.e., needs for affiliation and influence) moderate the relationships between interpersonal job characteristics and CPS?
8. From the modified job characteristics perspective developed here, how are the motivational

characteristics of human service professionals' jobs affected by changes incorporated in the case manager position?

### **Contributions of the Study**

This study offers the following theoretical and practical contributions:

1. Extension of job design theory -- This research extends the limits of job design theory by building on the JCM to develop a theoretical framework that is more comprehensive, specific and applicable to professional human service jobs.

Although the sample for this study was comprised of human service professionals, there may be application in other types of professional/white collar service occupations. Mills (1986) distinguished between "task-interactive" and "personal-interactive" service organizations on the basis that the service encounter in task-interactive firms, such as legal offices and financial institutions, is based on employing a body of knowledge that has relatively good predictability to solve a problem the client is aware of, but lacks the expertise to handle (e.g., filing a law suit). In contrast, personal-interactive or human service organizations provide personal services in response to client problems which must first be diagnosed and then treated based on an incomplete body of knowledge.

The nature of personal-interactive jobs appears to be

the most intensely interpersonal because the client is the direct focus of the service, but task-interactive services also require more client contact and interdependence than goods-related jobs. Thus, although characteristics of professional human service jobs were the specific focus of this study, findings may generalize to task-interactive service jobs, as well. It seems feasible, for example, that role stressors may also be important in jobs in task-interactive services, such as architecture, consulting, and advertising.

Testing the effects of a job design expected to have mixed motivational consequences also makes a contribution. Combined effects, and the important, but frequently overlooked issue of unintended effects from job redesign were evaluated in this research.

## 2. Examination of characteristic-CPS relationships --

Although the JCM has been used as the theoretical framework for hundreds of studies, only a handful of these investigations have examined relationships between job characteristics and the critical psychological states (Fried and Ferris, 1987; Johns et al., 1992). Given Hackman and Oldham's (1976: p. 255) description of the CPS as the "causal core of the model", the rarity of studies that include this component is remarkable (Johns et al., 1992).

The present study responded to this critical gap in JCM research by including an examination of the first link in

job characteristics-CPS-outcomes relationships. The characteristics-CPS relationships provide the basis for explaining the motivational mechanisms that underlie the connection between job enrichment and positive personal and work outcomes. Further study of these relationships is therefore contributory.

3. Evaluation of moderators of interpersonal job characteristics-CPS relationships -- Recent evaluations of the moderating effects of GNS and context satisfiers have not supported their continued inclusion in the JCM (Johns et al, 1992; Tiegs, Tetrick and Fried, 1992). The moderating effects of Ninf and Naff on relationships between newly specified interpersonal job characteristics and CPS were assessed in this study.

As Figure 1 illustrates, Hackman and Oldham's (1980) theoretical model postulates job characteristics-CPS-outcomes relationships that are moderated by individual and dispositional differences. When researchers do not include the CPS, their evaluation is restricted to characteristics-outcomes relationships by default. Because most JCM studies have not incorporated the CPS, this body of research has primarily focused on moderating effects on relationships between characteristics and outcomes (Johns et al., 1992; Tiegs et al., 1992), and less is known about moderation of relationships with the CPS. This study makes a contribution to knowledge about JCM moderators by examining moderating

effects at the first point actually specified, job characteristics-CPS relationships.

4. Evaluation of the effects of a case manager job --

Case managers were particularly appropriate and interesting subjects for inclusion in this research, as the creation of this type of job was influenced by both the macro level movement to a service economy and the micro level changes resulting from business process reengineering. The suggestion that case management may be the bellwether of a new organizational form (Davenport and Nohria, 1994) highlights the need to evaluate the effects of this potentially important new role on employees. There appears to be a dearth of research on this topic and a strong case for the development of job design theory to reflect twenty-first century jobs.

5. Use of a nursing sample -- Nurses are particularly good subjects for the study of role stressors because their jobs are characterized by high levels of role conflict (Perrow, 1965; Vredenburg and Trinkaus, 1983). A lack of autonomy has also been shown to be strongly related to job dissatisfaction in nursing (Blegen, 1993; McCloskey, 1990). The use of a nursing sample to evaluate an expanded model that integrates role and job characteristics theory to guide the design of service jobs is therefore contributory.

From an applied perspective, studying the effect of job design in nursing is important because nurses play a key

role in a health care delivery system that is in the throes of major change. While there has been a great deal of research concerning job satisfaction in nursing, this study investigated factors that may also affect perceived stress, burnout, and performance.

### **Organization of the Dissertation**

This dissertation is organized in seven chapters. Following the introduction and overview, the second chapter presents a review of relevant theoretical and empirical literature. The evolution of the JCM is described within the context of job enrichment theory and research development. Job characteristics theory is discussed, with an emphasis on findings from studies of professional human service jobs in general, and nursing in particular. This discussion is structured around three major sets of constructs from the JCM: (1) task characteristics, (2) mediating CPS, and (3) moderating individual and dispositional differences. Several situational and dispositional difference constructs are explored as potential theoretical extensions, including collaboration and social integration, as moderated by needs for influence and affiliation, and role stressors. Case management is then described and analyzed as a job design strategy that has emerged from the reengineering movement.

Based on this review, an expanded theoretical model is developed that integrates these constructs and depicts their

hypothesized interrelationships. Six groups of hypotheses are presented: (1) hypotheses designed to test the job characteristic-outcome relationships predicted by the model, (2) hypotheses designed to test the job characteristic-CPS relationships predicted by the model, (3) hypotheses concerning the mediating role of CPS in characteristic-outcome relationships, (4) hypotheses regarding the moderating effects of  $N_{inf}$  and  $N_{aff}$  on relationships between interpersonal job characteristics and CPS; and hypotheses concerning the effects of (5) intended and (6) unintended changes incorporated in the design of the case manager job.

The third chapter describes the methodology used to test specified sections of the model and evaluate hypotheses concerning the CM job. Results of the study are presented in the fourth chapter and discussed and interpreted in the fifth. The final chapters discuss the limitations and implications of the study. At the conclusion of the research report, relevant appendices and references are presented.

## CHAPTER 2. REVIEW OF RELATED LITERATURE

The conceptual framework for this study was drawn from several different bodies of theoretical and empirical literature. Specific elements from the domains of work redesign, role theory, and need theories of motivation are central issues that provide the basis for explaining the constructs and relationships which are the focus of this research. Key elements from each domain include:

1. Work redesign -- job design and the influence of organizations as social systems on the design and management of work (Hackman and Oldham, 1980).

2. Role theory -- relationships and interactions between and among role senders and role occupants and effects on occupants' affective and behavioral outcomes (Kahn, Wolfe, Quinn, and Snoek, 1981).

3. Need theories of motivation -- individual needs, or internal states of disequilibrium, as motivational forces driving behavior (Cherrington, 1991); specifically, needs for achievement and affiliation (McClelland, 1987), and influence (Bennett, 1988).

These concepts are complementary, and a model resulting from their synthesis facilitates the development of a better understanding of human service professionals' work experiences and reactions than any smaller subset of ideas. Specifically, work redesign focuses on the dimensions characterizing the work experience and employees' affective and behavioral responses, as mediated by a critical set of psychological states. Role theory augments the narrower considerations of task characteristics and design with a

more holistic perspective, thereby creating an avenue for the extension of job characteristics theory. Finally, need theories of motivation focus on the individual differences workers bring to a job that affect well-being and performance and highlight the importance of examining the dynamics of working from the perspective of person-job interaction. The review of literature for this section begins with a discussion of work redesign as the foundation upon which the extended theoretical model is built.

### **Work Redesign**

Most job design theory and research in the last forty years has been philosophically based in the human resources school of management. Because the human resources perspective considers good performance in a meaningful job to be causally related to satisfaction, this management philosophy views the design of work as important and encourages the development of enriched jobs.

The roots of the behavioral approach to job design lie in the work of Frederick Herzberg. Based on a survey of 200 engineers and accountants in the late fifties, Herzberg and his associates developed the Two-Factor or Motivator-Hygiene theory of work motivation (Herzberg et al., 1959). Subjects in the study were asked to describe incidents associated with feeling especially satisfied and especially dissatisfied with their jobs. These descriptions were grouped into categories, and frequencies for each category were tabulated.

Findings suggested that factors related to the work itself were mentioned more often as sources of satisfaction,

whereas contextual factors such as supervisory relationships and salary were more frequently cited as sources of dissatisfaction. Herzberg's theory posits that job satisfaction and dissatisfaction have different antecedents: motivators, such as the work itself, responsibility, and achievement, lead to satisfaction, but dissatisfaction is caused by hygiene factors, including supervisors, interpersonal relations, and salary. Jobs that are designed to include motivator factors are expected to be intrinsically motivating and satisfying and are therefore described as "enriched" (Paul, Robertson, and Herzberg, 1969).

A major contribution of the Two-Factor theory is that it stimulated a large body of research which examined the effects of job design on motivation; however, it has also been subject to a number of important criticisms, including a lack of empirical support for its major tenets (House and Wigdor, 1967; Locke, 1983) and insufficient attention to individual differences in predicting the effects of enriched jobs (Hackman and Oldham, 1980; Locke, 1983; Steers and Mowday, 1977).

Scott (1966) took a very different approach to explaining the effects of task design on behavior. Based on neurophysiological findings, he proposed that the nature of the work influences an employee's level of mental and physical activation. Jobs that are comprised of highly repetitive tasks do not provide sufficient stimulation to maintain an adequate level of activation, causing employees to engage in arousal-enhancing behaviors such as

daydreaming, which may impair performance. Although it is not clear what the appropriate level of activation is for different individuals or different types of work, Scott's Activation theory provides insight into the basis for the relationship between variety and work behavior.

Job characteristics theory is a behavioral approach to the design of work which focuses on objective attributes or characteristics of jobs (Hackman and Oldham, 1980). This theoretical perspective is grounded in the work of Turner and Lawrence (1965) and the Requisite Task Attributes (RTA) Model they proposed.

These researchers developed a behavioral conceptualization of work which described behavior in terms of three categories: (1) activities, (2) interactions with others, and (3) mental states. Each of these categories was further divided into prescribed and discretionary aspects of a task. This scheme resulted in the identification of six requisite task attributes considered to be required by the intrinsic nature of the job: variety and autonomy in activities, required and optional interactions, and the mental states of knowledge or skill and responsibility. Task identity, pay, and four other items were identified as associated task attributes thought to be associated with the nature of the job, but not requisite to its performance. Turner and Lawrence developed an instrument to quantitatively measure the attributes and a summary index of overall job complexity.

Data from a sample of 470 men in 47 industrial jobs from 11 different companies were used to test the hypothesis

that workers express a more favorable response (in terms of job satisfaction and attendance) to "more complex or involving tasks than to more highly programmed, less demanding work" (Turner and Lawrence, 1965: p. 2). Findings supported the hypothesized positive relationship between challenging work and positive outcomes for employees who worked in factories in small towns; however, for urban employees, satisfaction was negatively related and attendance was unrelated to the index. The researchers concluded that subcultural differences moderated the relationship between job complexity and employee response.

The RTA Model has been criticized for being based on an unvalidated, a priori classification scheme, as no data were collected to substantiate that the six attributes selected are the only or the most important motivational characteristics to workers, and for failing to explain the processes through which task characteristics affect employee outcomes (Steers and Mowday, 1977). Despite these limitations, however, Turner and Lawrence laid the groundwork for the development of job characteristics theory by initiating the development of an approach to classifying and measuring characteristics of jobs across different types of work and by identifying the need to consider the moderating effects of individual and situational differences.

#### The Job Characteristics Model

The Job Characteristics Model developed by Hackman and his colleagues (Hackman and Lawler, 1971; Hackman and Oldham, 1975, 1976, 1980) is regarded as the dominant

paradigm in job design research (Fried and Ferris, 1987; Taber and Taylor, 1990). It is an integrated, interactionist model that considers both individual and situational factors (Kulik et al., 1987). This model has provided the framework for hundreds of studies, and the evidence generated by this research has been the subject of a number of qualitative and quantitative reviews (Berlinger, Glick, and Rodgers, 1988; Fried and Ferris, 1987; Roberts and Glick, 1981; Taber and Taylor, 1990).

### **Description and Evolution of the JCM**

Lawler (1969) provided an expectancy theory explanation for the relationship between job design and employee performance. Briefly, he suggested that "job design changes can have a positive effect on motivation because they can change an individual's beliefs about the probability that certain rewards will result from putting forth high levels of effort" (p. 428). In other words, changes in the design of work are expected to affect the instrumentality of good performance. Specifically, good performance in a job that has the potential to satisfy higher order needs (i.e., self-esteem and self-actualization) is intrinsically rewarding because the employee experiences positive, valued outcomes such as feelings of accomplishment, achievement, and use of valued skills and abilities.

The first version of the JCM was described and tested by Hackman and Lawler (1971). This model contained four core job dimensions (variety, autonomy, task identity, and feedback) and two supplementary interpersonal interaction dimensions (dealing with others and friendship

opportunities). Hackman and Lawler retained variety and autonomy from the RTA Model (Turner and Lawrence, 1965), integrated task identity as a core dimension, repositioned the interpersonal dimensions to a supplementary role, and added feedback from work and other individuals. They indicated that dealing with others (required interaction) and friendship opportunities (optional interaction) were included "to permit exploration of the interpersonal characteristics of job design" but were "not, however, directly relevant to the conceptualization about job-based work motivation" being proposed (Hackman and Lawler, 1971: p. 265). Hackman and Lawler did not explain their decision to deemphasize interaction with others.

In developing their model, Hackman and Lawler reconceptualized the individual difference issue and changed its focus from the sociological to the psychological level of analysis. Although Turner and Lawrence (1965) suggested that McClelland's need for achievement motive might be one of the most relevant individual motivational predispositions to consider, Hackman and Lawler chose to incorporate higher order need strength from Alderfer's (1969) modification of Maslow's (1954) Hierarchy of Needs theory.

Hackman and Lawler developed measures for the job characteristics, higher order need strength, experienced work motivation, job involvement, general and specific types of satisfaction, and performance. These measures assessed perceived job characteristics, whereas Turner and Lawrence's approach had relied more heavily on observation. Hackman and Lawler tested their model with a sample of 208 telephone

company employees in 13 different jobs within the plant and traffic departments. Specific jobs included operators, installers, central office repairmen, and cable splicers. The sample appears to represent, in Sasser et al.'s (1978) terminology, a fairly industrial, consumer service organization.

Hypotheses that employees working in complex jobs who desire higher need satisfaction tend to have high motivation, satisfaction, quality performance, and attendance were supported. Although the two interpersonal interaction dimensions were positively and significantly related to general satisfaction, they were negatively associated with performance. Hackman and Lawler concluded that the consequences of having jobs with high interpersonal components were primarily social in nature. They also reported internal reliabilities for the interpersonal dimensions that were substantially lower than those for the task dimensions (i.e., reliability for friendship opportunities = .43 and for dealing with others = .47, as compared to a range of .75 for feedback to .90 for variety).

Hackman and Oldham (1975) refined the measures used by Turner and Lawrence (1965) and Hackman and Lawler (1971) to create the Job Diagnostic Survey (JDS) which assesses employees' perceptions of the characteristics of their jobs. They used this tool to evaluate an extension of Hackman and Lawler's (1971) conceptual framework which they called the Job Characteristics Model or JCM (Hackman and Oldham, 1976).

Key changes from earlier models that were incorporated in the JCM and reflected in the JDS included the following:

(1) the addition of task significance as a core dimension; (2) the redefinition of feedback to include only information from the work itself; (3) the deletion of friendship opportunities as a dimension; (4) the inclusion of the mental state of responsibility as a mediating variable rather than a task attribute; (5) the identification of experienced meaningfulness and knowledge of results as additional psychological states; (6) the elimination of job involvement as a dependent variable; (7) the addition of turnover as an outcome (although not measured in this study); (8) the refinement of the Motivating Potential Score (MPS) as an overall index of the characteristics; and (9) a relabeling of higher order need strength as GNS.

Hackman and Oldham (1976) tested the JCM with a sample of 658 employees on 62 different jobs (blue collar, white collar, and professional work) in 7 organizations (industrial and service business organizations). Findings generally supported the model's validity.

Hackman and Oldham (1980) developed another iteration of the JCM, the version in Figure 1, which included four modifications: (1) knowledge and skill and context satisfaction were added as moderating variables; (2) high quality work performance was changed to a more encompassing term, high work effectiveness; (3) absenteeism and turnover were no longer included as outcomes; and (4) satisfaction with the work was more specifically delineated as growth satisfaction and general satisfaction. They explained their rationale for these changes as follows:

1. Research by Oldham (1976) suggested that employees

who are satisfied with contextual elements of their work situation (i.e., pay, job security, coworkers, and supervisors) responded more positively to complex jobs.

2. The untested speculation that inability to perform well on an important task leads to unhappiness and frustration at work was used to justify including knowledge and skill as a moderator.

3. Work effectiveness was expected to improve because intrinsically motivated individuals are likely to direct their efforts toward performing well. The effect of work redesign on quantity was considered less predictable; however, it was suggested that productivity might improve if the job had been extremely demotivating prior to redesign or if hidden inefficiencies had been identified and corrected.

4. Research did not support the expected relationship between work redesign and attendance (Hackman and Oldham, 1976).

5. Growth satisfaction was used to describe a positive evaluation of opportunities for personal learning and growth. Both growth satisfaction and general satisfaction had been found to be positively related to jobs with high MPSs (Hackman and Oldham, 1976).

### **An Alternative Perspective**

The Social Information Processing (SIP) model proposed by Salancik and Pfeffer (1978) suggests a very different explanation of the relationships between objective job characteristics, perceived job characteristics, and affective responses. While the JCM views perceived job

characteristics as the initial independent variable in a causal chain leading to the formation of job attitudes, the SIP model argues that perceived job characteristics are the dependent variable in the psychological chain (Taber and Taylor, 1990).

Salancik and Pfeffer (1978) emphasized the effects of context and consequences of past choices, and they summarized their position as follows: "...the social information processing perspective posits that the multiple social influences on attitudes are more consequential for predicting attitudes at work than are individual needs or other characteristics" (p. 248). Although SIP does emphasize the importance of social influences, it appears to focus more on the effects of specific, socially-generated information, such as whether a particular change in an organization is good or bad, as opposed to the quality of the interpersonal relationships themselves.

#### Evaluation of the Cumulative JCM Research

##### Evidence: Elements to be Retained

This review of the cumulative evidence from JCM research is organized around four major sets of constructs: (1) task characteristics, (2) critical psychological states, (3) outcomes, and (4) moderators of the characteristic-CPS relationships. Within each set, discussion begins with findings from meta-analytic reviews and general tests of the model and progresses to results of studies with human service professionals. Based on the evidence reviewed, decisions about which elements of the JCM to retain in the extended theoretical model are outlined and justified.

## **Task Characteristics**

This section of the review is divided into two components: (1) task characteristic-CPS relationships, and (2) task characteristic-outcome relationships.

### **Evidence for Task Characteristic-CPS Relationships**

Hackman and Oldham's (1980: p. 97) own critique of the JCM research made the following key points concerning relationships between task characteristics and the CPS:

1. Links between specific core dimensions and CPS are not as precise as suggested.
2. Intercorrelations among the characteristics can diffuse their effects on the CPS.
3. The feedback concept is flawed in its restriction to feedback from the work itself.
4. The relationship between objective job characteristics and incumbents' perceptions is not clear because their own (Hackman, 1969) and others' research found that people "redefine their tasks to be consistent with their personal needs, attitudes, and values, and in response to cues or direct influence from other people about the meaning of the work."

The most comprehensive recent review of JCM research was reported by Fried and Ferris (1987). These authors conducted a meta-analysis of correlational data from 76 studies and a narrative review of additional studies for a total of nearly 200. The purpose of the study was to evaluate the extent to which empirical evidence supports the JCM.

Although core dimension findings supported the multidimensionality of job characteristics, the exact number of dimensions remains unclear. Fried and Ferris' analysis of findings from five studies partially supported the JCM's predictions concerning relationships between the core dimensions and CPS. Specifically, corrected correlational data failed to support the theory by showing that the predicted feedback-knowledge of results relationship (90% credibility value of  $r=.58$ ) was similar to unpredicted relationships between feedback and experienced meaningfulness ( $r=.57$ ) and experienced responsibility ( $r=.56$ ). It is important to note, however, that the predicted relationship between feedback and knowledge of results was substantially larger than any other characteristic's relationship with this psychological state.

Experienced responsibility and meaningfulness also appeared to have mixed relationships with predicted and unpredicted characteristics. Autonomy had the same relationship with predicted responsibility ( $r=.61$ ) and unpredicted meaningfulness ( $r=.61$ ). Task identity displayed a stronger relationship with unpredicted responsibility ( $r=.40$ ) than with predicted meaningfulness ( $r=.30$ ). There was support, however, for strong relationships between the predicted CPS experienced meaningfulness and skill variety ( $r=.71$ ) and task significance ( $r=.62$ ).

Johns and colleagues (1992) reported a more recent study with a sample of 300 managers that was specifically designed to test the complete JCM and investigate gaps identified by Fried and Ferris (1987). Relationships

between the core dimensions and CPS were a specific focus of this study, and the findings for meaningfulness and responsibility were consistent with the mixed results reported by Fried and Ferris. To summarize and clarify their previous analyses, Johns et al. conducted a path analysis which indicated good support for the JCM, including the predicted relationship between task identity and meaningfulness ( $b=.20$ ,<sup>1</sup>  $p<.05$ ). Although remaining anomalies included substantial unpredicted associations between autonomy and feedback and meaningfulness, the predicted associations between autonomy-responsibility ( $b=.33$ ,  $p<.05$ ) and feedback-knowledge of results ( $b=.44$ ,  $p<.05$ ) were stronger.

Summary and Conclusions. My summary evaluation of this evidence is that although there are substantial intercorrelations within the job characteristic and the CPS (Johns et al., 1992; Renn and Vandenberg, 1995) and relationships between the characteristics and states are not as distinct as the JCM proposes (Fried and Ferris, 1987; Hackman and Oldham, 1980), there are meaningful relationships between the core job dimensions and the CPS. These two sets of constructs and their predicted relationships have therefore been retained and used as the foundation for the extended theoretical model. Because the characteristics-CPS link represents an under-researched component of the JCM, these relationships were specifically examined in this study.

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<sup>1</sup> Standardized regression coefficients from appropriate regression equations served as path coefficients.

### Evidence for Task Characteristic-Outcome Relationships

Roberts and Glick's (1981) qualitative review of 61 studies relevant to the job characteristics approach to task design presented a rigorous critique of the JCM and is frequently cited in relation to criticisms of the model (e.g., Ferris and Gilmore, 1984; Kelly, 1992). Roberts and Glick identified numerous theoretical and methodological problems within this body of task design research, including confusion of objective and perceived job characteristics, failure to examine relationships of task characteristics and job responses to their organizational contexts, common method variance in relationships between perceived characteristics and affective outcomes, and an unquestioning acceptance of the five job characteristics as a comprehensive representation of perceptual task dimensions. They called for the consideration of additional dimensions and moderators of task-response relationships, the development of multimethod instruments to assess job characteristics, and attention to alternative theoretical perspectives that distinguish between situational task attributes and incumbent cognitions about them (i.e., SIP) (Roberts and Glick, 1981).

Griffin, Welsh, and Moorhead (1981) reported a qualitative review of 13 studies dealing specifically with empirical relationships between perceived job scope and employee performance. They concluded that the evidence was inconsistent and inconclusive, primarily due to variability in the measurement of employee performance. These authors

recommended the development of a more precise formulation of the job characteristics-performance relationship and appropriate measurement techniques, along with the integration of a broader set of individual difference and contextual variables in the study of job characteristics.

The most comprehensive recent review of evidence concerning job characteristic-outcomes relationships is again found in Fried and Ferris (1987). These authors reported moderate to strong relationships between task characteristics and affective outcomes, after correction for error of measurement and range variation, and weaker, but meaningful relationships between task characteristics and performance. Specifically, task characteristic correlations with general satisfaction ranged from identity (90 percent credibility value of  $r=.26$ ) to feedback ( $r=.43$ ). Identity also had the lowest correlation with growth satisfaction ( $r=.32$ ), whereas autonomy ( $r=.71$ ) had the highest. The MPS had a stronger relationship with both general ( $r=.63$ ) and growth satisfaction ( $r=.77$ ) than any individual dimension. Loher and colleagues' (1985) meta-analysis of 28 studies of the job characteristics-satisfaction relationship focused on the average of the correlations between each dimension and general satisfaction and reported a corrected value of .39.

Fried and Ferris (1987) found that task identity had the strongest relationship with job performance ( $r=.13$ ). Unlike satisfaction, the MPS relationship with performance was not the strongest. Instead, the MPS correlation ( $r=.08$ ) was similar to feedback-performance ( $r=.09$ ), and less than the identity-performance correlation of .13.

Berlinger et al. (1988) also used a combination of qualitative and quantitative review techniques to develop and test a theory about the job characteristics-performance relationship. Their meta-analysis included 45 independent samples for a total of 13,403 correlations, and they found an average characteristic-performance correlation of .21. They also reported that a step-wise regression equation which included seven predictors accounted for 47 percent of the variance in characteristic-performance correlations. The predictors were primarily related to method differences (e.g., the use of overall performance measures and random samples had positive effects).

Regarding the JCM-SIP debate, a number of meta-analysts have suggested there is a need to integrate these perspectives (Berlinger et al, 1988; Fried and Ferris, 1987; Taber and Taylor, 1990). For example, Fried and Ferris (1987) concluded that objective and perceived job characteristics are related, but other sources of variance, such as social cues must also be considered.

Characteristics of Professional Human Service Jobs. A review of the literature located a number of studies that focused specifically on the characteristics of professional human service jobs and their effects on satisfaction and performance. Hunt, Head, and Sorensen (1982), for example, reported a study of 27 pharmacists in a private hospital that supported the predicted positive relationships between the MPS and internal work motivation ( $r=.58$ ,  $p<.001$ ) and growth satisfaction ( $r=.63$ ,  $p<.001$ ).

Within the category of human service professions,

nursing has also been the subject of a number of JCM studies (Joiner, Johnson, Chapman, and Corkrean, 1982; Holaday and Bullard, 1991; Roedel and Nystrom, 1988; Seybolt, 1980; Tonges, 1993b; Wulff, 1991). A consistent pattern of findings has emerged from research designed to identify characteristics of staff nurse job content (Joiner et al., 1982; Roedel and Nystrom, 1988; Tonges, 1993b). In comparison to JDS norms for professional and technical jobs reported by Hackman and Oldham (1980), staff nurses perceive higher levels of significance and variety, about the same levels of autonomy and feedback, and lower task identity.

In their sample of 135 nurses, Roedel and Nystrom (1988) found statistically significant relationships, albeit at various levels of alpha, between all five of the core dimensions and general satisfaction, as measured by the Job Descriptive Index (feedback  $r=.30$ , autonomy  $r=.24$ , and identity  $r=.22$ ,  $p<.01$ ; variety  $r=.14$  and significance  $r=.12$ ,  $p<.10$ ). Four characteristics were significantly correlated with work satisfaction. Autonomy and feedback had the strongest relationships ( $r=.30$ ,  $p<.01$ ), followed by task identity ( $r=.24$ ,  $p<.01$ ), and skill variety ( $r=.14$ ,  $p<.10$ ).

Holaday and Bullard (1991) conducted a study of the job characteristics of 83 pediatric nurses that included performance as an outcome. The average score from the past two evaluations was used as the job performance rating, and results suggested that job characteristics and performance are related. Specifically, nurses with low performance ratings reported significantly lower job characteristic scores for autonomy, feedback from job, and feedback from

agents ( $p < .05$  for each) than nurses with high ratings.

**Summary and Conclusions.** Previous research provides strong support for the core dimensions of the JCM as important factors in explaining general and growth satisfaction and performance across many different types of jobs. These effects have been observed with human service professionals specifically. With the core dimensions and psychological states, general and growth satisfaction and performance are incorporated in the expanded theoretical model. Although there appears to be a growing consensus regarding the need to integrate the SIP perspective, this is beyond the scope of the model developed here.

Taber and Taylor (1990) also made the important point that the JDS and other subjective measures cannot provide the data needed to test the JCM versus the SIP model because "the JDS assesses job characteristics after perceptual processes, individual differences, social comparisons, and personal attributions have had their influence" (p. 494). Reliance on the objective point of view is recognized as a limitation of the study.

#### **Mediation by the Critical Psychological States**

Although they noted that very few studies have specifically examined the CPS, Fried and Ferris (1987) did find support for the mediating role of the CPS in relationships between job characteristics and general and growth satisfaction. Specifically, corrected correlations for each of the three CPS with general satisfaction were substantially higher than those of any job characteristic (i.e., meaningfulness,  $r = .87$ , responsibility,  $r = .72$ , and

knowledge of results,  $r=.56$  versus the highest dimension, feedback,  $r=.43$ ). Meaningfulness also demonstrated stronger relationships with general ( $r=.87$ ) and growth satisfaction ( $r=.84$ ) than the MPS ( $r=.63$  with general and  $.73$  with growth satisfaction). Responsibility also correlated more strongly with general satisfaction ( $r=.72$ ) than the MPS ( $r=.63$ ). In contrast, support for the mediating role of the CPS for characteristic-performance relationships was weak (knowledge of results,  $r=.03$ ) to nonexistent (meaningfulness and responsibility,  $r=0$ ).

Johns et al. (1992: p. 658) also noted that the "rarity of studies that incorporate the mediating psychological states is remarkable." These researchers used hierarchical regression analyses to demonstrate strong evidence for mediation of the characteristics-general satisfaction relationship. They also found several anomalies that included stronger direct relationships between characteristics and self-rated performance than the CPS and this outcome, and substantial direct effects for skill variety and autonomy on growth satisfaction.

Renn and Vandenberg (1995) reported two recent studies that focused specifically on the CPS as an under-represented component in JCM research. Study 1 ( $N=188$ ) was designed to test the hypothesis that the CPS are partial mediators of characteristic-affective outcome relationships, and findings from study 2 ( $N=90$ ) were used to validate these results. Findings from both studies demonstrated that the core dimensions had both direct and indirect (mediated by the CPS) effects on general and growth satisfaction, and thus

supported the partial mediation hypothesis.

#### Studies with Human Service Professionals

Job characteristics research with human service professionals has also focused more on relationships between the core dimensions and outcomes; however, findings from two studies that evaluated the CPS using nursing samples provide support for their mediating role (Holaday and Bullard, 1991; Tonges, 1993b). For example, Holaday and Bullard (1991) reported a stronger correlation for knowledge of results and performance ( $r=.22, p<.05$ ) than for any characteristic or the MPS with this outcome.

#### Summary and Conclusions

Available evidence indicates that the CPS partially mediate relationships between job characteristics and general and growth satisfaction. Although the mediating role of the CPS has not consistently been supported for performance outcomes, the number of studies that have investigated these relationships is too small to permit conclusions.

Johns et al. (1992) suggested that the states be used as "preliminary criteria in studies of job characteristics other than those specified by the JCM" (p. 674). The CPS have been incorporated as partial mediators of the relationships between job characteristics and well-being and performance in the extended theoretical model. In accordance with Johns et al.'s recommendation, this study

examined relationships with the CPS in evaluating the effects of an expanded set of job characteristics.

### **Affective and Behavioral Outcomes**

Findings supporting relationships between task characteristics and the CPS and satisfaction and performance outcomes have been discussed and summarized in preceding sections. Although studies have also supported predicted relationships with internal work motivation (Fried and Ferris, 1987), the outcomes retained from the JCM were limited to general and growth satisfaction and performance. The rationale for this decision was that internal work motivation should be an antecedent of job performance, the outcome of greatest interest to an organization; therefore, retaining satisfaction and performance should provide the basis for a parsimonious, yet reasonably comprehensive set of outcomes.

### **Satisfaction**

Locke (1983) has suggested the following definition:

Job satisfaction results from the appraisal of one's job as attaining or allowing the attainment of one's important job values, providing these values are congruent with or help to fulfill one's basic needs. These needs are of two separable but interdependent types: bodily or physical needs and psychological needs, especially the need for growth. Growth is made possible mainly by the

nature of work itself (p. 1319).

Two specific types of satisfaction are included in the model: growth satisfaction and general satisfaction.

Hackman and Oldham (1976) defined growth satisfaction as "satisfaction with opportunities for personal growth and development on the job" (p. 259) and described general satisfaction as an individual's global assessment and affective response to the job.

### Performance

Researchers generally do not offer a definition of job performance. Apparently some universally accepted definition is assumed; however, performance has been operationalized in myriad ways (Griffin et al., 1981). Moreover, performance is a multidimensional construct (Korman, 1977).

Motowidlo and Van Scotter (1994) have identified two distinct types of performance: (1) task performance, which encompasses activities that directly transform raw materials into goods and services, or support the technical core; and (2) contextual performance, which includes behaviors that support the broader organizational, social, and psychological environment in which the technical core must function. Findings from their research suggested that task and contextual performance contribute independently to overall performance (Motowidlo and Van Scotter, 1994). In the model developed here, performance is defined as the act

or process of doing the job, with specific reference to both prescribed tasks, such as carrying out work procedures, and discretionary behaviors, such as volunteering and cooperating.

#### **Moderators of Characteristic-CPS Relationships**

Hackman and Oldham's (1980) review of the JCM research indicated that evidence for the moderating effects they had proposed was mixed. Based on this finding, they identified a need to explore different conceptualizations of relevant individual differences, such as need for achievement or intrinsic versus extrinsic work values.

Again, because so few studies have focused on the CPS, there is little evidence available concerning moderating effects on characteristic-CPS relationships. Instead, most JCM research has investigated moderating effects on relationships between characteristics and outcomes; however, Johns et al. (1992) did examine GNS as a moderator of MPS-CPS relationships using hierarchical regression analyses and found no meaningful effects.

Another recent study by Tiegs and colleagues (1992), which was specifically designed to evaluate the effects of GNS and contextual satisfactions as moderators of characteristics-CPS-outcomes relationships, also failed to find support for these moderators. Although this study was not a meta-analysis, the investigators did identify and seek to overcome several methodological and statistical

shortcomings in the previous research, including small samples, a restricted range of jobs within and across studies, and use of subgroup analysis. Results of hierarchical regression analyses of the database used by Hackman and Oldham to create the JDS norms (N=6505) suggested that there were neither statistically nor practically significant moderating effects of GNS and contextual satisfactions on the characteristics-CPS-outcomes relationships proposed in the JCM.

#### Summary and Conclusions

The cumulative evidence indicates that inclusion of GNS and contextual satisfactions as moderators of job characteristic relationships is not warranted. The moderating effects of knowledge and skill have not been directly tested (Fried and Ferris, 1987; Johns et al., 1992); however, analysis of data from studies of 1,474 military subjects provided support for a strong relationship between job knowledge and work sample performance (Schmidt, Hunter, and Outerbridge, 1986). The moderating effects of knowledge and skill on relationships between the core dimensions and CPS are included in the expanded theoretical model, but were tested in this study.

Hackman and Oldham's (1980) summary conclusion from their review of JCM research captured the essence of what has been learned thus far and the likely direction for next steps:

In sum, while there is support in the research literature for the basic job characteristics model, it would be inappropriate to conclude that the model provides a correct or complete picture of the motivational effects of job characteristics. Instead, this model...is perhaps best viewed as a guide for further research... (p. 97).

### **Suggested Extensions to the JCM**

Many authors have suggested the need for modification and extension of the JCM (Abdel-Halim, 1981; Griffin, 1983; Hackman and Oldham, 1980; Renn and Vandenberg, 1995; Roberts and Glick, 1981; Sims et al., 1976; Stone and Gueutal, 1985; Taber and Taylor, 1990; Tumulty, 1992). Recommendations have included: (1) the identification of additional dimensions (Abdel-Halim, 1981; Griffin, 1983; Roberts and Glick, 1981; Sims et al., 1976; Stone and Gueutal, 1985; Tumulty, 1992); (2) the delineation of more psychological states (Renn and Vandenberg, 1995); (3) evaluation of additional affective outcomes (Griffin and McMahan, 1994; Riordan and Griffeth, 1995; Wall, Clegg, and Jackson, 1978); and (4) the consideration of different moderators (Hackman and Oldham, 1980; Roberts and Glick, 1981). This research responds to these recommendations and builds on previous studies of professional human service job characteristics.

### Theoretical Extensions: Reintegrated and New Job Dimensions

Before considering new characteristics, there is evidence to suggest that reexamination of the interpersonal dimensions associated with the JCM is warranted (Riordan and Griffeth, 1995; Sims and Szilagyi, 1976). Turner and Lawrence (1965) identified interaction with others as one of the three major categories of behavior within the RTA Model. In their research with industrial workers, they found that required interaction and optional interaction with others were significantly related to attendance. Optional interaction off-the-job was significantly related to job satisfaction, while the relationships of required interaction and optional interaction on-the-job with satisfaction were positive, but not statistically significant.

As previously noted, Hackman and Lawler (1971) did not offer a rationale for the decision to remove the interpersonal dimensions from their central place within the motivational model and reclassify them as supplemental considerations. In their test of this model, Hackman and Lawler (1971) found statistically significant positive relationships between general satisfaction and dealing with others ( $r=.17$ ,  $p<.05$ ) and friendship opportunities ( $r=.21$ ,  $p<.05$ ). They also found small, nonsignificant negative relationships between the interpersonal dimensions and overall performance (dealing with others,  $r= -.07$  and

friendship opportunities,  $r = -.09$ ).

Although Hackman and Lawler (1971) concluded that the consequences of having jobs with high interpersonal components were mainly social, there may be an alternative explanation. Unlike most service jobs, which generally require interaction with others, many industrial jobs can be performed relatively independently. Perhaps employees working in the subset of jobs with high levels of required interaction that were studied by Hackman and Lawler had less control over the effectiveness of their performance because of the interdependent nature of their activities. In other words, it may not be that increased interaction makes people perform more poorly, but it may be more difficult to perform as well in an interdependent job, as more people must perform well for the process to be effective.

Hackman and Lawler's (1971) interpretation profoundly influenced subsequent decades of job design theory and research. Specifically, the friendship opportunities dimension was not included anywhere in the JCM, and dealing with others and feedback from agents were relegated to "supplementary concepts" (Hackman and Oldham, 1980: p. 103.). As a result, few of the many studies based on the JCM have examined interpersonal dimensions of the work experience.

At the same time Hackman and Oldham (1975) were developing the JDS, Sims and colleagues (1976) were

constructing a job characteristic measure based on Turner and Lawrence's (1965) and Hackman and Lawler's (1971) work that retained the interpersonal dimensions in a central position. Sims and Szilagyi (1976) used the Job Characteristics Inventory (JCI) with a sample of 766 professional (e.g., nurses, physical therapists, and medical technologists) and support personnel at a large medical center and found a strong positive relationship between dealing with others and satisfaction with work ( $r=.36$ ,  $p<.001$ ) and a moderately strong, but meaningful relationship with performance ( $r=.19$ ,  $p<.001$ ). These correlations were larger than those of any of the core dimensions of the JCM except variety. Relationships between friendship opportunities and satisfaction ( $r=.28$ ) and performance ( $r=.19$ ) were very similar to those of dealing with others.

Because Sims and colleagues' (1976) work was contemporary to the development of the JCM and JDS, they did not address the differences between Hackman and Oldham's (1975, 1976) handling of the interpersonal dimensions and their own. Later researchers, however, have discussed this issue. Riordan and Griffeth (1995) noted that little attention has been paid to the interpersonal dimensions and indicated that "this lack of research evidence is surprising since improved interpersonal relationships may influence a variety of performance and attitudinal outcomes" (p. 142).

Riordan and Griffeth described the friendship

opportunities dimension as an "underexplored construct" and studied its effects on job satisfaction and involvement. They found that friendship opportunities explained a significant amount of variance in job involvement ( $b=.59$ ) and satisfaction ( $b=.30$ ), and concluded that the effects of friendship opportunities may be more extensive than originally thought. Based on their findings, these authors called for further theoretically-based study of links between informal friendship relations in the work-place and individual and organizational effectiveness.

Feedback from agents is the third interpersonal dimension of the JCM. Findings from Evans, Kiggundu, and House's (1979) study of 343 assembly line supervisors and managers included moderately strong, statistically significant relationships between feedback from agents and general satisfaction ( $r=.21$ ,  $p<.001$ ) and performance ( $r=.20$ ,  $p<.001$ ). Results such as these support Hackman and Oldham's (1980) conclusion regarding the need to reemploy a broader definition of the feedback construct.

#### **Studies with Human Service Professionals**

In comparison to the professional/technical norms for the JDS, pediatric nurses in Holaday and Bullard's (1991) study reported significantly less feedback from agents (3.9 vs 4.2,  $p<.01$ ) and more dealing with others (6.1 vs 5.8, ns). Unfortunately, but not atypically, the correlational analyses of relationships between characteristics and

outcomes were limited to the just the core dimensions.

### Summary and Conclusions

Evidence suggests that the interpersonal dimensions of dealing with others, friendship opportunities, and feedback from agents may be more important than the JCM indicates. Given the highly interpersonal nature of professional human service jobs, such dimensions may be especially useful in explaining the motivational characteristics of these jobs. The interpersonal dimensions of required interaction with others and feedback from agents have been reintegrated as the foundation for a set of characteristics of interpersonal relationships. The friendship opportunities dimension is encompassed within a construct described as social integration that was added to the model evaluated in this study. This construct is discussed in the next section.

### **New Interpersonal Relationships Characteristics**

As noted in Chapter 1, the limited attention that has been given to interpersonal dimensions in JCM research has been primarily focused on the existence of interactions with others, rather than on the quality of those interactions. Yet the existence of interactions and opportunities for relationships does not reflect the full dimensionality of interpersonal relationships.

There are at least three additional broad situational constructs that are particularly relevant to professional human service jobs: control, social integration, and role

stressors. Control can also be conceptualized with increased specificity. Two types of control or influence that are directly relevant are collaboration and influence with other disciplines. Similarly, role stressors include a number of applicable role dysfunctions, specifically role conflict, overload, and ambiguity. While collaboration, influence with other disciplines, and social integration are related to relationships with coworkers, role stressors encompass characteristics of relationships with both clients and coworkers.

#### Control

Control is an important motivational construct (Greenberger, Strasser, Cummings, and Dunham, 1989; Seligman, 1991), particularly in human service professions characterized by a subordinate, helping role (Fox, Dwyer, and Ganster, 1993). Greenberger et al. (1989) reported a study that focused on personal control, defined as "an individual's beliefs, at a given point in time, in his or her ability to effect a change, in a desired direction, on the environment" (p. 31). The findings from their longitudinal field study of 149 nursing employees indicated that personal control significantly predicted satisfaction and performance.

Autonomy can be defined as control or self-direction in the work itself (Hackman and Oldham, 1976), and research has consistently shown that autonomy is a critical factor in

nurses' job satisfaction (Dwyer, Schwartz, and Fox, 1992; McCloskey, 1990; Stamps and Piedmonte, 1986; Weisman, Alexander, and Chase, 1980). Yet autonomy represents only one aspect of situational control. What about the degree of control experienced in interactions with other disciplines? Due to the interdependent nature of human service professionals' work, it appears that these relationships may be an important potential source of experienced control.

Other researchers have also identified different types of situational control or sources of feelings of control in the work place. For example, Westman, Papamarcos, Cohen, and Korman (1994) differentiated between individualized control, or autonomy, and influence over decision-making through group interaction (e.g., in processes such as quality circles and self-managing work teams).

Control and power are interrelated constructs in that power provides the basis for the exercise of control. Bacharach and Lawler (1980) have delineated two distinct dimensions of the power construct: authority and influence. While authority is formal power that implies involuntary submission to the direction of a superior office, influence is more informal, deriving primarily from an individual's ability to persuade or convince others of one's position. Given that nurses do not have formal authority in relation to physicians and other disciplines, influence appears to be the more appropriate focus for this study.

Collaboration. From a control or influence perspective, nurses' relationships with physicians are particularly important and troublesome. Interdependence with physicians is a central feature of nursing, and physicians are, therefore, important figures in nurses' work lives. Because of the nature of the nurse-physician relationship, the quality of nurses' interactions with physicians affects their job satisfaction and may affect performance. For example, Weisman et al. (1980) found that nurses were more satisfied if they perceived that physicians did not delegate to them inappropriately.

Physicians hold a position of professional dominance in most hospitals and frequently resist decision-making discretion by nurses. As one physician expressed, "...there are nurses and there are doctors and...the highest ranking nurse is lower than the lowest ranking doctor, and that system will not change" (Prescott, Dennis, and Jacox, 1987: p. 2).

Fagin (1992) suggested that collaboration is a relationship of interdependence involving complementary roles. Thus, describing a nurse's relationship with physicians as collaborative, suggests that the nurse has more influence than is typical in most nurse-physician relationships. Evaluations of collaborative practice projects have shown increases in nurses' satisfaction ("Kellogg to Fund," 1981). Findings from other research has

indicated that patients cared for in intensive care units characterized by collaborative physician-nurse relationships had better outcomes, suggesting that collaboration made a positive difference in performance (Knaus, Draper, Wagner, and Zimmerman, 1986).

Influence with Other Disciplines. Nurses also interact with many other health professionals. They routinely work with social workers, physical therapists, dieticians, pharmacists and other disciplines in relation to patient care issues and decisions. Yet the nature of these relationships and their effects on nurses' work place well-being and productivity have not been well-researched.

Studies have shown that poor nonprofessional support services can impair nursing productivity (Swenson, Wolfe, and Shroeder, 1984) and lead to frustration, but my review of this literature failed to locate research that directly examined the effects of nurses' relationships with members of other professions, besides medicine. These relationships may not be as charged with gender and status issues as nurses' dealings with physicians, but such interactions do appear to represent a legitimate source of feelings of influence in clinical decision-making.

#### Social Integration

The effects of nurses' interactions with other nurses have been studied by several investigators (Gaynor, Verdin, and Bucko, 1995; McCloskey, 1990; Price and Mueller, 1981,

1986). McCloskey (1990), for example, studied 150 nurses in their first year of employment at a new hospital to examine the impact of autonomy and social integration on a number of outcomes, including job satisfaction. Social integration was defined in McCloskey's study in terms of supportive relationships with nurse colleagues. Findings suggested that nurses with low scores for social integration and autonomy experienced lower levels of job satisfaction. McCloskey also reported that higher than average amounts of social integration effectively buffered the negative effects of low autonomy. This author concluded that women, including nurses want "autonomy with connectedness" (Reverby cited in McCloskey, 1990).

Price and Mueller (1981, 1986) included social integration in the job satisfaction model imbedded within their causal model of nursing turnover. This model was originally developed in a study employing longitudinal data from 1,091 registered nurses (RNs) in seven hospitals. These authors defined social integration as the degree to which an individual has close friends among organizational members within the immediate work unit (1986), but did not explicitly restrict the set to just fellow nurses. This broader conceptualization was used in the present study. Price and Mueller (1986) found that friendly interactions in the work setting were significantly correlated with nurses' job satisfaction ( $r=.214$ ,  $p \leq .001$ ).

### Summary and Conclusions

The tasks and activities of the work itself comprise job content captured by the core dimensions of the JCM; however, interpersonal relationships are also important elements in the work lives of human service professionals. Development of a more comprehensive model of the motivational characteristics of these jobs should, therefore, reintegrate required interactions and feedback from agents and include additional constructs related to coworker relationships. Three additional constructs are included in the set of interpersonal relationship characteristics examined in this study: collaboration, influence with other disciplines, and social integration.

### Role Stressors

As noted in Chapter 1, a number of researchers have identified the need to integrate narrower considerations of task design with more global aspects of role design to gain a better understanding of employees' reactions to their work, particularly in the service sector (Abdel-Halim, 1981; Baird, 1975; Seybolt, 1980; Tumulty, 1992). Drawing on the work of sociological theorists, Kahn and his colleagues (1981) developed a conceptual framework for the study of role stressors in organizations in 1964 that has shaped much of the ensuing research on this topic. Role theory explains how expectations regarding behaviors in interpersonal relationships affect individuals. Due to space limitations,

only selected role theory concepts and definitions are presented here.

Kahn et al. identified two broad types of potential role dysfunction, role conflict and role ambiguity. Role conflict occurs when different members of a role set communicate disparate expectations that arouse motivational forces within the individual toward different behaviors. Role ambiguity stems from a lack of information required to perform the job. Within the role conflict category, these authors delineated several specific forms of sent role conflict, including intra-sender (different, incompatible prescriptions and proscriptions from one member of the set) and inter-role (pressures from membership in one organization conflict with pressures from membership in other groups). Kahn and his colleagues also described other types of conflict created by a combination of sent pressures and internal forces, such as person-role conflict which involves a conflict between the needs and values of the person and the demands of the role set. Rizzo, House, and Lirtzman's (1970) classic study of role stressors in complex organizations found that role conflict and ambiguity were negatively related to employee satisfaction and positively related to anxiety and propensity to leave.

Role Conflict. Jackson and Schuler (1985) conducted a meta-analysis of relationships between role conflict and ambiguity and 29 correlates, including job satisfaction.

These authors reported a relationship between role conflict and general satisfaction of  $r = -.48$ .

Evidence from a study of the antecedents of militancy on work control issues with a sample of 1300 teachers supported the importance of role conflict as a key factor in professional jobs within service organizations (Bacharach, Bamberger, and Conley, 1988). Specifically, influence deprivation was positively and job feedback negatively related to role conflict, which in turn had a substantial effect on teachers' militancy.

Within the general category of role conflict, Kahn et al. (1981) identified more specific types, and Jackson and Schuler (1985) commented on the need to attend to the differences between the various types of role conflict. Role overload is defined as a complex combination of inter-sender and person-role conflict in which various role senders hold legitimate expectations that are compatible in the abstract, but impossible for the individual to completely fulfill because of time constraints.

Role overload. Findings from Dear, Weisman, and O'Keefe's (1985) evaluation of a contract professional practice model suggested that role overload may be a greater problem for nurses than role conflict or ambiguity. Nurses on both the contract and the control units reported higher levels of role overload than either of the other two types of stressors. This is not surprising considering that

staffing levels are a critical issue in nursing, and work overload has been identified as a significant negative factor through meta-analysis of job satisfaction research in nursing (Irvine and Evans, 1992). Price and Mueller (1986) added role overload to their revised model of nursing turnover based on their observations and feedback from nurses and found that it had a significant relationship with satisfaction.

Jolma (1988) examined relationships among centralization, role stressors, and intent to turnover in a sample of 118 staff nurses. Role stressors studied included role conflict, overload, and ambiguity. Major findings included: (1) nurses reported high levels of role stressors and intent to leave; (2) participation was negatively related to role overload and ambiguity; (2) all three role stressors were positively associated with intent to leave.

Role Ambiguity. Jackson and Schuler's (1985) meta-analysis found a relationship between role ambiguity and general job satisfaction of  $r = -.46$ . Glisson and Durick (1988) reported a study of 319 human service workers, primarily social workers, in 22 different settings that analyzed the simultaneous effects of multiple variables on satisfaction and commitment. Explanatory variables included job, organizational, and worker characteristics. Results from hierarchical regression analyses indicated that the variables explaining the most variance in job satisfaction

were role ambiguity ( $b = -.48$ ) and skill variety (Glisson and Durick, 1988).

Similarly, Supple-Diaz and Mattison (1992) found that oncology social workers who responded to their pilot survey ( $N=27$ ) made comments that suggested role ambiguity and overlap are important factors in their job satisfaction and intent to stay in oncology social work. Organizational environment and relationships with peers and other members of the interdisciplinary team were identified as sources of stress, as well as support. Five subjects indicated that team conflict was the least rewarding aspect of their work, and one of the comments quoted concerned "the powerlessness of being a secondary professional in the medical setting" (p. 120). Based on their pilot data and a literature review, Supple-Diaz and Mattison developed a conceptual model of factors affecting professional survival and satisfaction in oncology social work in which three sets of factors (family history, patient factors, and organizational factors, such as role ambiguity, conflict, and overload), are mediated by social support in predicting burnout and survival.

Summary and Conclusions. Job characteristics research with professionals employed in human service organizations suggests that characteristics of work roles are important

antecedents of affective and behavioral outcomes in this population. A set of work role characteristics, which includes role conflict, ambiguity, and overload, is therefore incorporated in the extended theoretical model tested in this study.

#### Theoretical Extensions: New Mediating Psychological State

As previously noted, Hackman and Oldham (1976) stressed the importance of the critical psychological states in the JCM, calling them the "causal core of the model" (p. 255). Renn and Vandenberg's (1995) recent study of the mediating role of the CPS found that the three states identified in the JCM do not explain the core dimensions' total effects on the present outcomes. This finding suggests that other, as yet unidentified, psychological states may also be mediating these relationships.

Korman's (1992) conceptualization of alienation distinguished between two types -- personal and social alienation. He has defined social alienation as a disassociative state of estrangement from society, experienced as a sense of not being integrated into a meaningful social nexus and not having a common framework within which to interact with others. The opposite of alienation can be thought of as a sense of fulfillment. Within the social category, attachment to coworkers is proposed as a specific dimension of this state, which is distinct from attachment to family, neighbors, and other

nonwork friends.

Support for this dimension is available in the literature. Baumeister and Leary (1995) compiled a comprehensive qualitative review designed to test the hypothesis that the need to belong is a fundamental human motivation. They suggested that interpersonal relations must meet two criteria to satisfy this need: (1) the relationship provides frequent, affectively pleasant interactions, and (2) the interaction occurs in the context of a temporally stable and enduring framework. They also indicated that relationships in one area of an individual's life (e.g., work) can be substituted for a lack of attachments in another area (e.g., family). These authors concluded that the empirical literature supports the desire for interpersonal attachments as a fundamental human motivation that can increase our understanding and integrate a large body of existing literature concerning human interpersonal behavior. Perhaps a failure to meet this need accounts for the negative effects of social alienation.

Baumeister and Leary (1995) differentiated the need to belong from the need for affiliation (Naff) on the basis that affiliation relates to the existence of interpersonal contact without regard for the nature of the interaction. Although McClelland (1987) has described Naff as the need to be with and interact with people, he also defined affiliative imagery as the concern for establishing,

maintaining, or restoring a positive affective relationship with others. Thus, there appears to be some overlap between these constructs.

Barber (1994) reported a series of studies investigating the effect of relatedness of a target person on subjects' Machiavellian and helping attitudes. Although Barber defined relatedness in terms of kin relationships, he found that in a sample of 72 women, social attitudes were just as favorable to close friends as to family members, which suggested that "favorable social attitudes emerge in small intimate groups independently of relatedness" (p. 411). An experienced sense of attachment to coworkers may act as an antecedent to favorable social attitudes and create a positive, self-reinforcing cycle in which the psychological state and favorable social attitudes and behaviors are strengthened.

### **Summary and Conclusions**

A new psychological state identified as "experienced attachment to coworkers" is included in the extended model to anchor social integration and mediate its effects on well-being and performance. It is suggested that social integration and experienced attachment to coworkers may contribute to satisfying the universal need to belong described by Baumeister and Leary (1995). Effects of relationships with coworkers on work-place well-being and performance may be stronger for individuals with high

affiliative needs.

Unlike the critical psychological states of the JCM, experienced attachment is a new psychological state, and evidence concerning its relationships with predicted outcomes is not available from previous research. The relationship between experienced attachment and well-being was therefore assessed in this study.

#### Theoretical Extensions: Affective Outcomes

Work-place well-being is a broad term that encompasses a number of distinctly different constructs, including job satisfaction, stress, burnout, and alienation (Korman, 1992). Although job satisfaction has historically been the most important construct of well-being in the work setting, others have been developed more recently that represent different aspects of the work experience and are not interchangeable with satisfaction.

Human service professionals specifically have been found to be at risk for work-related stress (Motowidlo et al., 1986; Wolfgang, 1991) and burnout reactions to their jobs (Lee and Ashforth, 1990; Maslach, 1982; Pines and Aronson, 1981). Psychological stress occurs when a person has made an evaluation that external or internal demands tax or exceed his or her resources (Lazarus, 1991: p. 3). Motowidlo and colleagues (1986) reported a study with a sample of 171 nurses that suggested that the frequency and subjective intensity of work-place stressors "cause feelings

of stress, which lead to depression, which in turn, causes decrements in interpersonal and cognitive motivational aspects of job performance" (p. 618).

Burnout refers to a "syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do 'people-work' of some kind" (Maslach and Jackson, 1981: p. 99). This syndrome is characterized by physical exhaustion, depersonalization of clients, and feelings of low personal accomplishment. Findings from a study of 248 teachers suggested that inadequate autonomy, lack of support from colleagues, and role conflict are antecedents of burnout (Jackson, Schwab, and Schuler, 1986). Inadequate autonomy and a lack of support from colleagues result in low feelings of personal accomplishment, while continued attempts to meet the incompatible demands associated with role conflict lead to emotional exhaustion. Jackson et al.'s (1986) research suggests that burnout may be an important affective outcome to incorporate in a model of job design for human service professionals that includes autonomy, social integration, and role conflict as antecedent characteristics.

### **Summary and Conclusions**

Based on theory development and research concerning professional human service jobs and potential affective consequences, the extended theoretical model includes perceived job stress and burnout as affective outcomes.

Relationships between the CPS and the full set of well-being constructs included in the model were evaluated in this study.

#### Theoretical Extensions: Dispositional Difference Moderators

As noted in Chapter 1, a variety of dispositional difference constructs have been proposed as potential moderators for the JCM, including the Protestant work ethic, need for achievement, intrinsic versus extrinsic work values, and need for autonomy or independence (Hackman and Oldham, 1980; Morris and Snyder, 1979; Orpen, 1985; Stone, Mowday, and Porter, 1977; Stone et al., 1979). Among these, Nach has been repeatedly suggested, with supportive empirical evidence (Orpen, 1985; Joyce et al., 1976; Stone et al., 1979).

#### **Need for Achievement**

As noted earlier, Turner and Lawrence (1965) identified McClelland's work with Nach as a highly relevant avenue to pursue in refining assessment of the moderating effects of motivational predispositions. Much of McClelland's research has focused on the investigation of three of the motivational needs originally identified by Murray (1938): needs for achievement, power, and affiliation.

McClelland (1987) has stated that "doing something better" is the natural incentive for the achievement motive (p. 227). He indicated that individuals high in Nach are characterized by the tendency to seek out and do better at

moderately difficult tasks, take personal responsibility for their performance, seek performance feedback on how well they are doing, and try new and more efficient ways of doing things.

Evidence concerning the moderating effect of Nach on the relationship between perceived job characteristics and outcomes is mixed. Some studies have supported the existence of this relationship (Johnson and Stinson, 1975; Orpen, 1985), while others have not (Morris and Snyder, 1979; Stone et al., 1977). Orpen (1985) reported an investigation of Nach as a moderator of relationships between perceptions of the five core dimensions and job satisfaction and performance in a sample of 346 middle managers from manufacturing firms. The author noted that his study differed from previous related research in three ways: (1) a large sample of managers versus nonsupervisory employees was used; (2) both satisfaction and performance were included as dependent variables; and (3) the separate effect of Nach on the relationship between each of the core dimensions and the dependent variables was evaluated.

Through subgroup analysis, Orpen found that differences in the strength of the job characteristic-satisfaction relationship between high and low Nach groups were in the predicted direction for each dimension; however, only the correlation for skill variety was significantly higher in the high need group ( $r=.24$  vs  $.11$ ,  $p<.05$ ). For the job

characteristic-performance relationships, the difference for task significance was statistically significant ( $r=.41$  vs  $.11$ ,  $p<.05$ ). Moderating effects on the relationships with the psychological states were not examined. Orpen (1985) concluded that individual differences in managers' Nach did affect the relationship between their perceived job characteristics and affective and behavior responses.

Joyce et al. (1976) reported a study of the effects of organizational climate, drive for achievement, and task characteristics on workers' job satisfaction and performance. These authors found a significant interaction between motivational characteristics of the job and drive for achievement. Specifically, employees with high personal drive for goal achievement who described their jobs as highly intrinsically motivating were more satisfied.

A critical question that requires careful examination is whether Nach is a different construct than GNS. Although McClelland (1987) has stressed the relationship between Nach and the intrinsic satisfaction of doing something better, some of the examples used suggest that Nach may also be related to the incentive to show one's capabilities in situations that have extrinsic consequences. For instance, he described an experiment in which one group is told their cooperation is needed in taking a test as part of an experiment, while a second group is told that the test measures a critical ability related to general intelligence

and will be related to their future career. McClelland stated that the first scenario arouses a motivation to do well in those who have high affiliative needs and want to please the researcher, while the second situation creates an incentive for subjects to show how capable they are, and should be related to the need to achieve.

Questions arise regarding to whom the individual is trying to demonstrate his superior capability, and against what standard. Is he interested in proving his abilities to himself and/or to someone else? Is "better" defined as improving on a previous personal best or surpassing another's performance? In discussing the need for performance feedback, McClelland (1987) stated that people with a high Nach need to know whether they are "doing better than others" (p. 247). Based on this analysis, Nach may represent more of a mixture of intrinsic and extrinsic elements, whereas GNS may be more purely intrinsic. Baumeister and Leary (1995) have also stated that people's preference for achievements that are validated, recognized, and valued by other people over solitary achievements suggests there may a substantial interpersonal component behind Nach.

Stone et al.'s (1979) study comparing the relationships between the GNS scales of the JDS and other measures of higher order needs supported the position that Nach and GNS share some overlap, but are reasonably independent.

Specifically, the correlation between the JDS GNS "job choice" scale and Jackson's (1967) Personality Research Form Nach scale was  $r=.34$  (corrected for unreliability) which indicates that these two measures shared 11.6 percent common variance.

### **Need for Influence**

Because interpersonal interactions are not central to the basic JCM, Need for Power (Npow) and Naff have rarely been examined in relation to task characteristics; however, with the modification of the JCM to reemphasize required interactions and include characteristics of relationships with coworkers, these needs become more salient.

Stahl (1986) found that staff nurses reported Naff and Npow percentiles which were both above the norm. He concluded that SNs are characterized by concern for others, interpersonal relationships, and friendships. They are also concerned with influencing others and expect, for example, that patients will accept their help and advice.

Of the three primary motivational needs McClelland studied, Nach and Npow have received the most attention. To assess need strength, McClelland has used projective techniques in which subjects tell stories that are coded for the presence of certain images. The scoring system for Npow describes power imagery as relating to impact, control, or influence over others (McClelland, 1987).

Bennett (1988) identified a construct he labeled Need

for Influence, rather than power. He defined Need for Influence (Ninf) as the desire to persuade and affect others, as opposed to his description of Npow as an egoistic striving for position, and reported the development of an instrument to measure the two constructs separately. Factor analysis from several different samples was used to demonstrate the construct validity of the separate scales, and additional analyses supported their reliability and discriminant validity.

Bennett's findings (1988) suggested that Ninf may be more prevalent in women than Npow. McClelland (1975) has also indicated that because women's values differ from men's, women are more sociocentric than men.

#### **Need for Affiliation**

Steers and Braunstein (1976) found that a preference for working together and helping coworkers is significantly related to Naff. They measured this motive with items that suggested a tendency to engage others in non-work related conversation and attend to coworkers' feelings. As noted earlier, Stahl (1986) found that SNs reported higher than average Naff, which is not surprising given the nurturing, interpersonal nature of their work.

#### **Summary and Conclusions**

Nach appears to be a useful potential alternative to GNS. Nach is therefore incorporated in the extended model; however, its effects on relationships between the core

dimensions and CPS were not investigated in this study. Instead, consistent with a primary focus on evaluating relationships between the expanded set of interpersonal job characteristics and the CPS, the predicted moderating effects of Ninf and Naff on these relationships were assessed. Given that the majority of human service professionals are female, Ninf was evaluated as a moderator of responses to required interactions, collaboration, influence with other disciplines, and feedback from agents. Naff was evaluated as a moderator of responses to required interaction, social integration, and feedback from agents.

#### **Case Management as the Reintegration of Labor**

Several authors have described a business trend toward combination, rather than division of labor (Davenport and Nohria, 1994; Hammer and Champy, 1993). This "radical new work design" is called case management, possibly in reference to social work case managers who help clients deal with multiple agencies (Davenport and Nohria, 1994: p. 11).

Davenport and Nohria have made a number of important points about case management in general business that are relevant to this discussion. They identified the components of a successful case manager's (CM) role as: (1) completing or managing a "closed loop" work process to deliver an entire service; (2) mediating between customers and complex organizations at a point where customers and other functions

intersect; and (3) having an expanded role to make decisions about customer issues. These elements suggest that a CM's job is a boundary-spanning function, high in job identity, autonomy, and influence.

From a macro perspective, these authors observed that case management generally leads to strains within an organization. Specifically, they suggested, "Because it is a role based on a process view of the organization, some aspects of case management will frequently conflict with functional or divisional structures and with existing policies and procedures" (Davenport and Nohria, 1994: p. 21). This indicates that the CM may also experience higher levels of role stressors.

Interestingly, Davenport and Nohria (1994) identified the CM role as a potential bellwether of a new organizational form. They reported that case management is being widely adopted across multiple industries and concluded that "It has the potential to become the future of all business organizations, and it has already become the present for some" (Davenport and Nohria, 1994: p. 22). Given these authors' predictions, the effects of this potentially important new role on employees should be evaluated.

#### Nursing Case Management

Organizations with complex processes for bringing their products and services to market are identified as the best

candidates for case management (Davenport and Nohria, 1994). For example, case management is highly suited to service organizations in which "the service cannot be performed simply and straightforwardly in assembly line fashion... because multiple types of services are offered to one customer, perhaps even simultaneously (e.g., as in a health care institution)" (Davenport and Nohria, 1994: p. 16).

### **Nursing Case Management Defined**

Health care organizations have, in fact, been ahead of this trend. Pioneering hospitals began to implement case management in the mid-eighties (Ethridge, 1987; Zander, Etheredge, and Bower, 1987). There are a number of different types of case management models in health care (Barnum and Kerfoot, 1995). These models can be classified according to several criteria, including: (1) the discipline that fills the CM role (nurse, social worker, physician), (2) sponsorship (internal, sponsored by care providers, or external, sponsored by third party payers), and (3) scope (episode-based, limited to specific episode of illness, or continuum-based, continuing indefinitely until issues are resolved) (Bower, 1993b).

Nursing case management, the model of interest in this research, is provided by registered professional nurses, usually through a department of nursing within a hospital or other health care organization (Bower, 1993b). Nurse Case Managers (NCMs) frequently utilize clinical management tools

known as CareMaps<sup>®</sup> that organize, sequence, and time the major interventions of various health professionals and identify expected patient responses and outcomes (Zander, 1992). These tools provide a framework for managing care and assessing patients' progress.

Another model of outcomes-based practice, known as care management or coordination, also employs CareMaps; however, in this approach, the tools are used to manage patients' care during their stay on a particular hospital unit. One of the most common strategies used in implementing such unit-based models is the introduction of a new position with the title Care Coordinator (Zander, 1994b). While the NCM follows patients across care setting boundaries throughout an episode of hospitalization, Care Coordinators' (CC) case loads are restricted to patients currently being cared for on their unit. Thus, CCs may experience levels of, for example, autonomy, job identity, and role ambiguity that are higher than SNs' and lower than NCMs'. However, no studies investigating the job characteristics of CC jobs have been located.

### **Nursing Case Management Research**

My review of the nursing case management literature suggests two general conclusions, which are supported by the findings of other reviewers: (1) This literature is largely anecdotal (Marschke and Nolan, 1993); and (2) The research that does exist focuses primarily on patient and

institutional outcomes, rather than nurses' (Erkel, 1993). A small body of relevant research was located, however, and descriptions and key findings from four quantitative and three qualitative nursing case management studies are summarized in Table 1. Together these studies suggest that the design of the NCM job affects characteristics of nurses' jobs, and these effects can be expected to have mixed motivational consequences.

#### **Extended Theoretical Model: Antecedents of Work-Place Well-Being and Performance**

The extended theoretical model is broadly depicted in Figure 2a. Due to the complexity of specific inter-relationships within the model, relationships for discrete sets of variables are diagrammed separately. Although this approach requires additional figures and the examination of subsets of the complete model, it offers advantages in terms of simplicity and clarity. Figure 3 illustrates predicted relationships among characteristics of the work itself, psychological states, individual and dispositional differences, and outcomes. Relationships among characteristics of interpersonal relationships, psychological states, dispositional differences, and outcomes are diagrammed in Figure 4. Work role characteristics, psychological states, and outcome interrelationships are presented in Figure 5. Following the discussion of specific links within each set of variables,

**Table 1. Nursing Case Management Studies and Key Findings**

<b>Author &amp; Date</b>	<b>Description</b>	<b>Key Findings</b>
1. Ethridge, 1987	Quantitative evaluation of Carondelet model	NCMs (N=7) reported significantly higher levels of autonomy, enjoyment of work, and professional status than staff nurses (N=72).
2. Newman et al., 1991	Qualitative study of nursing case management practice at Carondelet.	Nurses experience something different when practicing as NCMs. Specifically, NCMs (1) are not bound by time and space and establish ongoing partnerships with clients, and (2) are organizationally empowered to carry out professional service. Relationships with hospital staff nurses were "sensitive" initially, but improved with time.
3. Van Dongen & Jambunathan, 1992	Qualitative pilot study examining role of psychiatric NCM in outpatient clinic	Both psychiatrists (N=2) and NCMs (N=5) described the NCM role as autonomous, yet collaborative with the psychiatrist.
4. Goode, 1993	Quantitative evaluation of Hospital Based Managed Care intervention (HBMC) combining CareMaps <sup>®</sup> and case management	Nurses who applied and were selected for NCM positions had higher levels of collaboration than other nurses, reported higher levels of job satisfaction with quality of care, and their autonomy increased with time in the NCM job. Multidisciplinary Team members had higher levels of collaboration than other multidisciplinary staff on the experimental unit.

<p>5. Lancero, 1994</p>	<p>Quantitative examination of perceived control over nursing practice, job stress, and work satisfaction among 30 NCMs in two different models</p>	<p>Satisfaction was positively correlated with control (<math>r=.65</math>, <math>p=.01</math>) and negatively correlated with stress (<math>r= -.43</math>, <math>p=.01</math>). Stress scale items NCMs reported as most unique to NCM practice included: (1) "focusing on continuum rather than episode," "having independence and autonomy," and "long-term relationships with clients and families."</p>
<p>6. McGill, 1994</p>	<p>Qualitative evaluation of the impact of the NCM role on leadership development within a hospital setting, based on data from two focus groups of NCMs (N=16)</p>	<p>NCMs relationships changed with physicians and other disciplines positively, but relationships with staff nurses changed negatively. Specifically, NCMs reported more collaboration and communication with MDs and other disciplines; however, they also described a sense of being in an ambiguous job and separated from other nurses.</p>
<p>7. Rheume et al., 1994</p>	<p>Qualitative study of the effects of case management on nursing practice, based on literature review and interviews with community-based NCMs (N=17) in Canada</p>	<p>Case management has the potential to fundamentally alter usual lines of authority between nurses and MDs. Difficulties are encountered in relationships between NCMs and discharge planners and other nurses and health care workers, especially if NCM role is not clearly understood. Despite the potential difficulties, however, case management appears to improve quality of working relationships in that it makes collaborative relationships feasible.</p>

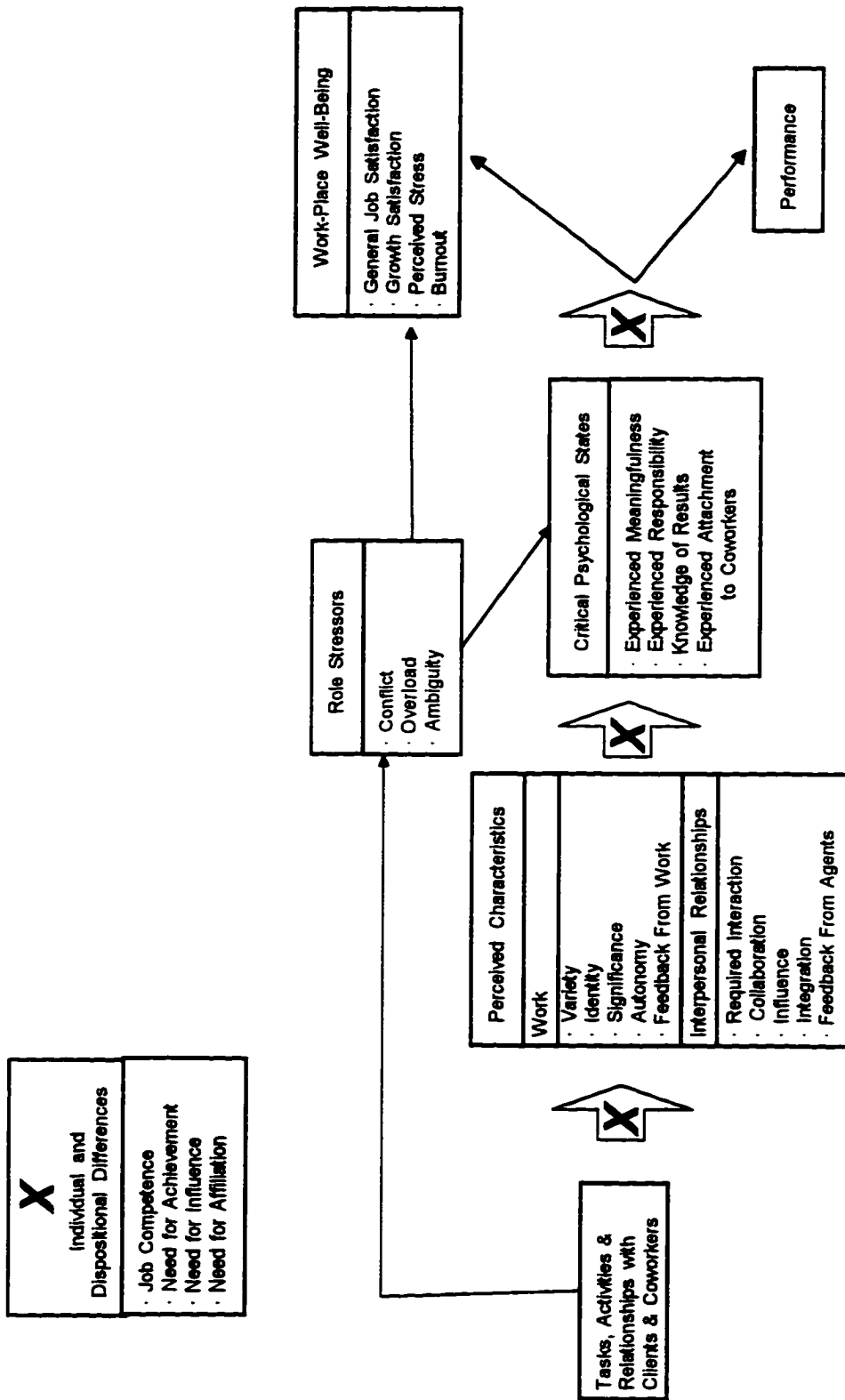
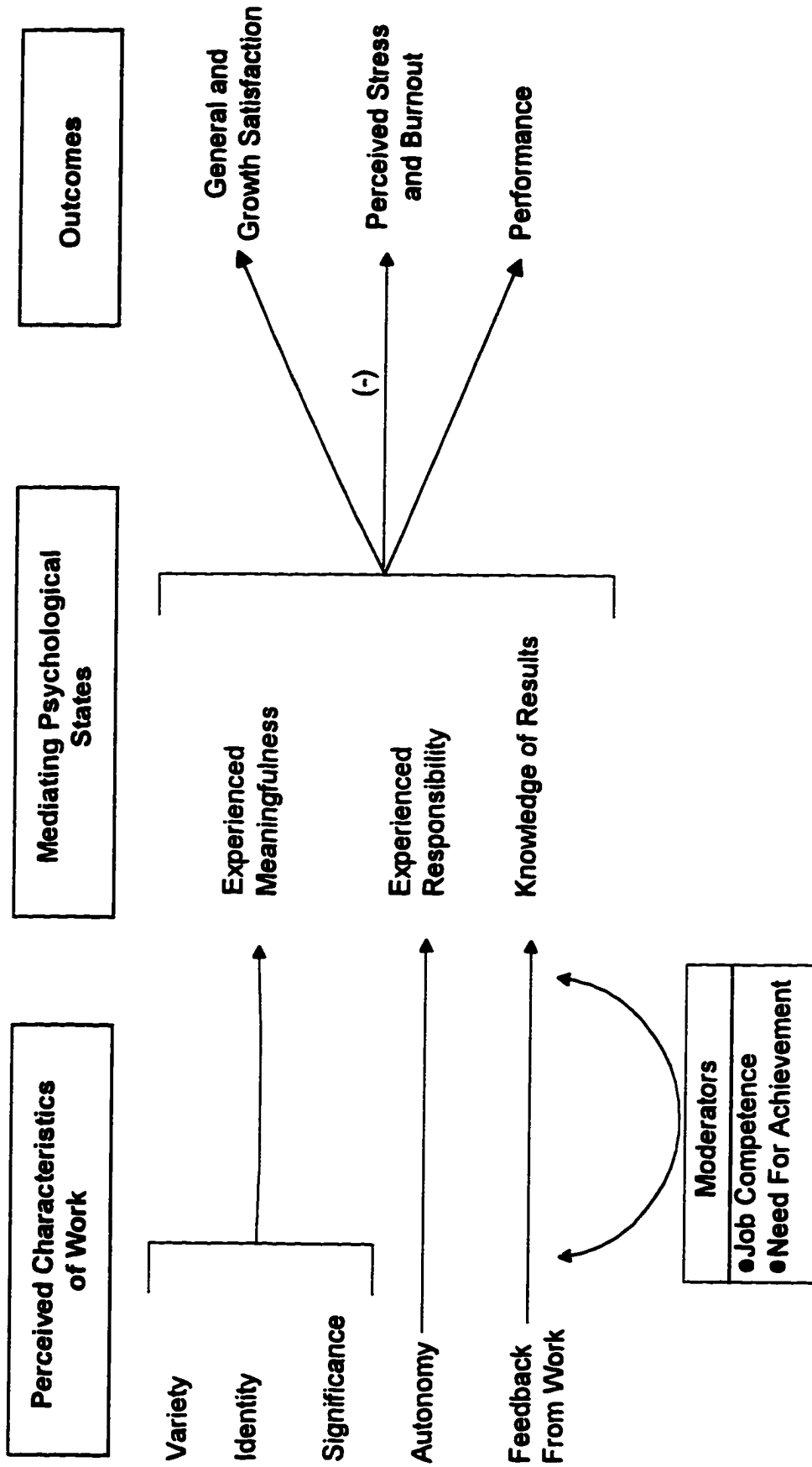
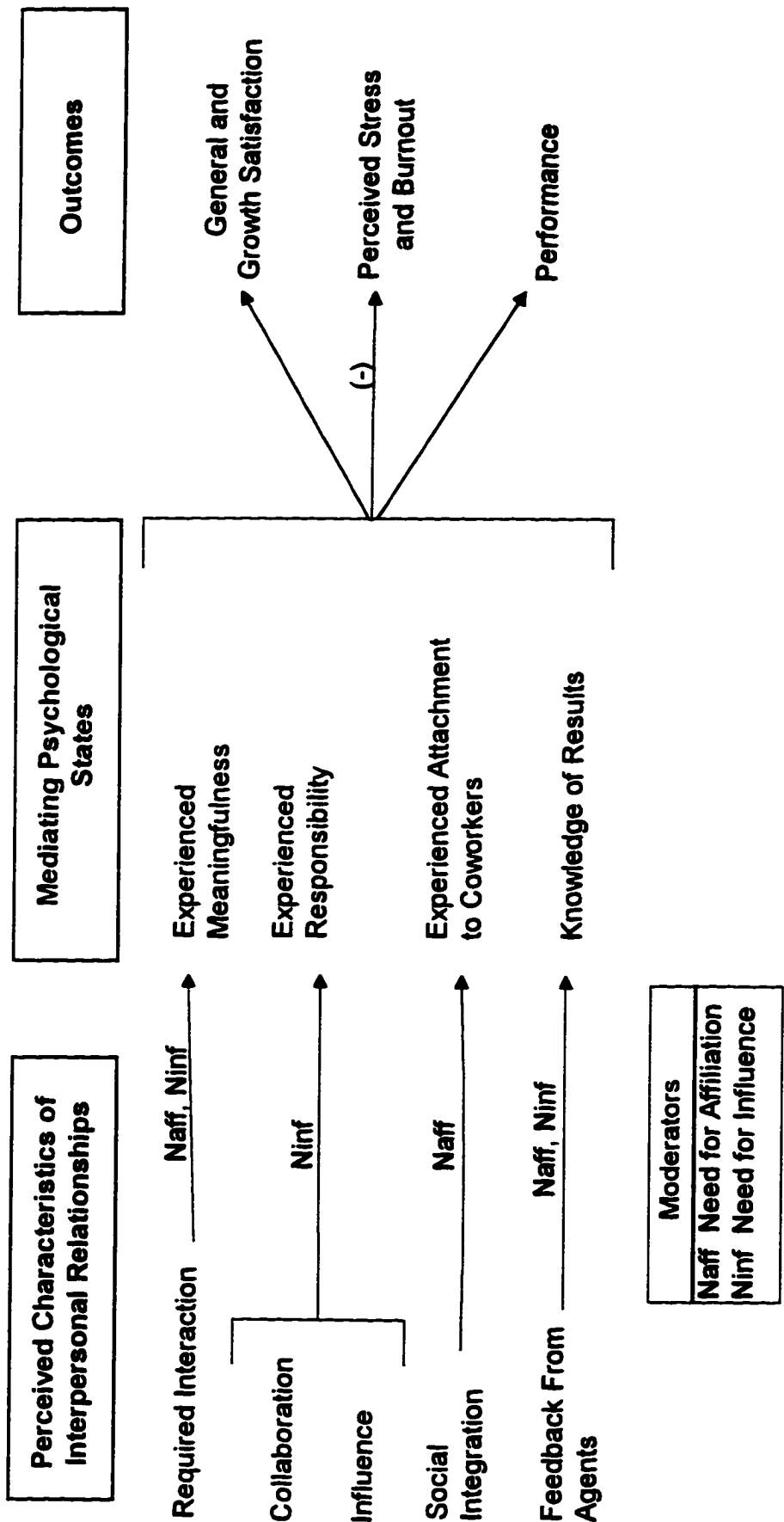


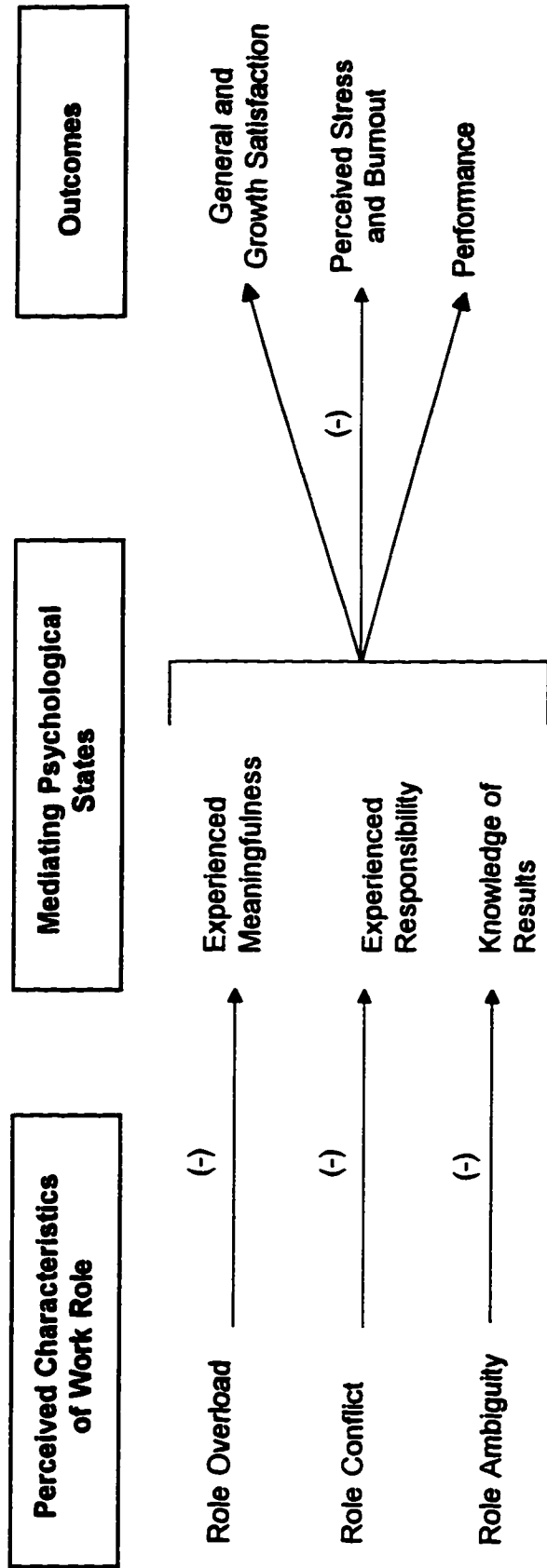
Figure 2a. Theoretical Model



**Figure 3. Relationships Among Core Dimensions of the JCM, Psychological States, Individual and Dispositional Differences, and Outcomes**



**Figure 4. Relationships Among Characteristics of Interpersonal Relationships, Psychological States, Dispositional Differences, and Outcomes**



**Figure 5. Relationships Among Characteristics of Work Role, Psychological States, and Outcomes**

these subsets are reintegrated into the model.

In Figure 2a it is proposed that tasks, activities, and relationships with clients and coworkers lead to both perceived characteristics of the work and interpersonal relationships, as well as role stressors. It is also suggested that the relationships between objective job characteristics and related perceptions are moderated by individual and dispositional differences, but these relationships are assumed based on previous research and were not tested in this study.

As in the JCM (Hackman and Oldham, 1976), the five core dimensions of job content are expected to be related to satisfaction and performance through mediating relationships with the three critical psychological states. These relationships are assumed based on evidence concerning relationships between the core characteristics and outcomes and the mediating role of the CPS. The model also builds on previous research in proposing that role stressors have direct effects on well-being, as well as indirect effects through the CPS. It is also suggested that CPS-outcome relationships are moderated by individual and dispositional differences; however, these relationships were not examined in this study.

The JCM is extended through inclusion of characteristics of interpersonal relationships in the theoretical model. Required interaction and feedback from

agents are reincorporated within the motivational theory, and three new interpersonal relationship characteristics are added: collaboration, influence with other disciplines, and social integration. These characteristics are expected to influence well-being and performance through mediating relationships with the psychological states.

To more fully capture the interpersonal nature of human service professionals' work, the three role stressor variables of role conflict, overload, and ambiguity are predicted to affect well-being and performance through the psychological states. The inclusion of experienced attachment to coworkers as an additional psychological state represents another extension of the JCM.

The last set of variables for discussion is the moderators. Interactional effects of individual and dispositional differences are predicted to moderate perceived characteristic-CPS relationships. Predictions concerning the moderating effects of employee knowledge and skill (job competence) and Nach on relationships between the core dimensions and the CPS are grounded in previous theory development and research and were not tested in this study. Because the expanded set of interpersonal job characteristics is a new addition to the model, this study evaluated the moderating effects of Ninf and Naff on relationships between these characteristics and the CPS.

Although variables included in the model and their

primary interrelationships have been discussed in the literature review, it may be helpful to provide further explanation of underlying motivational mechanisms. This discussion of key constructs and terms is organized around three sets of variables: job characteristics as independent or explanatory variables, the psychological states, and individual and dispositional difference moderator variables.

Independent Variables: Work, Interpersonal  
Relationship, and Role Characteristics

Relationships tested in this research begin with perceived characteristics of professional human service jobs related to the work itself, interpersonal relationships, and work roles. Thirteen independent variables are included in the model.

**Characteristics of Work**

Skill Variety. Hackman and Lawler (1971) suggested that jobs providing workers with opportunities to use a number of skills and abilities they value can be intrinsically motivating because good performance (i.e., successfully meeting the challenge) is internally rewarding. They proposed that this characteristic enhances the meaningfulness an employee experiences in doing the work.

Task Identity. Doing a piece of work that is sufficiently complete for the worker to perceive that something of consequence has been produced is also expected to contribute to the sense of meaning associated with the

work (Hackman and Lawler, 1971).

Task Significance. Having a substantial impact on others is expected to make the work more meaningful (Hackman and Oldham, 1976).

Autonomy. An employee with control over outcomes is more likely to feel responsible for success or failure. Success that results from one's own efforts is intrinsically motivating, as the positive emotions associated with success are internally rewarding (Hackman and Lawler, 1971).

Feedback from Work. An employee must have a basis for determining what has been accomplished for the other characteristics to be effective.

Figure 3 illustrates the specific relationships proposed for this set of variables. This figure will be discussed in further detail with the explanation of relevant moderating variables.

### **Characteristics of Interpersonal Relationships**

Required Interaction. Doing a job that requires contact with others enables individuals to meet some of their social needs through working, and it is proposed that this makes the work more meaningful.

Collaboration. Nurse-physician collaboration refers to "interactions between nurse and physician that enable the knowledge and skill of both professionals to synergistically influence the patient care being provided" (Weiss and Davis, 1985: p. 299). It is suggested that a nurse who perceives

that she can influence physicians' decisions will feel a stronger sense of responsibility for patient outcomes.

Influence with Other Disciplines. Influence with other disciplines is defined as the extent to which the nurse perceives that professional coworkers from other disciplines, besides physicians, ask nurses' opinions about patient care problems and are inclined to take nurses' opinions and suggestions into account. It is proposed that the effects of this variable will be similar to collaboration in increasing experienced responsibility for outcomes.

Social Integration. It is suggested that close friendships with others in the immediate work unit will contribute to the individual's experienced attachment to coworkers.

Feedback from Agents. Feedback from supervisors and coworkers is an interpersonal source of information that individuals can use to determine how well they are performing.

Specific relationships predicted for this set of variables are depicted in Figure 4. This figure is also explained in greater detail following the delineation of moderating variables.

#### **Characteristics of the Work Role**

Role Conflict. In a study of the correlates of role indices, Brief and Aldag (1976) found a significant negative

relationship between role conflict and autonomy ( $r = -.31$ ,  $p < .01$ ). Findings concerning relationships between role stressors and the core dimensions may provide some insight into patterns of relationships with the psychological states.

Role conflict is predicted to have a negative effect on experienced responsibility for outcomes. It is proposed that individuals who are torn between contradictory expectations will feel less personal responsibility for outcomes, as they are juggling their time between competing demands and are likely to feel that they are not making a substantive contribution anywhere.

Role Overload. It is suggested that workers who feel that they do not have time to accomplish all that is expected are likely to experience work as less meaningful because, in this form of role conflict, positive feelings associated with successfully meeting some expectations may be negated by the frustration of being unable to accomplish all that is expected, specifically because of time.

Role Ambiguity. Brief and Aldag (1976) reported a significant negative relationship between role ambiguity and feedback from work ( $r = -.27$ ,  $p < .05$ ). It is proposed that employees who are unclear about what is expected will experience difficulty in determining their level of performance; therefore, role ambiguity is expected to be negatively related to knowledge of results.

Specific relationships predicted to exist among work role characteristics, psychological states, and well-being and performance are diagrammed in Figure 5.

#### Mediating Critical Psychological States

The CPS provide the mediating link between the job characteristic variables and outcomes. Based on Lawler's (1969) expectancy theory explanation of the psychological mechanisms underlying the relationship between job characteristics and intrinsic motivation, Hackman and Lawler (1971) proposed that individuals who desire satisfaction of higher order needs should be most likely to obtain what they seek when working effectively in jobs that meet three conditions: (1) produce intrinsically meaningful or otherwise worthwhile outcomes, (2) allow workers to feel personally responsible for an identifiable and meaningful piece of the work, and (3) provide feedback about performance effectiveness. An individual's perception that these conditions are operational gives rise to the CPS, which are in turn positively related to the individual's work-place well-being and performance.

Experienced attachment to coworkers is defined as the degree to which the individual feels a sense of closeness or connection to others in the immediate work group. It is suggested that this new CPS is intrinsically motivating because it contributes to satisfying individuals' need to belong (Baumeister and Leary, 1995).

The extended model also suggests that a critical set of psychological states is negatively related to perceived stress and burnout. As a related example, social support has been shown to buffer the negative effects of stressors (Cohen and Wills, 1985; Ganster, Fusilier, and Mayes, 1986) and decrease the likelihood of burnout (Pines, 1983).

#### Individual and Dispositional Difference Moderators

One individual difference and three specific dispositional needs are proposed to moderate relationships between job characteristics and psychological states.

##### **Job Competence**

This variable refers to individuals' perception that they possess the knowledge and skills required to perform well. Hackman and Oldham (1980) suggested:

For jobs high in motivating potential... people who have sufficient knowledge and skill to perform well will experience substantially positive feelings as a result of their work activities. But people who are not competent enough to perform well will experience a good deal of unhappiness and frustration at work, precisely because the job "counts" for them and they do poorly at it (p. 84).

In this context, individuals' perceptions concerning the adequacy of their job knowledge and skills are viewed as a stand-in for an objective assessment of competence, rather

than a reflection of self-esteem. It is proposed that job competence moderates the relationships between each of the core dimensions and their specified CPS.

#### **Need for Achievement**

It is suggested that *Nach* moderates the relationships of the core dimensions with their specified CPS. The opportunity to use valued skills and exercise discretion in the performance of a substantive piece of work should lead to feelings of personal ownership for the outcomes, and feedback provides a basis for determining how well one is doing. The underlying motivational mechanisms are similar to those described by Lawler (1969).

#### **Need for Influence**

*Ninf* is expected to moderate an individual's response to perceived interpersonal effects on others. It is predicted that individuals with high *Ninf* will react favorably to a job in which they are expected to interact with others (required interaction) and if they perceive that their interactions with others lead to desired psychological or behavioral responses (collaboration, influence, and feedback from agents).

#### **Need for Affiliation**

Because these elements contribute to meeting affiliative needs, it is proposed that high *Naff* individuals will respond more positively to a job characterized by interdependence (required interaction), the development of

friendships with coworkers (social integration), and the receipt of performance feedback from others (feedback from agents). It is therefore predicted that Naff moderates the relationships between each of these characteristics and their specified CPS.

In summary, thirteen constructs have been identified as important motivational characteristics of professional human service jobs. This model's unique contribution to improved understanding of the effects of these characteristics may lie in its combination of increased specificity and comprehensiveness. To increase specificity, the model delineates different types or sources of perceived control: autonomy in one's own work and collaboration or influence in relationships with coworkers. It also distinguishes among different work-place well-being constructs and breaks GNS into more specific dispositional needs for achievement, influence, and affiliation. It is more comprehensive in (1) reemphasizing the interpersonal characteristics of required interaction and feedback from agents, (2) including the contextual factor of social integration, (3) identifying experienced attachment to coworkers as an additional CPS, and (4) integrating work role characteristics that transcend the task domain to capture key aspects of relationships with clients and coworkers and the experiences of professional employees in bureaucratic service organizations.

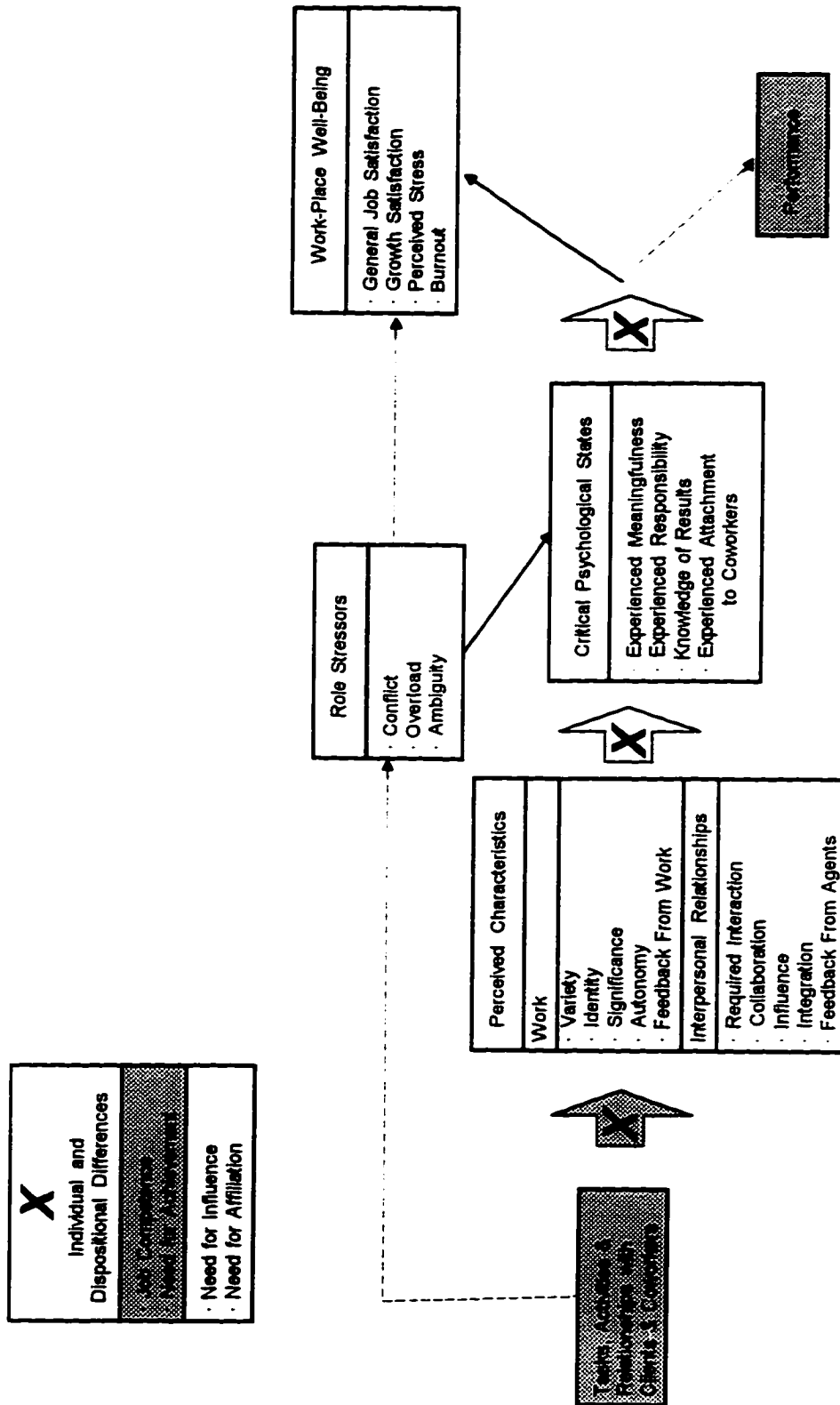
Hypotheses for Job Characteristic, CPS,  
and Well-Being Relationships

In Figure 2b, constructs not included in this research are shaded and connecting lines are dotted to highlight the study's focus on evaluating job characteristic-CPS-well-being relationships. Specifically, this study tested hypotheses drawn from these components of the model: (1) relationships between characteristics of the job and well-being outcomes; (2) relationships between characteristics of the job and psychological states; (3) the mediating role of the psychological states in relationships between characteristics and well-being; and (4) moderating effects of dispositional differences on relationships between interpersonal job characteristics and the psychological states. Figures 2b, 4, and 5 depict the relationships that were the focus of this research.

**Hypothesized Effect Size**

Hypotheses have been developed using an approach based on effect size estimates (Cohen, 1977; Rosenthal and Rosnow, 1984). This method has the advantage over traditional null hypothesis statistical testing of specifying the magnitude of the predicted relationship.

Effects size (ES) can be defined as the degree to which the phenomenon of interest is present in the population (Cohen, 1977), or the degree of departure from the null hypothesis (Rosenthal and Rosnow, 1984). Raw effect sizes



**Figure 2b. Elements of the Model Tested in this Study**

can be standardized to provide a common index for comparing the size of relationships between variables, transcending the use of different units of measurement. A correlation coefficient  $r$ , for example, is a standardized index of covariance which expresses the strength of the relationship between two variables, regardless of the units of measurement involved. Cohen (1977) has also defined a range of small, medium, and large ES values for  $r$ : small=.10, medium=.30, and large=.50.

Hypotheses for this study were tested with hierarchical regression analysis. This approach was chosen because it facilitates model testing by enabling the investigator to (1) specify the variables to be included in each set and the sequence in which sets enter the regression, (2) evaluate the combined effects of several sets of variables on the dependent variable (cumulative  $R^2$ ), and (3) identify each set's unique contribution to these effects (change in  $R^2$ ) (Keppel and Zedeck, 1989).

Cohen (1977) identified the ES index  $f^2$  as appropriate for use in multiple regression correlation systems employing  $F$  tests for the statistical significance of the amount of explained variance ( $R^2$ ) and the increment in explained variance (change in  $R^2$ ). He also defined a range of small, medium, and large ES values for  $f^2$  in analyses with multiple independent variables: small=.02, medium=.15, and large=.35.

Locating sources of information to guide the estimates is a critical step in formulating hypotheses that include ES. Effect size estimates in the hypotheses that follow were based on the following sources, in this order:

1. Relevant findings from previous studies that employed multiple regression analysis to evaluate relationships among variables of interest.
2. Bivariate correlations from prior studies, interpreted with the understanding that the variables in these hypotheses were not being evaluated as zero-order predictors.
3. My general knowledge of the literature.

For example, the prediction that the core dimensions of the JCM would explain a medium-large amount of the variance in general job satisfaction, equal to an  $f^2$  of at least .20, (H1A1.1) was based on Johns et al.'s (1992) findings of an R-squared for this relationship of .23. Similarly, Tiegs et al. (1992) reported that the core dimensions explain 25 percent of the variance in general satisfaction. Thus, evidence from prior tests of job characteristics theory indicate that an ES larger than .20 could be expected. This effect size information is important from a practical perspective because core characteristics that have a small effect on the job satisfaction may not justify the effort and expense of job redesign.

The ES estimates also reflect Cohen's (1977) guideline

for evaluating a large number of hypotheses that indicates a result should be larger than .01 to be meaningful, regardless of statistical significance. Findings equal to or larger than the minimum specified ES have been interpreted as support for the hypothesis.

**Hypothesis Set H1: Relationships Between Job Characteristics and Outcomes**

**Set H1A. General Job Satisfaction**

**H1A1:** There is a significant relationship between work characterized by variety, identity, significance, autonomy, and feedback, and general job satisfaction.

**H1A1.1:** The core dimensions explain a medium-large amount of variance, equal to an  $f^2$  of at least .20 (Johns et al., 1992; Tiegs et al., 1992).

**H1A2:** After controlling for the effects of the core dimensions, there is a significant relationship between interpersonal relationships characterized by required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents, and general satisfaction.

**H1A2.1:** The interpersonal relationship characteristics explain a small-medium increase in explained variance, beyond that explained by the core dimensions, equal to an  $f^2$  of at least .05 (Evans et al., 1979; Riordan and Griffeth, 1995; Sims and Szilagyi, 1976).

**H1A3:** After controlling for task and interpersonal job

characteristics, there is a significant relationship between a work role characterized by conflict, ambiguity, and overload, and satisfaction.

H1A3.1: Work role characteristics explains a small-medium increase, beyond that explained by characteristics of work and interpersonal relationships, equal to an  $f^2$  of at least .05 (Agho, 1993; Glisson and Durick, 1988; Tumulty, 1990)

Set H1B. Growth Satisfaction

H1B1: There is a significant relationship between work characterized by variety, identity, significance, autonomy, and feedback, and growth satisfaction.

No hypotheses regarding specific effect sizes were formulated for relationships between job characteristics and growth satisfaction, burnout, and stress because there was not enough information available from prior research to guide these predictions.

H1B2: The relationship between required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents, and growth satisfaction explains a significant increase in variance, beyond that accounted for by the core dimensions.

H1B3: The relationship between role conflict, ambiguity, and overload, and growth satisfaction explains a significant increase in variance, beyond that accounted for by characteristics of work and interpersonal relationships.

Set H1C. Burnout

H1C1: There is a significant relationship between work characterized by variety, identity, significance, autonomy, and feedback, and burnout.

H1C2: The relationship between required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents, and burnout explains a significant increase in variance, beyond that accounted for by the core dimensions.

H1C3: The relationship between role conflict, ambiguity, and overload, and burnout explains a significant increase in variance beyond, that accounted for by characteristics of work and interpersonal relationships.

Set H1D. Job Stress

H1D1: There is a significant relationship between work characterized by variety, identity, significance, autonomy, and feedback, and job stress.

H1D2: The relationship between required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents, and stress explains a significant increase in variance, beyond that accounted for by the core dimensions.

H1D3: The relationship between role conflict, ambiguity, and overload, and stress explains a significant increase in variance, beyond that accounted for by characteristics of work and interpersonal relationships.

**Hypothesis Set H2: Relationships Between Job  
Characteristics and Psychological States**

**Set H2A. Experienced Meaningfulness**

**H2A1**: There is a significant relationship between variety, identity, and significance and experienced meaningfulness.

**H2A1.1**: The specified characteristics of the JCM explain a medium-large amount of the variance in experienced meaningfulness (Hackman and Oldham, 1976; Johns et al., 1992), equal to an  $f^2$  of at least .25.

**H2A2**: The relationship between required interaction and experienced meaningfulness explains a significant increase in variance, beyond that accounted for by the specified core dimensions.

**H2A2.1**: Required interaction explains a small-medium increase in variance, beyond that accounted for by the specified dimensions of the JCM, equal to an  $f^2$  of at least .05.

**H2A3**: The relationship between role overload and experienced meaningfulness explains a significant increase in variance, beyond that accounted for by characteristics of work and required interaction.

**H2A3.1**: Role overload explains a small increase in variance, beyond that explained by characteristics of work and required interaction, equal to an  $f^2$  larger than .01.

Set H2B. Experienced Responsibility for Outcomes

H2B1: There is a significant relationship between autonomy and experienced responsibility.

H2B1.1: Autonomy explains a small-medium amount of the variance in experienced responsibility, equal to an  $f^2$  of at least .10 (Hackman and Oldham, 1976; Johns et al., 1992).

H2B2: The relationship between collaboration and influence and experienced responsibility explains a significant increase in variance, beyond that accounted for by autonomy.

H2B2.1: Collaboration and influence explain a small increase in variance, beyond that accounted for by autonomy, equal to an  $f^2$  larger than .01.

H2B3: The relationship between role conflict and experienced responsibility explains a significant increase in variance, beyond that accounted for by autonomy and characteristics of interpersonal relationships.

H2B3.1: Role conflict explains a small increase in variance beyond that explained by autonomy and characteristics of interpersonal relationships, equal to an  $f^2$  larger than .01.

Set H2C. Knowledge of Results

H2C1: There is a significant relationship between feedback from the work itself and knowledge of results.

H2C1.1: Feedback from work explains a medium amount of variance in knowledge of results equal to an  $f^2$  of at

least .15 (Hackman and Oldham, 1976; Johns et al., 1992).

H2C2: The relationship between feedback from agents and knowledge of results explains a significant increase in variance, beyond that accounted for by feedback from the work itself.

H2C2.1: Feedback from agents explains a small-medium increase in variance, beyond that accounted for by feedback from work, equal to an  $f^2$  of at least .05.

H2C3: The relationship between role ambiguity and knowledge of results explains a significant increase in variance, beyond that accounted for by feedback from work and agents.

H2C3.1: Role ambiguity explains a small increase in variance beyond that explained by feedback from work and agents, equal to an  $f^2$  larger than .01.

Set H2D. Experienced Attachment to Coworkers

H2D1: There is a significant relationship between social integration and experienced attachment to coworkers.

H2D1.1: Social integration explains a medium increase in variance in experienced attachment, equal to an  $f^2$  of at least .15.

**Hypothesis Set H3: Mediating Effects of CPS**

Set H3A. Experienced Meaningfulness

H3A1: The relationship between variety, identity, significance, required interaction, and role overload, and general job satisfaction is mediated by meaningfulness.

**H3A1.1**: Mediation by experienced meaningfulness explains a medium-large amount of variance between these characteristics and satisfaction, equal to an  $f^2$  of at least .25 (Renn and Vandenberg, 1995).

**H3A2**: The relationship between variety, identity, significance, required interaction, and role overload, and growth satisfaction is mediated by meaningfulness.

Again, no hypotheses regarding specific effect sizes were formulated for mediating relationships between job characteristics and growth satisfaction, burnout, and stress because there was not enough information available from prior research to guide these predictions.

**H3A3**: The relationship between variety, identity, significance, required interaction, and role overload, and burnout is mediated by meaningfulness.

**H3A4**: The relationship between variety, identity, significance, required interaction, and role overload, and stress is mediated by meaningfulness.

**Set H3B. Experienced Responsibility**

**H3B1**: The relationship between autonomy, collaboration, influence, and role conflict, and general job satisfaction is mediated by responsibility.

**H3B1.1**: Mediation by experienced responsibility explains a medium amount of variance between these characteristics and satisfaction, equal to an  $f^2$  of at least .15 (Renn and Vandenberg, 1995).

H3B2: The relationship between autonomy, collaboration, influence, and role conflict, and growth satisfaction is mediated by responsibility.

H3B3: The relationship between autonomy, collaboration, influence, and role conflict, and burnout is mediated by responsibility.

H3B4: The relationship between autonomy, collaboration, influence, and role conflict, and stress is mediated by responsibility.

Set H3C. Knowledge of Results

H3C1: The relationship between feedback from work, agents, and role ambiguity, and general job satisfaction is mediated by knowledge of results.

H3C1.1: Mediation by knowledge of results explains a medium-large amount of variance between these characteristics and satisfaction, equal to an  $f^2$  of at least .20 (Renn and Vandenberg, 1995).

H3C2: The relationship between feedback from work, agents, and role ambiguity, and growth satisfaction is mediated by knowledge of results.

H3C3: The relationship between feedback from work, agents, and role ambiguity, and burnout is mediated by knowledge of results.

H3C4: The relationship between feedback from work, agents, and role ambiguity, and stress is mediated by knowledge of results.

**Set H3D. Experienced Attachment to Coworkers**

**H3D1**: The relationship between social integration and general job satisfaction is mediated by experienced attachment to coworkers.

**H3D1.1**: Mediation by experienced attachment explains a medium-large amount of variance between these variables, equal to an  $f^2$  of at least .20.

**H3D2**: The relationship between social integration and growth satisfaction is mediated by experienced attachment to coworkers.

**H3D3**: The relationship between social integration and burnout is mediated by experienced attachment to coworkers.

**H3D4**: The relationship between social integration and stress is mediated by experienced attachment to coworkers.

**Hypothesis Set H4: Moderating Effects on  
IP Job Characteristic-CPS Relationships**

Effect sizes in this set of hypotheses were based on the guideline Cohen (1977) recommended for evaluating a large number of hypotheses (i.e., explained variance should be greater than .01 to be meaningful, regardless of statistical significance).

**Set H4A. Need for Influence (Ninf)**

**H4A1**: The relationship between required interaction and meaningfulness is moderated by Ninf.

**H4A1.1**: Moderation by Ninf explains a small increase, equal to an  $f^2$  larger than .01, in additional variance

in this relationship.

H4A2: The relationships between collaboration and influence with other disciplines and responsibility are moderated by Ninf.

H4A2.1 Moderation by Ninf explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in these relationships.

H4A3: The relationship between feedback from agents and knowledge of results is moderated by Ninf.

H4A3.1: Moderation by Ninf explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in this relationship.

Set H4B. Need for Affiliation (Naff)

H4B1: The relationship between required interaction and experienced meaningfulness is moderated by Naff.

H4B1.1: Moderation by Naff explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in this relationship.

H4B2: The relationship between social integration and experienced attachment to coworkers is moderated by Naff.

H4B2.1: Moderation by Naff explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in this relationship.

H4B3: The relationship between feedback from agents and knowledge of results is moderated by Naff.

H4B3.1: Moderation by Naff explains a small increase,

equal to an  $f^2$  larger than .01, in additional variance in this relationship.

#### Motivational Characteristics of the Case Manager Job

The NCM job was developed in response to changes in hospital financing that presented an opportunity to enrich staff nursing and create a new job. Work redesign strategies focus on expanding the responsibilities of a job both horizontally and vertically. These changes are intended to produce desired improvements in affective and behavioral outcomes, including increased employee satisfaction, motivation, and performance, which have been reported in numerous studies (Fried and Ferris, 1987; Hackman and Oldham, 1976, 1980; Herzberg, 1966). Yet it has also been noted that the effects of work redesign are not always as intended (Joiner and van Servellen, 1984). It appears that the design of the NCM position has successfully introduced a number of theoretically important changes which should make it a more satisfying and motivating job. It is also expected, however, that the design of this job may produce several unintended negative effects.

#### **Unintended Effects from Job Redesign**

Although not nearly as prevalent as reports of improved satisfaction and performance, there are occasional references to unintended effects from job redesign scattered through the literature. Perhaps the dehumanizing effects attributed to scientific management can be considered the

first instance of unanticipated consequences related to changes in the design of work (Steers and Porter, 1991). Alderfer's (1967) dissertation research indicated that increasing job complexity had the desired effect of increasing employees' satisfaction with opportunities to use their skills and abilities, but was also associated with decreased satisfaction with respect from supervisors. He suggested that the deterioration of supervisor-subordinate relationships could be due to higher demands for interpersonal competence, in both the performance and supervision of more complex jobs.

More contemporary researchers have also identified the potential for undesirable results from work redesign. Kopelman (1985) noted that job enrichment sometimes leads to decreased satisfaction with pay and supervision: employees may expect increased compensation for expanded responsibilities, and supervisors may interfere with the autonomy employees expect to receive. Campion and Thayer (1988) pointed out that alternative approaches to job design each have advantages and disadvantages. For example, although the behavioral approach may lead to desired individual outcomes, such as high satisfaction and motivation, there are negative organizational consequences, as well, including difficulty in filling more demanding jobs and longer training times. Kulik et al. (1987) also cautioned that people with strong growth needs working in

jobs with high motivating potential may become excessively involved in work, to the detriment of other aspects of their lives (i.e., workaholics).

Two studies were located that identify the potential for unintended effects from job enrichment in nursing, specifically the transition to nurse-managed care (Shigemitsu and Tsushima, 1990; Wolf, 1993). Wolf's (1993) dissertation research described a number of negative outcomes associated with the shift to a professional nursing practice model in which nurses assumed responsibility for managing the care of a caseload of patients. These negative effects included increased work intensity, isolation, breakdown in mutual help systems, increased competition between nurses, decreased group cohesion, and increased tension between nurses and physicians.

As part of an evaluation of nurse-managed patient care, Shigemitsu and Tsushima (1990) measured nurses' stress before and after implementation of a model which encouraged nurse-physician collaboration in managing patient care, in accordance with predetermined protocols. Results suggested that a significant increase in nurse job stress occurred following implementation of the care management program. Thus, it appears that in assessing the motivational characteristics of the NCM job, there is a need for balanced consideration of potential unanticipated consequences, as well as intended effects.

### **The Nurse Case Manager Job**

From the job characteristics and other theoretical perspectives, what is the NCM job? This job appears to differ from the traditional SN job on a number of theoretically important dimensions that are expected to have mixed motivational consequences.

#### **Characteristics of the Work Itself**

Staff nurse is the basic hospital RN position in which the nurse provides bedside care for an assigned group of patients each shift. SN jobs are known to be high in significance and skill variety (Joiner et al., 1982; Roedel and Nystrom, 1988; Tonges, 1993b). The NCM job is likely to be similar in these characteristics; however, it is expected that NCMs experience more job identity, autonomy, and feedback in their work than SNs.

As compared to the traditional SN job, the NCM has an expanded scope in terms of both a broader perspective on patient care and a view across a longer continuum. The NCM sees the system of patient care more broadly in that she manages the entire hospitalization, as opposed to just the nursing care component on one unit. She also follows the same patients longitudinally across unit and institutional boundaries. Both McGill's (1994) and Lancero's (1994) research provided support for increased job identity in the NCM job (see Table 1). Case managers in McGill's study described a change in their focus to the total picture of

patient care, and Lancero found that one of the most unique aspects of NCM practice is focusing on a continuum of care.

Previous research also suggests that NCMs experience greater autonomy in their jobs. Case managers in Lancero's (1994) study identified independence and autonomy as additional unique characteristics of their jobs. Ethridge (1987) and Goode (1993) explicitly demonstrated that NCMs reported higher levels of autonomy than SNs.

NCMs may also receive more feedback from their work, particularly if they are working with a CareMap system. Bueno and Hwang (1993) described a sophisticated system developed at Robert Wood Johnson University Hospital that integrates analysis of variances from CareMaps with NCMs' performance appraisals. Variance analysis data is entered into a data base and summary reports are prepared for each NCM that list the frequency for each case type and compare the average expected and actual lengths of stay. SNs generally do not receive this type of regular, quantitative performance feedback.

To summarize the motivational characteristics of NCM work within the context of previous JCM research in nursing, the NCM is what Harrison (1987) called a specialized role. As such, it combines some of the best features of critical care staff nursing, such as growth satisfaction (Wulff, 1991), with the job identity more characteristic of medical/surgical SN jobs (Roedel and Nystrom, 1988).

Harrison's (1987) findings suggested that specialized roles are characterized by a higher MPS, and especially higher levels of perceived autonomy, than either nurse manager or SN jobs. Thus, it is expected that NCMs may experience higher levels of several of the core dimensions than SNs, particularly job identity, autonomy, and feedback.

#### Characteristics of Interpersonal Relationships

NCMs have more influence with physicians and other disciplines because of their authority and responsibility for patients' movement through the hospital system. NCMs are in a better position to collaborate with physicians than SNs because they can affect events that are important to physicians (e.g., arranging services their patients need) and may have access to comparative information about physicians' practice patterns and outcomes.

Although NCMs do not interact with physicians on a "level playing field", their relationships are more equable. For example, descriptions of NCMs' interactions with physicians from McGill's (1994) research suggested a more balanced relationship in which nurses exerted more control in relation to decisions about patient care (e.g., questioning a physician's assertion that a patient does not need a particular intervention). Thus it is predicted that NCMs experience more collaboration with physicians than SNs.

McGill's (1994) findings also indicated that NCMs have influence with other disciplines in the management of

patient care. For example, in regard to a question about relationships with members of other professions, the focus group facilitator commented, "I see you all nodding your heads, so would you pretty well agree that as you become the recognized experts, that other departments also approach you, not just your own area?" (p. 40). This was confirmed by the participants. Similarly, Goode (1993) found that the nine members of a designated multidisciplinary care management team, composed of physicians, NCMs, and an individual dietician and pharmacist, reported higher levels of collaboration than the other multidisciplinary staff on the unit. Based on the nature of their responsibilities and increased contacts with other professions, it is expected that NCMs experience more influence in their interactions with other disciplines than SNs.

NCMs perform an integrator/expeditor function within hospitals (Zander, 1994a) and occupy what can be described as an intraorganizational boundary spanning position (Adams, 1983). Because NCMs move throughout the organization in the course of their work, they may have fewer opportunities to develop close relationships within an immediate work group. Additionally, the structure of their responsibilities may increase the potential for interpersonal conflict with nursing staff and other professionals, such as social workers or discharge planners (McGill, 1994; Morse, 1991; Newman, Lamb, and Michaels, 1991; Rheume, Frisch, Smith,

and Kennedy, 1994). NCMs are therefore expected to experience less social integration than SNs.

In summary, nurses' jobs involve a great deal of interaction with others, and it is expected that both SN and NCM jobs are characterized by required interaction and feedback from agents; however, due to the design of their jobs, it is predicted that NCMs experience more collaboration and influence with other disciplines and less social integration than SNs.

#### Work Role Characteristics

The boundary spanning nature of NCMs' roles may also contribute to role conflict. NCMs link patients, physicians, and other disciplines to each other and to the organization. Dealing with these multiple constituencies places the NCM at high risk for inter-sender role conflict. The shift from a clinical to a more administrative role noted by Rheume et al. (1994) may also create a form of intra-person role conflict in which the NCM feels torn because her values as a clinician may suggest everything possible should be done for a patient regardless of cost, while her role expectations require administrative attention to resource management. Thus, it is predicted that NCMs experience greater role conflict than their SN counterparts.

Work overload is an important factor in SNs' job dissatisfaction (Irvine and Evans, 1992). Similar to their colleagues in staff positions, NCMs report that they have

difficulty completing their work within the time available (Lancero, 1994; McGill, 1994). It appears that role overload may characterize both jobs.

NCMs work in positions that tend to be new, incompletely defined, and less structured by routine. In my experience, NCMs are at risk for role blurring and diffusion between their new roles and SN responsibilities (Tonges, 1993a). McGill's (1994) subjects specifically described the experience of repeatedly explaining their jobs to others. Thus, it is expected that NCMs experience more role ambiguity than SNs.

Specific predictions regarding differences between the motivational characteristics of NCM and SN jobs are presented in the last two sets of hypotheses. There also appear to be differences in the characteristics of the care coordinator job; however, no predictions were made concerning this job, as it seemed premature to hypothesize about the CC job prior to investigating differences between the extremes within this job family, which the NCM and SN jobs appear to represent.

#### **Hypothesis Set H5: Intended Positive**

##### **Effects of NCM Job Design**

**H5A:** There is a significant relationship between working in the NCM job and perceived autonomy (Ethridge, 1987; Goode, 1993).

**H5A1:** Job category explains a medium amount of variance

in perceived autonomy, equal to an  $f^2$  of at least .15.

H5B: There is a significant relationship between working in the NCM job and perceived job identity.

H5B1: Job category explains a small-medium amount, of variance in perceived job identity, equal to an  $f^2$  of at least .10.

H5C: There is a significant relationship between working in the NCM job and perceived job feedback.

H5C1: Job category explain a small-medium amount of variance in perceived job feedback, equal to an  $f^2$  of at least .05.

H5D: There is a significant relationship between working in the NCM job and perceived collaboration with physicians (Goode, 1993).

H5D1: Job category explains a medium amount of variance in perceived collaboration, equal to an  $f^2$  of at least .15.

H5E: There is a significant relationship between working in the NCM job and perceived influence with other disciplines.

H5E1: Job category explains a small-medium amount of variance in perceived influence with other disciplines, equal to an  $f^2$  of at least .10.

#### **Hypothesis Set H6: Unintended Negative**

##### **Effects of NCM Job Design**

H6A: There is a significant relationship between working in the NCM job and perceived social integration.

**H6A1**: Job category explains a small-medium amount of variance in perceived social integration, equal to an  $f^2$  of at least .05.

**H6B**: There is a significant relationship between working in the NCM job and perceived role conflict.

**H6B1**: Job category explains a small-medium amount of variance in perceived role conflict, equal to an  $f^2$  of at least .05.

**H6C**: There is a significant relationship between working in the NCM job and perceived role ambiguity.

**H6C1**: Job category explains a medium amount of variance in perceived role ambiguity, equal to an  $f^2$  of at least .15.

### **CHAPTER 3. DATA COLLECTION AND ANALYSIS**

This study was designed to (1) test a model of the motivational characteristics of professional human service jobs and (2) investigate the effects of changes incorporated in the design of a case management job. The research questions and hypotheses guided the development of the methodology.

#### **Data Collection Methods**

A cross-sectional correlational design was used to collect data concerning relationships among perceived job characteristics, psychological states, individual and dispositional differences, and work-place well-being outcomes. To strengthen the internal validity of the study, an effort has been made to conceptualize and measure variables that might serve as potential confounds (Mitchell, 1985).

#### **Subjects and Sample**

The population of interest is human service professionals, and RNs represent an occupational subset of this population. The sample was comprised of RNs employed in three different job categories: (1) nurse case manager, (2) unit-based care coordinator, and (3) staff nurse. The CC position appears to fall between the NCM and SN jobs on a number of dimensions of interest in this study. Subjects from this job category were included to increase variability and sample size.

Sampling criteria were as follows:

1. female RNs;
2. working in acute care hospitals on inpatient units where patients are cared for on a 24-hour basis (i.e., medical/surgical, critical care, pediatric, and postpartum units);
3. at least half-time; and
4. with a minimum of two years of experience.

The sample was restricted to females, who comprise approximately 94 percent of the nursing population, to avoid gender-related variation. Sampling was focused on traditional inpatient units, as opposed to areas such as emergency departments and ambulatory clinics, in an effort to limit differences related to practice settings. Half-time employment is often used as a cutoff for participation in clinical advancement programs and other hospital activities. Two years of experience was established as a requirement for inclusion based on Benner's (1984) finding that it takes at least two years to become fully competent in clinical nursing practice. This may contribute to increased stability in perceived job characteristics. For similar reasons, NCMs and CCs who had at least one year of experience in that type of position were selected.

#### **Description of Sample**

Data were collected from the population of eligible NCMs and CCs and a random sample of SNs from each

participating hospital. The questionnaire was mailed to 1,247 SNs and 185 NCMs/CCs for a total of 1,432. Of these, 413 usable responses were returned, for an overall response rate of 29 percent. Responses were received from 38 nurses whose backgrounds varied slightly from the desired profile (e.g., SNs working on subacute units and NCMs with 6 months experience in the job). These subjects (29 SNs, 6 CCs, and 3 NCMs) were included in the total sample of 413 to increase the variability and size of the sample used to test the model; however, they were not included in evaluating hypotheses related to differences between job categories.

The distribution of responses by job category was 302 SNs, 44 CCs, and 60 NCMs, plus one Head Nurse. The response rate was thus 56 percent for NCMs/CCs and 25 percent for SNs. A substantially lower number of SNs responded from one site, probably because there was a delay in distribution during which nurses were reassigned to different units. Of the 191 packets sent to SNs in this organization, only 13 (7 percent) were returned. Without this site, the SN response rate increases to 28 percent.

The response rate for SNs was not as high as desired; however, this was a random sample, and there was no apparent sampling bias. 15 subjects (13 SNs and 2 NCMs) who chose not to participate in the study returned just the demographic form. Assessment of the nonrespondents'

demographic data indicated they were similar to respondents, suggesting that respondents were reasonably representative of the total sample (see Appendix A). In comparison to national norms, subjects also appeared to be reasonably similar to the population of nurses employed in hospitals (see Appendix A).

Respondents were placed in job categories based on the subject's description of her main job responsibility on the demographic form. Specifically, only nurses who indicated that they managed the care of a case load of patients across different units or settings were included in the NCM category. Seven subjects who were identified as NCMs by their organizations but indicated that they coordinate care on a single unit were reclassified as CCs.

The mean age of respondents was 40 (sd=9.2). Thirteen percent had a diploma in nursing, 30 percent an associate degree, 43 percent a baccalaureate, and 13 percent a Master's degree or higher. Their mean years of experience was 14 (sd=8.3). Distribution across clinical practice areas was as follows: 33 percent medical/surgical, 23 percent intensive care, 9 percent pediatrics, 6 percent obstetrics/nursery, and 28 percent other (does not total to 100 due to rounding and missing data).

### **Statistical Power**

Sample size was based on analysis of statistical power with procedures recommended by Rothstein, Borenstein, Cohen

and Pollack (1990) for using a power analysis computer program (Borenstein and Cohen, 1988)(see Appendix B). The sample of 413 was slightly larger than the target of 400 suggested by this analysis. Comparing actual effect sizes to the estimates used in planning the study, increments in  $R^2$  were equal to or greater than estimates at each step of the regression of general satisfaction on job characteristics with one exception: the actual increment in explained variance accounted for by site in step 4 was smaller than the estimate of .02. As a result, power approached 1.0 in the first three steps of this regression and dropped to .49 at step 4.

A similar assessment of the analysis of power needed to test hypotheses concerning differences between characteristics of NCM and SN jobs indicated that with the sample of 307 included in the contrast, power was as follows:

- Step 1, set of individual difference covariates entered, and power was .90.
- Step 2, variable representing contrast between jobs entered, and power approached 1.0.
- Step 3, set of site covariates entered, and power was .95.

Although the actual numbers of NCM (53) and SNs (254) included were slightly smaller than the targets of 65 and 270, there was sufficient power to detect meaningful

relationships.

### Setting

Data were collected in a sample of eight acute care hospitals from a wide geographic area, including the Northeast, Mid-Atlantic, South, and Mid-West regions. To be eligible for inclusion, hospitals were required to have both of the following: (1) an episode-based nursing case management and/or unit-based care coordination program in operation for at least one year, and (2) a standard SN job description. The requirement that nursing case management and/or care coordination had been implemented at least one year prior to the study was intended to minimize potentially confounding conditions associated with the introduction of a new program. All of the hospitals were not-for-profit organizations, and other characteristics of each site and the distribution of respondents are described in Table 2.

Site 2 was an organization that had been created through a fairly recent merger and had two different physical facilities. A series of one-way analysis of variance (ANOVA) and Tukey-b pair-wise comparisons was used to evaluate responses from these two locations for differences. Of the thirteen job characteristics measured, only one was significantly different at the .05 level: collaboration with physicians. It was therefore decided to combine responses from the two locations for analysis as one site.

Table 2

**Characteristics of Sites and Numbers of Respondents**

Hospital	Ownership	Licensed Beds	Teaching Status	RN Union	Number of Respondents				%
					SN	CC	CM	Total	
1	Private	587	Community	no	57	20	7	84	20%
2	Private	1000	Affiliated	no	30	1	8	39	9%
3	Private	416	Primary Teaching	yes	41	3	10	54	13%
4	Private	661	Primary Teaching	no	60	1	18	79	19%
5	Private	540	Affiliated	yes	44	5	3	52	13%
6	Private	940	Primary Teaching	yes	13	6	4	23	6%
7	Public	238	Affiliated	no	27	2	3	32	8%
8	Public	908	Primary Teaching	no	36	6	7	49	12%
					308	44	60	412 <sup>1</sup>	100%

<sup>1</sup> One Head Nurse respondent brings the total sample to N=413.

### Instruments

Items from eleven instruments and a demographic data form were used to measure the variables in this study. Following a description of these scales, including pretesting and selected modifications, internal consistency reliability in this study is discussed.

#### **Task Characteristics, Required Interaction, Feedback from Agents, Psychological States, and Growth and General Satisfaction**

The five task characteristics, required interaction (dealing with others), feedback from agents, the CPS, and growth and general satisfaction were measured with subscales from the JDS (Hackman and Oldham, 1975). Items used to assess these 12 variables are included in Appendix C. Items were averaged to arrive at a score for each variable.

Taber and Taylor's (1990) meta-analysis of the psychometric properties of the JDS core dimension scales suggested that these measures provide useful information about perceived job properties, despite some limitations. Their key findings can be summarized as follows:

1. Internal consistency and discrimination of scales -- Internal consistency estimates range from .65 to .71 and the median scale intercorrelation is .33. Thus, internal consistency is somewhat low, and discrimination among scales is less of a problem. The low number of items and the use of different formats for items assessing the same

characteristic contribute to lower internal consistency.

2. Objectivity of the scales -- Experimental studies have demonstrated that changes in objective task properties result in significant changes in JDS scores.

Hackman and Oldham (1975) reported internal consistency reliabilities for scales measuring the CPS and affective outcomes in the same .70 range. They also reported internal consistency reliabilities for dealing with others of .59 and feedback from agents of .78. In other research, Evans et al. (1979) found a Cronbach's alpha for the JDS dealing with others scale of .74, corrected for range restriction.

Consideration was given to using the dealing with others items from Sims et al.'s (1976) Job Characteristics Index, based on higher reliability; however, the items are very similar, except for the JCI item concerning the extent of feedback received from individuals other than the supervisor, which seems more closely related to feedback from agents.

The only modification to the JDS scales made for this study was the omission of one item designed to assess experienced responsibility. This item reads, "It's not hard, on this job, for me to care very much about whether or not the work gets done right." It was deleted because I had observed that SNs have difficulty interpreting this wording (Tonges, 1993b).

### **Nurse-Physician Collaboration**

Weiss and Davis (1985) described the development and testing of the Collaborative Practice Scales (CPS). This tool consists of two separate self-report measures that can be used together to assess the degree to which the interactions of nurses (Scale 1) and physicians (Scale 2) enable synergistic influence of patient care. Because this research focused on nurses' perceptions concerning their collaboration with physicians, only Scale 1 was used.

The nine specific items are included in Appendix D. Weiss and Davis (1985) indicated that "the overriding construct being measured by the nurse CPS appears to be the nurse's initiation of active interchange with the physician to clearly communicate what nursing can contribute" (p. 303). Internal consistency of .80 was reported for the nurse CPS. Further information regarding the reliability and validity of the instrument has been provided by its developers.

During data entry, a different pattern of responses to several items in this scale was noted among Nurse Case Managers as compared to Staff Nurses in this sample. Specifically, NCMs tended to select lower values in response to questions concerning the frequency with which they clarify expectations with physicians. The effects and implications of this response pattern are assessed in the discussion section.

### **Influence with Other Disciplines**

Perceived influence with professionals from other disciplines or departments, such as social work and discharge planning, was assessed with a measure adapted from Parker (1993). As noted in the literature review, nurses' interactions with professionals other than physicians and nurses appear to be an underresearched topic; therefore, instrumentation is limited, and it was necessary to adapt a related measure.

Parker reported the development and testing of a measure of perceived control over decision making with a nursing sample. This researcher used an item format adapted from Tannenbaum, Kavcic, Rosner, Vianello, and Wieser (1974) in which the nurse is asked to report the extent to which the party of interest takes nurses' opinions and suggestions into account. She developed a 20-item questionnaire that focuses on nurses' perceived influence with attending physicians, residents, and supervisors.

Parker indicated that she chose to operationalize perceived control in this way, instead of using a more general measure (e.g., Rotter's Locus of Control scale), because she was interested in examining the effect of a highly specific judgement that workers can make about their working lives: how much control or influence does the work environment afford the worker over decision making? Internal consistency for her measure was .91.

A copy of Parker's questionnaire was obtained from the author, and selected items were modified to address influence with other disciplines. The term "staff nurse" was also changed to "nurse" to make the items more broadly applicable.

Three items adapted from Parker's (1993) scale were pretested through inclusion in a questionnaire for a different study with SN subjects. The items included in Appendix E yielded a coefficient alpha of .84 with a sample of 17, and the decision was made to use this scale in the present study.

#### **Social Integration**

Price and Mueller's (1986) scale was used to measure nurses' social integration. These researchers originally stressed close friends in the work organization in operationalizing this variable (Price and Mueller, 1981); however, based on the results of their 1981 study in which the evidence did not support social integration as an important determinant of job satisfaction, Price and Mueller (1986) modified their items to focus on close friends within the immediate work group. Hypotheses concerning the relationships between social integration and satisfaction and turnover among nurses were supported in their second study.

The three items for this scale are included in Appendix F. Price and Mueller reported that factor analysis yielded

a single factor for this scale, with loadings of .54, .66, and .47 on the three items. Internal consistency reliability in their research was .61. Although this is rather low, the measure is short and incorporates two different response scales. Further information regarding the reliability and validity of this measure has been reported by Price and Mueller (1986). Because no changes were made, this scale was not pretested.

Coefficient alpha for the social integration scale in this study was .63, but dropping item 3 would have increased it to .72. This item asks to what extent respondents discuss personal problems with individuals in their immediate work group. It is possible that registered nurses tended to respond that they engaged in this behavior infrequently because they viewed it as unprofessional; however, the pattern of responses for this scale was also different for SNs and NCMs, and the difference is explained and interpreted in the discussion section.

### **Role Conflict and Ambiguity**

Slightly modified versions Rizzo et al.'s (1970) role conflict and ambiguity scales were used to operationalize these constructs. The developers of these scales reported a two-factor solution and internal consistency reliabilities of .82 for role conflict and .81 for role ambiguity (Rizzo et al., 1970). Critics of these scales have argued that the role constructs are confounded with the negative and

positive wording of the items (Tracy and Johnson, 1981). Specifically, the conflict items are stress items that are worded negatively, while the ambiguity items are comfort items worded positively.

A recent reevaluation by Smith, Tisak, and Schmieder (1993) using confirmatory factor analyses and item statistics showed discriminant validity for these scales across three diverse samples of workers and suggested that method bias was not as serious as previously argued; however, these authors did recommend deleting two items based on factor loadings and reliabilities: (1) Role conflict item eight ("I work on unnecessary things.") deals with superfluous activities and could include extra responsibilities, as well as nonwork activities; and (2) Role ambiguity item three ("I know I divide my time properly.") may be construed as related to time management. Based on these recommendations and a concern about the length of the questionnaire, these two items were not used. The 12 items retained in the scales are included in Appendix G.

### **Role Overload**

The role overload scale of the Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, and Klesh, 1983) was used to measure this variable. The developers of this scale described it as representing characteristics of the job as an organizational role, based

on the work of Kahn and colleagues (1981). Findings from analyses of the scale included an internal consistency reliability estimate of .65 and low intercorrelations with companion measures of role clarity and conflict (Cammann et al., 1983).

Although the reliability of this scale is not optimal, it is higher than other measures commonly used to assess role overload, such as Beehr, Walsh, and Taber's scale (reviewed in Cook, Hepworth, Wall, and Warr, 1981) which has an internal reliability coefficient of .56. The three items which comprise this scale are included in Appendix H.

#### **Experienced Attachment to Coworkers**

A new scale was developed to assess experienced attachment to coworkers. Based on the idea that this construct represents a dimension of fulfillment, in contrast to social alienation, items from Korman's (1992) social alienation scale were adapted in two ways: (1) to reflect feelings of attachment rather than estrangement, and (2) to focus specifically on interactions with coworkers.

Initially, ten items were pretested as part of a questionnaire for another study with SNs. For a sample of 70 SNs, internal consistency reliability was .82, but would increase to .84 without the first item ("I rarely feel all alone at work.", reverse scored).

In a second wave of pretesting, this item was changed to "I often feel all alone at work." For a sample of 17

SNs, coefficient alpha was .83, but again would increase to .84 without this item. Since this item contributed nothing to internal consistency, it was dropped, resulting in the nine item scale used in the study (see Appendix I).

### **Perceived Stress**

Perceived stress was measured with a four item scale described by Motowidlo et al. (1986). These researchers used the scale to assess subjective stress in their study of occupational stress among nurses and reported an alpha of .83.

My review of the job stress literature identified a number of different approaches to measuring this construct. For example, Matteson and Ivancevich's (1987) review of work stress measures included stimuli scales, psychological and somatic response scales, and physiological measures. Although many stress measures exist, several authors have commented on the difficulty of finding an appropriate instrument (Jackson and Schuler, 1985; Judge, Bourdreau, and Bretz, 1994). Specifically, Judge et al. (1994) indicated that most measures of job stress are extremely long and contain items that are not appropriate for some samples (e.g., asking CEOs about problems with their supervisor).

The Motowidlo et al. (1986) scale was chosen because it appears to capture the aspect of job stress being investigated in this study: the psychological stress/strain an individual experiences in reaction to job stressors, such

as role conflict and ambiguity. Length was another consideration in its selection. The four items of the perceived stress scale are included in Appendix J.

### **Burnout**

The emotional exhaustion scale of the Maslach Burnout Inventory (Maslach and Jackson, 1981) was used to assess burnout. The Maslach Burnout Inventory (MBI) is a 22 item instrument designed to measure emotional exhaustion, depersonalization, and low personal accomplishment. Subjects are asked to rate each item separately for intensity and frequency. The MBI has sound psychometric properties (Maslach and Jackson, 1981) and is widely used in burnout research (Jackson et al., 1986; Jayaratne and Chess, 1984; Maslach, 1982; Pines, 1983).

The emotional exhaustion scale was selected because this dimension of the burnout syndrome appears to be most closely related to work-place well-being. I also think that personal accomplishment may overlap with the influence construct, and again, the length of the questionnaire was a concern. It is not uncommon for researchers to use selected scales from the MBI and to ask respondents to rate either intensity or frequency, rather than both, as they are reported to be highly intercorrelated (Jackson et al., 1986; Jayaratne and Chess, 1984; Pines, 1983). In this study participants were asked to indicate the intensity of their feelings at that time.

The emotional exhaustion scale contains nine items, and Maslach and Jackson (1981) reported a coefficient alpha of .86 for intensity. Test-retest reliability for a 2-4 week interval for this scale was reported to be .68 (Maslach and Jackson, 1981). The nine items that comprise this scale are presented in Appendix K.

### **Need for Affiliation**

Naff was assessed with the relevant scale from the Personality Research Form, form E (PRF-E) developed by Jackson (1967). A self-report instrument was chosen for this research because sample size and location prohibited administration and interpretation of a projective test.

Jackson's PRF is a highly regarded instrument. It has been described by Hogan (1989) as having "high internal consistency, minimal overlap, good test-retest reliability, and minimal item ambiguity", and as being "relatively free of acquiescence and social desirability bias" (p. 282). Another reviewer indicated, "I would recommend PRF-E over any other inventory of Murray's needs ...on substantive, structural, and external grounds" (Wiggins, 1989; p. 283).

Jackson (1989) reported an internal consistency reliability coefficient of .88 for Naff. The 16 PRF items used in this study are included in Appendix L. Further information concerning the validity and reliability of this instrument has been reported by Jackson (1989).

### **Need for Influence**

Bennett (1988) developed a measure of Ninf which is one of the four scales included in his Index of Personal Reactions (IPR). This scale has been used in subsequent research with female subjects (Langan-Fox and Roth, 1995) and was used to assess Ninf in this study.

Bennett (1988) reported a lengthy instrument development and evaluation process. Findings from the evaluation of the final version of the IPR suggested that Ninf is related to Npow ( $r=.47$ ), but each scale has substantial independence, with a shared variance of 22 percent. Males scored significantly higher on the Npow ( $t_{788}=3.6$ ,  $p<.001$ ) and Resistance to Subordination scales than females, but there was no sex difference in Ninf.

Bennett (1988) suggested that Ninf "may be unrelated to either gender-specific or sex-role-related behavior, while the Npow may be more socialized in males" (p. 376). Internal consistency reliability for the Ninf scale was reported as .77, and test-retest reliability was .64 with an interval of three months. The nine items used to assess Ninf in this study are included in Appendix M. Further validation studies are reported by Bennett (1988).

### **Other Measures**

A demographic data form was used to collect information concerning each subject's job category, age, education, years of experience, tenure, and clinical area.

As previously discussed, effects of situational differences in job content were evaluated in this study. The remaining information was important in describing the sample and evaluating its representativeness, as well as the effects of potential covariates.

#### **Internal Consistency Reliability in This Study**

Anastasi (1976) has defined good internal consistency reliability as .8 to .9 and acceptable as .6 to .7. Of the 23 scales used in this study, 10 meet the criterion for good reliability, 7 are acceptable, 3 are very close to acceptable, and 3 are problematic.

Internal consistency reliabilities (coefficient alpha) are reported in Table 3 for this study and, as available, for meta-analyses or general samples and nursing samples. Range restriction appeared to be the main contributing factor to low values, particularly in the established scales such as task significance and required interaction from the JDS and Rizzo et al.'s (1970) role ambiguity scale. I have found similar problems with range restriction and lower reliabilities for JDS scales with other nursing samples (Rothstein and Tonges, 1997; Tonges, 1993b). It appears that this lack of variability may be related to using a single occupation sample.

In this study, for example, 87 percent of respondents chose the maximum value for a required interaction item that asks to what extent the job requires one to work closely

Table 3

## Internal Consistency Reliability For Scales in This Study

Scale	Alpha in this study	Alpha From Meta-analysis or General Samples	Alpha From Other Nursing Samples
Skill Variety	0.57	.71 <sup>1</sup>	
Task Identity	0.59	.68 <sup>1</sup>	
Task Significance	0.41	.65 <sup>1</sup>	.47 <sup>2</sup> .52 <sup>3</sup>
Autonomy	0.65	.69 <sup>1</sup>	
Feedback From Work	0.70	.70 <sup>1</sup>	
Feedback from Agents	0.79	.78 <sup>4</sup>	
Required Interaction	0.41	.59 <sup>4</sup>	.48 <sup>3</sup>
Experienced Meaningfulness	0.73	.74 <sup>4</sup>	
Experienced Responsibility	0.61	.72 <sup>4</sup>	
Knowledge of Results	0.79	.76 <sup>4</sup>	
General Satisfaction	0.81	.76 <sup>4</sup>	
Growth Satisfaction	0.86	.84 <sup>4</sup>	
Collaboration	0.85		.80 <sup>5</sup>
Influence	0.84		
Social Integration	0.63		.61 <sup>6</sup>
Role Conflict	0.56	.82 <sup>7</sup>	
Role Ambiguity	0.46	.81 <sup>7</sup>	
Role Overload	0.82	.65 <sup>8</sup>	
Experienced Attachment	0.86		
Job Stress	0.82	.83 <sup>9</sup>	
Burnout	0.91	.86 <sup>10</sup>	
Need for Affiliation	0.84	.88 <sup>11</sup>	
Need for Influence	0.88	.77 <sup>12</sup>	

N = 413

<sup>1</sup> Taber and Taylor, 1990<sup>2</sup> Tonges, 1993<sup>3</sup> Rothstein and Tonges, 1997<sup>4</sup> Hackman and Oldham, 1975<sup>5</sup> Weiss and Davis, 1985<sup>6</sup> Price and Hueller, 1986<sup>7</sup> Rizzo et al., 1970<sup>8</sup> Cammann et al., 1983<sup>9</sup> Motowidlo et al., 1986<sup>10</sup> Maslach and Jackson, 1981<sup>11</sup> Jackson, 1988<sup>12</sup> Bennett, 1988

with other people. It is not surprising that nurses would report that their job involves a high level of interpersonal interaction, and the resulting range restriction explains why a nursing sample might be expected to yield a lower coefficient alpha than a mixed occupation sample. However, it is important to note that lower reliability attenuates correlations with other variables (Schmitt and Klimoski, 1991). Thus, this factor must be considered in the interpretation of findings.

#### Procedures

Access to sites was elicited through a phone appointment with the Chief Nurse Executive (CNE) or designee. During the telephone interview, I established that the hospital met the criteria for inclusion. To facilitate interpretation of results at the level of the individual hospital as needed, information concerning the following organizational variables was requested:

1. Hospital characteristics, including ownership, bed-size, union status, and teaching affiliation;
2. Operationalization of program, including descriptions of NCM/CC and SN jobs;
3. Timing of implementation;
4. Critical organizational events since inception of program (e.g., mergers, financial crises, layoffs, and strikes)
5. Key events occurring at the time of the research.

The following steps were taken in chronological order in each of the study sites to ensure consistency in data collection:

1. I called the CNE to explain the purpose of the study, ask for sponsorship in entry into the hospital, confirm the presence of a hospital research committee and/or IRB, ascertain the procedure to submit required documents for approval, and inquire about the possibility of an on-site coordinator and contact person to facilitate questionnaire distribution and return.

2. With the CNE's permission, I contacted the on-site coordinator to explain the general purpose of the study and the procedure for survey distribution to SNs, NCMs and/or CCs. Together we determined the best method of in-house distribution, which was generally through nurse manager mailboxes to the SNs.

3. After receiving permission to access hospital staff, I obtained a list of eligible SNs, NCMs and/or CCs. SN names were randomized according to sampling criteria. Surveys were coded with identifier numbers and placed in envelopes labeled with subjects' names for distribution. Instruments were coded so that I could identify respondents for follow-up, as necessary.

4. Packets containing a cover letter, informed consent, demographic data form, questionnaire, and prepaid return envelope were mailed to the on-site coordinator and

delivered to subjects through internal hospital distribution. Samples of these forms are included in Appendix N. The cover letter asked nurses who chose not to participate to complete and return the demographic form to help me assess representativeness of the sample. The questionnaire contained 124 items and took about 30 minutes to complete.

Subjects were asked to return the completed survey by mail within two weeks. Questions about the study or data collection were directed to the investigator or on-site coordinator. I kept completed questionnaires in files in my home office that are not accessible to others.

5. After several weeks, I assessed the return rate to determine if the response was adequate. Based on the responses received, no follow-up mailings were sent.

For the two sites within driving distance, the NCMs and CCs were excluded from step 4. Instead, I arranged for a group meeting on-site to explain the study, obtain consent, and ask subjects to complete the questionnaire before leaving. My thinking was that personal contact might result in a higher response rate, which was especially critical for this small pool of subjects. This proved to be an effective approach, resulting in high NCM/CC response rates for these hospitals. Specifically, responses were obtained from 13 of the 16 eligible NCM/CCs from site 3 (81 percent) and 5 of the 8 from site 6 (67 percent), as compared to a 48 percent

response rate from NCM/CCs from the other six hospitals.

### **Data Analysis**

Initial data analysis included the calculation of descriptive statistics, reliabilities for measures, and assessment of multicollinearity of the independent variables. Frequencies for responses were examined for evidence of range restriction. Correlational analysis was used to examine the discriminant validity of selected measures, to assess the independence of hypothesized moderators, and to determine the path coefficients for the simple, unmediated relationships in the research model (Dillon and Goldstein, 1984; Keppel and Zedeck, 1989; Schmitt and Klimoski, 1991).

Hierarchical regression analyses were used to test the six sets of hypotheses (Cohen and Cohen, 1983; Rothstein et al., 1990). Descriptions of these analyses are presented in relation to each set of hypotheses: (1) relationships between job characteristics and outcomes; (2) relationships between job characteristics and CPS; (3) mediating effects of the CPS; (4) moderating effects of dispositional needs on characteristic-psychological state relationships; and (5) intended and (6) unintended effects of NCM job design.

These discussions are framed in terms of the meaning of statistically significant effects and increases in explained variance; however, findings have also been evaluated and discussed in terms of the predicted effect sizes specified

in the hypotheses and the practical, as well as statistical significance of the results.

Relationships of Job Characteristics with Outcomes

To test the first set of hypotheses (H1), a hierarchical regression analysis was run with each well-being outcome as the dependent variable in the following sequence:

1. The five original characteristics from the JCM were entered first.
2. The additional five job characteristics related to interpersonal relationships were entered in a block in step 2.
3. The three role stressor characteristics were entered in step 3.
4. The seven (8-1) dummy coded site variables were entered as potential covariates in the last step.

The adjusted R-squared at step 1 tested hypotheses that these five characteristics of work can be used to explain general satisfaction, growth satisfaction, burnout, and stress (H1A1-H1D1). For these hypotheses to be supported, the variance in outcomes explained by these variables had to be significant. The adjusted R-squared at step 2 evaluated the amount of variance in outcomes explained by all of the variables now included in the regression equation (i.e., the five core dimensions of the JCM plus the five characteristics of interpersonal relationships). The test

of the increase in R-squared tested hypotheses that characteristics of interpersonal relationships increase the amount of variance in outcomes that can be explained after the effects of the core JCM dimensions have been taken into consideration (H1A2-H1D2). Similarly, the test of the increase in R-squared at each step evaluated hypotheses that the variables entered in that step make a significant unique contribution to explaining satisfaction, burnout, and stress.

Significant increases in R-squared at steps 2 and 3 indicate that the expanded model explains more about the effects of characteristics of jobs on well-being than the JCM alone. A similar approach was used to test whether the additional CPS specified in the model added to the explanatory power of the three original CPS in predicting satisfaction, burnout, and stress.

Significant increases in R-squared at step 4 indicate that the covariate hospital site accounted for a significant amount of variance in outcomes over and above that explained by job characteristics. Site was expected to account for some added variance in outcomes; however, explanation of a substantial amount of additional variance suggested a need for additional analyses. Specifically, a series of ANOVAs by site were performed for each variable to determine if significant differences existed between the hospitals in the sample on that variable.

### Effect Size Calculations

Different variations of Cohen's (1977) formulas were used to calculate the standardized effect size  $f^2$  for the amount of variance explained in each step of the hierarchical regression. Cohen's (1977: p. 410) Simple Case 0 formula for calculating  $f^2$  was used to calculate the effect size for step 1.

As illustrated below,  $f^2$  is equal to the amount of variance explained in  $y$  by  $b$  divided by the amount of variance that is not explained.

$$f^2 = \frac{R^2_{y.b}}{1-R^2_{y.b}}$$

Cohen's (1977: p. 410) Case 1 formula<sup>1</sup> was used to calculate the effect size for step 2. In this case,  $f^2$  equals the increase in variance explained by adding the variables in step 2 divided by the amount of variance remaining unexplained.

$$f^2 = \frac{R^2_{y.a,b} - R^2_{y.a}}{1-R^2_{y.a,b}}$$

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<sup>1</sup> Cohen also provides a formula for what he describes as Case 2 in which the error term is further reduced through the introduction of a third set of variables into the regression equation. In this case, he suggests using  $1-R^2_{y.a,b,c}$  as the denominator in calculating the effect size at step 2; however, I prefer to take the more conservative approach of using  $1-R^2$  for the cumulative variance explained at that step in the regression.

An extension of Cohen's Case 1 formula to include a third step in the regression, depicted below, was used to calculate the effect size for step 3.

$$\frac{f^2 = R^2_{y.a,b,c} - R^2_{y.a,b}}{1 - R^2_{y.a,b,c}}$$

Relationships Between Characteristics  
and Psychological States

To test the second set of hypotheses (H2), a hierarchical regression analysis was run with each psychological state as the dependent variable in the following sequence:

1. The original specified job characteristics from the JCM were entered first (e.g., autonomy for experienced responsibility).
2. The relevant additional characteristics of interpersonal relationships were entered in a block in step 2 (e.g., collaboration and influence).
3. The specified role stressor characteristics was entered in step 3 (e.g., role conflict).

These analyses were examined to determine if the R-squared associated with adding each set of characteristics hypothesized to be related to the psychological state was significant. This finding suggests that the variables included in the expanded model added to the explanation of job characteristics which lead to the psychological states, over and above the basic JCM.

Mediation of Relationships Between Job Characteristics  
and Outcomes by the Psychological States

The mediating effects of the psychological states were also evaluated using hierarchical regression (H3). First, the outcome was regressed on the set of job characteristics. Because the effects of the psychological state was not partialled out, the R-squared reflected both the direct effects of the characteristics on the outcome and their indirect effects through the psychological state.

A second regression was then run with the following structure:

1. The psychological state was entered first.
2. The set of job characteristics was entered in step 2.

The increase in R-squared at step 2, after effects through the psychological state were partialled out, represents the direct effects of the characteristics. A comparison of the total amount of variance explained by the characteristics in the first regression (direct + indirect = total) to the amount explained in step 2 of the second regression (direct), revealed the amount of variance mediated by the psychological state (indirect). If partialling out the psychological state caused a substantial decrease in the amount of variance explained by the characteristics, the mediating hypothesis was supported. These analyses are explained in more detail in conjunction with results in

chapter 4.

Moderating Effects of Dispositional Needs on Relationships  
Between Job Characteristics and Psychological States

Moderating hypotheses (H4) were tested by determining if the specified multiplicative term (e.g.,  $N_{inf} \times$  required interaction or  $N_{aff} \times$  social integration) increased the amount of variance explained over and above the unmoderated characteristic. Three step analyses were conducted in which the job characteristic was entered in the first step, the moderating variable was entered in the second step, and the product of the characteristic and moderator was entered in the last step. The increase in R-squared at step 2 was expected to be nonsignificant, and if the increase in R-squared at step 3 was significantly different from zero, the moderating hypothesis was supported.

Intended and Unintended Effects of the Nurse  
Case Manager Job on Perceived Characteristics

Prior to testing hypotheses concerning differences between the characteristics of NCM and SN jobs, the subsamples were compared to determine if they were demographically different in any potentially meaningful way. Demographics were inspected to determine whether the two groups were substantially different on variables that were significantly related to the well-being outcomes. Effects of such differences on relationships between job category and perceived characteristics were controlled by entering

the set of demographic covariates as step 1 in the regressions to test these hypotheses.

The next step in preparing to test this set of hypotheses was an overall multivariate analysis of variance (MANOVA) with the 13 characteristics as multiple dependent variables to determine if there were significant differences between these means for the two jobs. A significant result provided the basis for proceeding with the eight planned comparisons specified in the sets of hypotheses H5 and H6 to determine the specific source(s) of the difference.

These hypotheses were evaluated through a series of hierarchical regressions with perceived characteristics as the dependent variables. These regressions employed a contrast coding approach that provided a direct comparison of the characteristics of the two jobs (Keppel and Zedeck, 1989).

The regressions were structured as follow:

- Step 1, the covariates of age, education, clinical area, and years of experience were entered.
- Step 2, the variable representing the vector contrasting the NCM and SN jobs was entered.
- Step 3, the set of site variables was entered.

A significant increase in explained variance at step 2 suggests that job category explained differences in perceived job characteristics over and above individual differences. Although differences in the two groups were

predicted for just 8 of the 13 characteristics, all 13 were compared to provide a more comprehensive and rigorous test.

## CHAPTER 4. RESULTS

### Descriptive Statistics<sup>1</sup>

#### Demographic Characteristics of Respondents

Respondents' ages varied widely with a range of 24-67, a mean of 40 (sd=9.2), and a median of 39 years. The average respondent had a baccalaureate degree in nursing, and 56 percent of the subjects had a baccalaureate degree or higher. Thirty percent held an associate degree, and 13 percent had a diploma. There was also a wide range in years of experience among respondents, from 1 to 42 years, with a mean of 14.2 (sd=8.3) and a median of 13 years.

A variety of clinical practice areas are represented in the sample. The majority of respondents worked in medical/surgical areas (33%) and intensive care (23%), with the remaining subjects drawn from pediatrics (9%), obstetrics/nursery (6%), and other inpatient areas, such as psychiatry, oncology, and rehabilitation (28%).

#### Comparison with JDS Norms

Norms for JDS scales for professional or technical workers reported by Hackman and Oldham (1980) are included in Table 4 for comparison with results from this study. Several findings are worthy of note. First, means from subjects in this study follow the same pattern reported for

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<sup>1</sup> Means and standard deviations of continuous variables are reported in Table 4. Frequencies of dichotomous variables are reported in Tables 5-6. Correlations are reported in Table 7.

**Table 4****Means and Standard Deviations of Continuous Variables**

<b>Variable</b>	<b>Mean</b>	<b>SD</b>	<b>JDS Norms</b>	
			<b>Mean</b>	<b>SD</b>
<b>Age</b>	<b>40.0</b>	<b>9.20</b>		
<b>Years of RN Experience</b>	<b>14.0</b>	<b>8.30</b>		
<b>Skill Variety</b>	<b>5.8</b>	<b>0.87</b>	<b>5.4</b>	<b>1.00</b>
<b>Task Identity</b>	<b>4.3</b>	<b>1.10</b>	<b>5.1</b>	<b>1.20</b>
<b>Task Significance</b>	<b>6.2</b>	<b>0.70</b>	<b>5.6</b>	<b>0.95</b>
<b>Autonomy</b>	<b>5.3</b>	<b>0.97</b>	<b>5.4</b>	<b>1.00</b>
<b>Feedback From Work</b>	<b>5.0</b>	<b>1.00</b>	<b>5.1</b>	<b>1.10</b>
<b>Required Interaction</b>	<b>6.5</b>	<b>0.71</b>	<b>5.8</b>	<b>0.96</b>
<b>Motivating Potential Score</b>	<b>147.8</b>	<b>53.00</b>	<b>154.0</b>	<b>55.00</b>
<b>Collaboration</b>	<b>3.8</b>	<b>1.00</b>		
<b>Influence</b>	<b>7.1</b>	<b>1.80</b>		
<b>Social Integration</b>	<b>3.7</b>	<b>0.70</b>		
<b>Feedback from Agents</b>	<b>4.1</b>	<b>1.40</b>	<b>4.2</b>	<b>1.40</b>
<b>Role Conflict</b>	<b>3.4</b>	<b>1.00</b>		
<b>Role Overload</b>	<b>3.9</b>	<b>1.60</b>		
<b>Role Ambiguity</b>	<b>3.5</b>	<b>0.78</b>		
<b>Experienced Meaningfulness</b>	<b>5.7</b>	<b>0.89</b>	<b>5.4</b>	<b>0.87</b>
<b>Experienced Responsibility</b>	<b>5.6</b>	<b>0.76</b>	<b>5.8</b>	<b>0.72</b>
<b>Knowledge of Results</b>	<b>4.9</b>	<b>1.10</b>	<b>5.0</b>	<b>0.99</b>
<b>Experienced Attachment</b>	<b>5.5</b>	<b>0.90</b>		
<b>General Satisfaction</b>	<b>4.7</b>	<b>1.20</b>	<b>4.9</b>	<b>0.99</b>
<b>Growth Satisfaction</b>	<b>5.2</b>	<b>1.10</b>	<b>5.1</b>	<b>1.10</b>
<b>Burnout</b>	<b>3.2</b>	<b>1.30</b>		
<b>Job Stress</b>	<b>3.5</b>	<b>1.00</b>		
<b>Need For Affiliation</b>	<b>9.8</b>	<b>3.90</b>		
<b>Need for Influence</b>	<b>3.1</b>	<b>0.60</b>		

**N = 413**

**Table 5****Education Level Frequencies**

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<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Diploma	53	13
Associate Degree	124	30
Baccalaureate	178	43
Master's Degree or Higher	55	13
Missing	3	1
Total	413	100

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**Table 6****Clinical Area Frequencies**

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<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
<b>Medical / Surgical</b>	<b>135</b>	<b>33</b>
<b>Intensive care</b>	<b>95</b>	<b>23</b>
<b>Pediatrics</b>	<b>39</b>	<b>9</b>
<b>Obstetrics / Nursery</b>	<b>25</b>	<b>6</b>
<b>Other</b>	<b>116</b>	<b>28</b>
<b>Missing</b>	<b>3</b>	<b>1</b>
<b>Total</b>	<b>413</b>	<b>100</b>

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nurses in previous studies (Joiner et al., 1982; Roedel and Nystrom, 1988; Tonges, 1993b): skill variety and task significance are higher than JDS norms; autonomy and feedback from work are similar to norms; and task identity is lower than the norm.

It is also interesting to contrast standard deviations for scales with lower internal consistency in this study with the JDS norms. Specifically, the standard deviation for task significance was .70 in this study as compared to a norm of .95. Similarly, the standard deviation for required interaction was .71 in this research, and the norm is .96. This is consistent with the problem with range restriction discussed earlier. On the other hand, the standard deviation for experienced responsibility was .76 in this study, similar to the norm of .72.

#### Assessment of Multicollinearity and Covariates

Examination of the correlations reported in Table 7 indicates that relationships among the independent variables of this study were all well below the .9 threshold for early detection of multicollinearity suggested by Kerwin (1992). The highest intercorrelation was between role conflict and overload ( $r=.64$ ), which is not surprising since role overload is a form of role conflict, and the second highest was between skill variety and task significance ( $r=.37$ ).

The dispositional difference moderators, Ninf and Naff, were not highly correlated with the characteristics and the

Table 7  
Correlations Between Continuous Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
1. Age	●																										
2. Education	-.13*	●																									
3. Experience	.67**	.02	●																								
4. Skill Variety	.09	.07	.07	●																							
5. Task Identity	.07	.06	.03	.16**	●																						
6. Task Significance	-.12*	-.09	-.11*	.37**	.08	●																					
7. Autonomy	.02	.18**	.09	.24**	.32**	.08	●																				
8. Feedback from Work	.14*	-.06	.07	.30**	.33**	.22**	.20**	●																			
9. Required Interaction	.01	.10	.00	.28**	.03	.13*	.06	.10	●																		
10. Collaboration	-.09	.21**	.05	.22**	.18**	.01	.30**	.08	.10	●																	
11. Influence	.00	.08	.09	.13*	.07	.04	.13*	.15**	.18**	.30**	●																
12. Social Integration	-.08	-.08	-.02	.17**	.03	.13*	.08	.11*	.16**	-.01	.20**	●															
13. Feedback from Agents	.05	.05	.06	.16**	.27**	.01	.17**	.34**	.17**	.15**	.18**	.23**	●														
14. Role Conflict	-.01	.02	-.02	.03	.22**	-.11*	.17**	.27**	0.07	.02	-.13*	-.05	.20**	●													
15. Role Overload	.04	.08	.01	.08	.18**	-.12*	-.10	.15**	0.08	-.07	-.04	-.04	-.09	.64**	●												
16. Role Ambiguity	-.08	.13*	-.01	-.10	.25**	.17**	.13*	.34**	0.02	.14**	.25**	.15**	.24**	.41**	.30**	●											
17. Exp. Meaningfulness	.12*	-.05	.05	.40**	.21**	.30**	.21**	.42**	.11*	.09	.19**	.17**	.21**	.26**	-.13*	.36**	●										
18. Exp. Responsibility	.04	-.03	-.01	.11*	.17**	.12*	.13*	.19**	0.02	.06	.14*	.13*	.12**	-.09	.04	.22**	.27**	●									
19. Knowledge of Results	.09	-.13*	.04	.15**	.32**	.12*	.19**	.57**	.00	.07	.17**	.23**	.50**	.41**	.23**	.50**	.39**	.24**	●								
20. Exp. Attachment	.06	.00	.05	.30**	.19**	.13*	.19**	.25**	.17**	.04	.15**	.62**	.33**	.15**	-.03	-.13*	.34**	.22**	.36**	●							
21. General Satisfaction	.14*	.07	.07	.25**	.38**	.15**	.33**	.35**	.06	.20**	.24**	.17**	.37**	.48**	.45**	.33**	.51**	.08	.44**	.31**	●						
22. Growth Satisfaction	.11*	.05	.01	.48**	.33**	.23**	.42**	.34**	.14*	.20**	.21**	.14*	.28**	.20**	.16**	.33**	.58**	.17**	.35**	.33**	.61**	●					
23. Job Stress	-.03	-.01	-.05	.13*	-.13*	.01	-.05	-.13*	.15**	-.03	-.09	-.05	-.07	.36**	.50**	.16**	.17**	-.06	.15**	-.07	.38**	.15**	●				
24. Burnout	-.14**	.00	-.07	-.24**	-.09	.15**	.27**	-.01	-.03	.18**	-.09	-.09	.18**	.51**	.62**	.29**	.29**	-.03	.32**	.16**	.63**	.37**	.65**	●			
25. Need for Affiliation	-.10	.11*	-.05	.20**	.10	.14**	.06	.10	.15**	.11*	.12*	.11*	.10	-.07	-.02	-.04	.14**	.05	.13*	.21**	.18**	.19**	-.08	.22**	●		
26. Need for Influence	.03	.20**	-.04	.15**	.10	.06	.17**	.15**	.23**	.13*	.06	.10	.16**	.12*	-.01	.13*	.05	-.02	.13*	.01	.07	.16**	.08	.06	.25**	●	

N = 413  
\* p < .05  
\*\* p < .01  
two tailed

CPS in the relationships they are hypothesized to moderate. For example, the largest correlation for Ninf was with collaboration ( $r=.23, p<.01$ ). All of the other relevant correlations were equal to or less than .15. For Naff, the strongest correlation was with experienced attachment to coworkers ( $r=.21, p<.01$ ), and the remaining correlations for Naff were also equal to or less than .15.

There were several small but significant correlations between potential covariates and job characteristic variables. Age was significantly related to feedback from work ( $r=.14, p=.01$ ) and task significance ( $r= -.12, p<.05$ ). Education was significantly correlated with collaboration ( $r=.18, p<.01$ ), autonomy ( $r=.18, p<.01$ ), and role ambiguity ( $r=.13, p<.05$ ). Years of experience was also significantly related to task significance ( $r= -.11, p<.05$ ).

Effects of these covariates on the independent job characteristic variables were controlled in the hierarchical regressions used to test the hypotheses of the study. Dummy variables were created to transform clinical area and site into continuous variables for the regressions, and effects of these potential covariates were also controlled.

#### Job Characteristics Model Correlations

Correlations between the five core dimensions and three CPS of the JCM reported in Table 7 indicate that for respondents in this study, three of the characteristic-psychological state relationships conformed to theory and

two did not. Specifically, as predicted by the JCM, the strongest relationships were between skill variety and experienced meaningfulness ( $r=.40$ ,  $p<.01$ ), task significance and experienced meaningfulness ( $r=.36$ ,  $p<.01$ ), and feedback from work and knowledge of results ( $r=.57$ ,  $p<.01$ ). Contrary to the JCM, the strongest relationship for autonomy was also with experienced meaningfulness ( $r=.21$ ,  $p<.01$ ), not experienced responsibility ( $r=.13$ ,  $p<.05$ ), and task identity was most strongly related to knowledge of results ( $r=.32$ ,  $p<.01$ ), not to experienced meaningfulness ( $r=.21$ ,  $p<.01$ ).<sup>1</sup>

#### Assessment of Overload Data for Conformance with Assumptions

Before testing the hypotheses of the study with regression analysis, data for the role overload variable were examined to assess their conformance with the assumptions for regression: normality, constant variance, and linearity (Norusis, 1991). These analyses were performed because of concern about the possibility of a curvilinear relationship in which, for example, general satisfaction was low at lower levels of role overload, increased with a moderate work load, and decreased again at high levels of role overload. Despite a strong relationship

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<sup>1</sup> Results of this and other studies (Johns et al, 1992; Fried and Ferris, 1987; Hackman and Oldham, 1975) support Hackman and Oldham's (1980) assessment that effects of the characteristics are diffuse and relationships with the CPS are not as specific as proposed (see review of literature, pp. 41-43). This finding does not preclude a meaningful evaluation of other elements of the extended model.

such a pattern would yield a weak correlation, and a data transformation would be necessary prior to regression analysis (Norusis, 1991).

Experienced meaningfulness and the four outcome variables were regressed on role overload, and a standardized residual histogram was created for each regression. Evaluation of these displays indicated that although more peaked, the distributions were reasonably normal. Scatterplots of the residuals also suggested that variance was constant across the range of values for each relationship. Finally, plots of the regression line for each variable with role overload appeared to represent linear relationships. Thus, it was determined that role overload met the assumptions for inclusion in regression analysis with experienced meaningfulness and the four well-being outcomes.

### **Hypothesis Tests**

#### **Hypothesis Set H1: Relationships Between Job Characteristics and Outcomes**

##### **H1A: General Job Satisfaction**

Hypothesis 1A1 states that there is a significant relationship between work characterized by variety, identity, significance, autonomy, and feedback, and general job satisfaction. The  $R^2$  for the set of task variables entered simultaneously was .249 ( $p < .01$ ). This means that the core dimensions of the JDS explain 25 percent of the

variance in job satisfaction among the respondents in this study. The test of statistical significance indicates that there is less than a 1 percent chance of finding this result in a sample from a population in which there is no relationships among these variables. Hypothesis 1A1 is therefore supported.

Hypothesis 1A1.1 states that the core dimensions explain a medium-large amount of variance, equal to an  $f^2$  of at least .20. The current  $f^2$  equals .33, and Hypothesis 1A1.1 is supported.

Hypothesis 1A2 states that after controlling for the effects of the core dimensions, there is a significant relationship between interpersonal relations characterized by required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents and satisfaction. The set of interpersonal job characteristics was entered after the core dimensions as step 2. The incremental  $R^2$  yielded was .076 ( $p < .001$ ). Hypothesis 1A2 is thus supported.

Hypothesis 1A2.1 states that the interpersonal characteristics explain a small to medium increase in explained variance, beyond that explained by the core dimensions of the JCM, equal to an  $f^2$  of at least .05. The  $f^2$  equals .11, and hypothesis 1A2.1 is supported.

Hypothesis 1A3 states that after controlling for task and interpersonal job characteristics, there is a

significant relationship between a work role characterized by role conflict, overload and ambiguity, and satisfaction. The increment in  $R^2$  was .151 ( $p < .01$ ), and Hypothesis 1A3 is supported.

Hypothesis 1A3.1 states that the work role characteristics explain a small-medium increase in additional variance, beyond that explained by characteristics of work and interpersonal relationships, equal to an  $f^2$  of at least .05. The  $f^2$  equals .29, and Hypothesis 1A3.1 is supported.

#### Covariate Check

To evaluate the effect of site on general job satisfaction, this dichotomous variable was transformed into a set of dummy variables and entered into the regression as step 4. Because the most respondents were from site 1, this was chosen as the base group. As a result, seven dummy variables, SITE2 through SITE8, which compare each site to the base group, were created.

The change in R-squared for this set was .01 ( $p = .42$ ) which suggests that site explains a small, nonsignificant amount of variance in job satisfaction beyond that explained by the job characteristics included in the extended model.

#### **H1B: Growth Satisfaction**

Hypothesis 1B1 states that there is a significant relationship between work characterized by variety, identity, significance, autonomy, and feedback and growth

satisfaction.  $R^2$  was .36 ( $p < .01$ ), and H1B1 is supported.

No hypotheses regarding specific effect sizes were formulated for the relationships between job characteristics and growth satisfaction, burnout, and job stress because there was not enough information from previous research to guide predictions.

Hypothesis 1B2 states that the relationship between required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents and growth satisfaction explains a significant increase in variance beyond that accounted for by the core dimensions. Increase in R-squared was .03 ( $p < .01$ ), and H1B2 is thus supported.

Hypothesis 1B3 states that the relationship between role conflict, overload and ambiguity, and growth satisfaction explains a significant increase in variance beyond that accounted for by characteristics of work and interpersonal relationships. Increase in R-squared was .03 ( $p < .01$ ), and H1B3 is supported.

#### Covariate Check

The change in R-squared for site was .03 ( $p < .05$ ) which means that site explains a small, significant amount of variance in growth satisfaction among respondents of this study, over and above that explained by the job characteristics. A one way ANOVA was conducted for growth satisfaction by site and yielded an F ratio of 2.976

( $p < .01$ ). A Tukey pair-wise comparison indicated that the mean for growth satisfaction from site 1 ( $x = 5.5$ ) was significantly higher than the means from site 7 ( $x = 4.8$ ) and site 5 ( $x = 4.9$ ) ( $p = .05$ ). This finding suggests that other factors, not assessed in this study, also affect growth satisfaction at these sites.

#### **H1C: Burnout**

Hypothesis 1C1 states that there is a significant relationship between variety, identity, significance, autonomy, and feedback and burnout.  $R^2$  was .117 ( $p < .01$ ), and H1C1 is supported.

Hypothesis 1C2 states that the relationship between required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents and burnout explains a significant increase in variance beyond that accounted for by the core dimensions. Increase in R-squared was .03 ( $p < .05$ ), and H1C2 is supported.

Hypothesis 1C3 states that the relationship between role conflict, overload and ambiguity, and burnout explains a significant increase in variance beyond that accounted for by characteristics of work and interpersonal relationships. Increase in R-squared was .28 ( $p < .01$ ), and H1C3 is supported.

#### **Covariate Check**

The change in R-squared for site was .03 ( $p < .01$ ) which means that site explains a small, significant amount of

variance in burnout among respondents of this study, over and above that explained by the job characteristics. A one way ANOVA was conducted for burnout by site and yielded an F ratio of 2.37 ( $p < .01$ ); however, a Tukey pair-wise comparison indicated that no two means were significantly different at the .05 level.

#### H1D: Stress

Hypothesis 1D1 states that there is a significant relationship between variety, identity, significance, autonomy, and feedback and job stress.  $R^2$  was .056 ( $p < .01$ ), and H1D1 is supported.

Hypothesis 1D2 states that the relationship between required interaction, collaboration, influence with other disciplines, social integration, and feedback from agents and stress explains a significant increase in variance beyond that accounted for by the core dimensions. Increase in R-squared was .03 ( $p < .05$ ), and H1C2 is supported.

Hypothesis 1D3 states that the relationship between role conflict, overload and ambiguity, and stress explains a significant increase in variance beyond that accounted for by characteristics of work and interpersonal relationships. Increase in R-squared was .19 ( $p < .01$ ), and H1B3 is supported.

#### Covariate Check

Change in R-squared for site was .03 ( $p < .05$ ) which means that site explains a small, significant amount of

variance in job stress among respondents of this study, over and above that explained by the job characteristics. A one way ANOVA was conducted for stress by site and yielded an F ratio of 2.7 ( $p < .01$ ). A Tukey pair-wise comparison indicated that the mean for site 7 ( $x = 3.01$ ) was significantly lower than the means for site 8 ( $x = 3.93$ ) and site 2 ( $x = 3.75$ ) ( $p = .05$ ). This means that other factors, not evaluated in this study, also contributed to perceived job stress among respondents at these sites.

Hypothesis Set H2: Relationships Between Job Characteristics and Psychological States

**H2A: Experienced Meaningfulness**

Hypothesis 2A1 states that there is a significant relationship between the work characteristics of variety, identity, and significance, and experienced meaningfulness. Change in R-squared was .21 ( $p < .01$ ), and H2A1 is supported.

Hypothesis 2A1.1 states that the specified characteristics of the JCM explain a medium-large amount of the variance in experienced meaningfulness, equal to an  $f^2$  of at least .25.

$f^2$  is .26, and H2A1.1 is supported.

Hypothesis 2A2 states that the relationship between required interaction and experienced meaningfulness explains a significant increase in variance beyond that accounted for by the specified core dimensions. Change in R-squared was .00013 ( $p = .80$ ), and H2A2 is not supported.

Hypothesis 2A2.1 states that required interaction explains a small-medium increase in variance, beyond that accounted for by the specified dimensions of the JCM, equal to an  $f^2$  of at least .05.  $f^2$  is .0001, and H2A2.1 is not supported.

Hypothesis 2A3 states that the relationship between role overload and experienced meaningfulness explains a significant increase in variance, beyond that accounted for by characteristics of work and required interaction. Change in R-squared was .02 ( $p < .01$ ), and H2A3 is supported.

Hypothesis 2A3.1 states that role overload explains a small increase in variance, beyond that explained by characteristics of work and required interaction, equal to an  $f^2$  larger than .01.  $f^2$  is .02, and H2A3.1 is supported.

#### **H2B. Experienced Responsibility for Outcomes**

Hypothesis 2B1 states that there is a significant relationship between autonomy and experienced responsibility. R-squared was .02 ( $p = .01$ ), and H2B1 is supported.

Hypothesis 2B1.1 states that autonomy explains a small-medium amount of the variance in experienced responsibility, equal to an  $f^2$  of at least .10.  $f^2$  is .02, and H2B1.1 is not supported. These findings demonstrate the value of looking beyond the significance test to the actual effect size. Although the relationship between autonomy and experienced responsibility is statistically significant, the

effect is small, especially in view of the place autonomy holds in the JCM as the sole antecedent of experienced responsibility.

Hypothesis 2B2 states that the relationship between collaboration and influence and experienced responsibility explains a significant increase in variance beyond that accounted for by autonomy. Increase in R-squared was .02 ( $p < .05$ ), and H2B2 is supported.

Hypothesis 2B2.1 states that collaboration and influence explain a small increase in variance, beyond that explained by autonomy, equal to an  $f^2$  larger than .01.  $f^2$  is .02, and H2B2.1 is supported.

Hypothesis 2B3 states that the relationship between role conflict and experienced responsibility explains a significant increase in variance, beyond that accounted for by autonomy and characteristics interpersonal relationships. Increase in R-squared was .002 ( $p = .35$ ), and H2B3 is not supported.

Hypothesis 2B3.1 states that role conflict explains a small increase in variance, beyond that explained by autonomy and characteristics of interpersonal relationships, equal to an  $f^2$  larger than .01.  $f^2$  is .002, and H2B3.1 is not supported.

## **H2C. Knowledge of Results**

Hypothesis 2C1 states that there is a significant relationship between feedback from the work itself and

knowledge of results. R-squared was .34 ( $p < .01$ ), and H2C1 is supported.

Hypothesis 2C1.1 states that feedback from work explains a medium amount of variance in knowledge of results, equal to an  $f^2$  of at least .15.  $f^2$  is .51, and H2C1.1 is supported.

Hypothesis 2C2 states that the relationship between feedback from agents and knowledge of results explains a significant increase in variance, beyond that accounted for by feedback from work. Increase in R-squared was .10 ( $p < .01$ ), and H2C2 is supported.

Hypothesis 2C2.1 states that feedback from agents explains a small-medium increase in variance, beyond that explained by feedback from the work itself, equal to an  $f^2$  of at least .05.

$f^2$  is .18, and H2C2.1 is supported.

Hypothesis 2C3 states that the relationship between role ambiguity and knowledge of results explains a significant increase in variance, beyond that explained by feedback from work and agents. Increase in R-squared was .07 ( $p < .01$ ), and H2C3 is supported.

Hypothesis 2C3.1 states that role ambiguity explains a small increase in variance, beyond that explained by feedback from work and from agents, equal to an  $f^2$  larger than .01.  $f^2$  is .14, and H2C3.1 is supported.

## **H2D: Experienced Attachment to Coworkers**

Hypothesis 2D1 states that there is a significant relationship between social integration and experienced attachment to coworkers. Change in R-squared was .36 ( $p < .01$ ), and H2D1 is supported.

Hypothesis 2D1.1 states that social integration explains a medium increase in variance, equal to an  $f^2$  of at least .15.  $f^2$  is .57, and H2D1.1 is supported.

### Hypothesis Set H3: Mediating Effects of Psychological States

Baron and Kenny's (1986) approach for evaluating mediation was used to test the hypotheses in this set. This approach required estimating three regression equations, which can be labeled steps 1, 2, and 3, for each hypothesized mediated relationship (Renn and Vandenberg, 1995):

1. Regress the mediator on the independent variable;
2. Regress the dependent variable on the independent variable; and
3. Regress the dependent variable on the independent variable and the mediator.

Baron and Kenny suggested that support for mediation is shown if the following conditions are met:

1. The independent variable affects the mediator.
2. The independent variable affects the dependent variable.

3. The mediator affects the dependent variable, and the effect of the independent variable on the dependent is smaller in the third equation than in the second (1986, p. 1177).

In this study, the analyses used to evaluate the hypotheses in Set H2, which correspond to step 1, demonstrated that the independent job characteristics variables affect the specified psychological states, with two exceptions: required interaction-experienced meaningfulness and role conflict-experienced responsibility. Given these findings, the mediating hypotheses were tested by comparing results from the following two sets of equations:

1. Each outcome was regressed on the set of characteristics hypothesized to be mediated by a specific psychological state.
2. Each outcome was regressed first on the predicted psychological state mediator and second on the set of characteristics.

Mediation was evaluated by comparing the R-squared from the first equation to the R-squared in step 2 of the second. If the unpartialled R-squared was larger than the R-squared from which the effect of the mediator had been removed, the mediating hypothesis was supported.

A nonsignificant change in R-squared at step 2 indicates complete mediation. In complete mediation, the

characteristic essentially has no direct effect on the outcome, and the variance explained by the characteristic and psychological state is a combination of the indirect effect of the characteristic through the state and the direct effect of the state.

A statistically significant increase at step 2 indicates partial mediation (Renn and Vandenberg, 1995). This means that the characteristic has a direct effect on the outcome, as well as an indirect effect through the state.

Finally, the third possibility is equal  $R^2$ 's from equation 1 and step 2 of equation 2. If these  $R^2$ 's are equal, the mediating hypothesis is not supported.

### **H3A. Experienced Meaningfulness**

Hypothesis 3A1 states that the relationship between variety, identity, significance, required interaction, and role overload, and general job satisfaction is mediated by meaningfulness. The R-squared for regressing job satisfaction on this set of characteristics was .35. When the effect of experienced meaningfulness was controlled, the semi-partial regression coefficient representing the effect of the characteristics on satisfaction decreased to .211 ( $p < .01$ ). Thus, hypothesis 3A1 is supported.

Hypothesis 3A1.1 states that mediation by experienced meaningfulness accounts for a medium-large amount of variance between these characteristics and satisfaction,

equal to an  $f^2$  of at least .25. Because the use of effect sizes is relatively new, there are no guidelines for the examination of mediation in terms of effect size. I am proposing that the amount of variance explained by mediation relative to the total amount of variance explained by the characteristics and experienced meaningfulness can be evaluated as follows:

$$\frac{R^2_{y.b} - R^2_{y.b,a}}{1 - R^2_{y.a,b}} = \frac{.345 - .211}{1 - .469} = \frac{.135}{.531} = .25$$

This formula again expresses the amount of variance mediated by the psychological state in terms of the difference between the amount of variance explained by the characteristics ( $R^2_{y.b}$ ) and the amount of variance explained by the characteristics after the effect of the psychological state has been removed ( $R^2_{y.b,a}$ ). To calculate an effect size, this difference is divided by the error term, the amount of variance not accounted for by the characteristics and the psychological state ( $1 - R^2_{y.a,b}$ ). The resulting ratio of explained to unexplained variance reduces to an effect size.

Applying this formula to the findings concerning mediation by experienced meaningfulness indicates that Hypothesis 3A1.1 is supported. As summarized in Table 8, the relationship between this set of job characteristics and general satisfaction is partially mediated by experienced meaningfulness, which accounts for 25 percent of the total

Table 8

**Hierarchical Regressions Predicting Outcomes From  
Model-Specified Characteristics Compared to Predictions  
From Characteristics Controlled For Experienced Meaningfulness**

Dependent Variable	a R <sup>2</sup> For Characteristics Only (variety, identity, significance, interaction and role overload)	b R <sup>2</sup> For State Only	c $\Delta$ in R <sup>2</sup> By Adding Characteristics (direct)	d a-c= Indirect Effect of Characteristics Through State
General Satisfaction				
H3A1	0.345	0.259	0.211	.135 ( $f^2=.25$ )
Growth Satisfaction				
H3A2	0.309	0.281	0.136	.173 ( $f^2=.30$ )
Burnout				
H3A3	0.378	0.089	0.331	.047 ( $f^2=.08$ )
Job Stress				
H3A4	0.263	0.025	0.265	-

N = 413

All R<sup>2</sup>s significant at the p<.01 level

variance explained by these variables.

Hypothesis 3A2 states that the relationship between variety, identity, significance, required interaction, and role overload, and growth satisfaction is mediated by meaningfulness.  $f^2$  is .30. Experienced meaningfulness partially mediates this relationship, and H3A2 is supported.

No predictions were made about the amount of variance mediated in relationships with growth satisfaction, burnout, and job stress because there was not enough information from previous research to provide a basis for estimation.

Hypothesis 3A3 states that the relationship between variety, identity, significance, required interaction, and role overload, and burnout is mediated by meaningfulness.  $f^2$  is .08. Experienced meaningfulness partially mediates this relationship, and H3A3 is supported.

Hypothesis 3A4 states that the relationship between variety, identity, significance, required interaction, and role overload, and stress is mediated by meaningfulness. There was no meaningful difference between the total and partialled, direct effects of these characteristics, and H3A4 is not supported.

### **H3B. Experienced Responsibility**

Hypothesis 3B1 states that the relationship between autonomy, collaboration, influence, and role conflict, and general satisfaction is mediated by experienced responsibility. As reported in Table 9, the total

Table 9

**Hierarchical Regressions Predicting Outcomes From  
Model-Specified Characteristics Compared to Predictions  
From Characteristics Controlled For Experienced Responsibility**

Dependent Variable	a R <sup>2</sup> For Characteristics Only (autonomy, collaboration, influence and role conflict)	b R <sup>2</sup> For State Only	c $\Delta$ in R <sup>2</sup> By Adding Characteristics (direct)	d a-c= Indirect Effect of Characteristics Through State
General Satisfaction				
H3B1	.336**	0.006	.331**	.005 ( $f^2=.008$ )
Growth Satisfaction				
H3B2	.220**	.0160*	.199**	.021 ( $f^2=.03$ )
Burnout				
H3B3	.281**	0.0002	.282**	-
Job Stress				
H3B4	.131**	0.002	.133**	-

N = 413

\* p &lt; .05

\*\* p &lt; .01

(unpartialled)  $R^2$  of the characteristics exceeded the  $R^2$  from which the effect of experienced responsibility had been removed by only .005. These two  $R^2$ 's are virtually identical, providing little support for H3B1.

Hypothesis 3B1.1 states that mediation by experienced responsibility accounts for a medium amount of variance between these characteristics and general satisfaction, equal to an  $f^2$  of at least .15.  $f^2$  is .008. This is a very small effect size, and 3B1.1 is not supported. This finding indicates that experienced responsibility does not meaningfully mediate this relationship.

Hypothesis 3B2 states that the relationship between autonomy, collaboration, influence, and role conflict, and growth satisfaction is mediated by experienced responsibility. The total effect was larger than the direct, and H3B2 is supported. Mediation is partial, and  $f^2$  is .03.

Hypothesis 3B3 states that the relationship between autonomy, collaboration, influence, and role conflict, and burnout is mediated by experienced responsibility. There was no meaningful difference between the total and direct effects of the characteristics, and H3B3 is not supported.

Hypothesis 3B4 states that the relationship between autonomy, collaboration, influence, and role conflict, and stress is mediated by experienced responsibility. There was no meaningful difference, and H3B4 is not supported.

### H3C. Knowledge of Results

Hypothesis 3C1 states that the relationship between feedback from work, feedback from agents, and role ambiguity, and general satisfaction is mediated by knowledge of results. As reported in Table 10, the total effect was larger than the direct effect, and H3C1 is supported.

Hypothesis 3C1.1 states that mediation by knowledge of results accounts a medium amount of variance between these variables and general satisfaction, equal to an  $f^2$  of at least .20.  $f^2$  is .23, and H3C1.1 is supported.

Hypothesis 3C2 states that the relationship between feedback from work, feedback from agents, and role ambiguity, and growth satisfaction is mediated by knowledge of results. The total effect exceeded the direct, and H3C2 is supported. Mediation is partial, and  $f^2$  is .16.

Hypothesis 3C3 states that the relationship between feedback from work, feedback from agents, and role ambiguity, and burnout is mediated by knowledge of results. The total effect was larger than the direct, and H3C3 is supported. Mediation is partial, and  $f^2$  is .10.

Hypothesis 3C4 states that the relationship between feedback from work, feedback from agents, and role ambiguity, and stress is mediated by knowledge of results. The total effect exceeded the direct, and H3C4 is supported. The change in R-squared for step 2 was not significant, which indicates that mediation is complete, and  $f^2$  is .02.

**Table 10**

**Hierarchical Regressions Predicting Outcomes From  
Model-Specified Characteristics Compared to Predictions  
From Characteristics Controlled For Knowledge of Results**

<b>Dependent Variable</b>	<b>a</b> <b>R<sup>2</sup> For</b> <b>Characteristics Only</b> <b>(feedback from work</b> <b>and agents,</b> <b>role ambiguity</b>	<b>b</b> <b>R<sup>2</sup> For</b> <b>State Only</b>	<b>c</b> <b>Δ in R<sup>2</sup></b> <b>By Adding</b> <b>Characteristics</b> <b>(direct)</b>	<b>d</b> <b>a-c=</b> <b>Indirect</b> <b>Effect of</b> <b>Characteristics</b> <b>Through State</b>
General Satisfaction H3C1	.231**	.188**	.061**	.17 (f <sup>2</sup> =.23)
Growth Satisfaction H3C2	.201**	.133**	.078**	.12 (f <sup>2</sup> =.16)
Burnout H3C3	.112**	.111**	.021*	.09 (f <sup>2</sup> =.10)
Job Stress H3C4	.027*	.026**	0.007	.02 (f <sup>2</sup> =.02)

N = 413

\* p &lt; .05

\*\* p &lt; .01

### H3D: Experienced Attachment to Coworkers

Hypothesis 3D1 states that the relationship between social integration and general satisfaction is mediated by experienced attachment to coworkers. As reported in Table 11, the total effect of social integration exceeded its direct effect, and H3D1 is supported.

Hypothesis 3D1.1 states that mediation by experienced attachment to coworkers accounts for a medium amount of variance between social integration and general satisfaction, equal to an  $f^2$  of at least .20. Mediation is complete (i.e., .041 divided by .041 equals 100%), which means that social integration essentially has no effect on general satisfaction except through experienced attachment. However, the  $f^2$  associated with this relationship is .05 which means that the amount of variance social integration and experienced attachment explain in general satisfaction is small. To summarize, experienced attachment completely mediates a small effect, and H3D1.1 is partially supported.

Hypothesis 3D2 states that the relationship between social integration and growth satisfaction is mediated by experienced attachment to coworkers. The total effect exceeded the direct, and H3D2 is supported. Mediation is complete, and  $f^2$  equals .02.

Hypothesis 3D3 states that the relationship between social integration and burnout is mediated by experienced attachment to coworkers. The total effect was larger than

Table 11

**Hierarchical Regressions Predicting Outcomes From  
Model-Specified Characteristics Compared to Predictions From  
Characteristics Controlled For Experienced Attachment to Coworkers**

Dependent Variable	a	b	c	d
	R <sup>2</sup> For Social Integration Only	R <sup>2</sup> For State Only	$\Delta$ in R <sup>2</sup> By Adding Characteristics (direct)	a-c <sup>*</sup> Indirect Effect of Characteristics Through State
General Satisfaction H3D1	.041**	.106**	0.00001	.041 ( $f^2=.05$ )
Growth Satisfaction H3D2	.024**	.121**	0.006	.018 ( $f^2=.02$ )
Burnout H3D3	.019**	.032**	0.0007	.018 ( $f^2=.02$ )
Job Stress H3D4	0.006	0.007	0.0004	.0056 ( $f^2=.006$ )

N = 413

\* p &lt; .05

\*\* p &lt; .01

the direct, and H3D3 is supported. Mediation is complete, and  $f^2$  equals .02.

Hypothesis 3D4 states that the relationship between social integration and job stress is mediated by experienced attachment to coworkers. The total effect exceeded the direct by only .0056. Mediation is complete, but  $f^2$  equals .006, which is too small to provide meaningful support for H3D4.

#### **Contribution of Experienced Attachment as a New CPS**

The contribution of experienced attachment to coworkers was further evaluated through correlation and regression analysis. Zero-order correlations between experienced attachment and general satisfaction ( $r=.31$ ,  $p<.01$ ), growth satisfaction ( $r=.33$ ,  $p<.01$ ) and burnout ( $r=-.16$ ,  $p<.05$ ) reported in Table 7 are consistently significant and substantially larger than relationships between experienced responsibility and these outcomes.

In a hierarchical regression of general satisfaction on the CPS, the three original states in step 1 yielded an R-squared of .33 ( $p<.01$ ). Entering experienced attachment in step 2 resulted in an increase in R-squared of .012 ( $p<.01$ ). This equates to an  $f^2$  of .02, which is small, but exceeds the .01 threshold for practical significance.

Of the four CPS variables included in the regression equation, the significant explanatory variables for job satisfaction were as follows:

Variable	Beta	t	Sig t
Meaningfulness	.381	8.19	.000
Knowledge of results	.266	5.75	.000
Attachment to coworkers	.123	2.67	.009
Responsibility	-.090	-2.17	.030

In the same analysis for growth satisfaction, the  $f^2$  for the increase in R-squared at step two was .03, also small but meaningful. The following were significantly explanatory for growth satisfaction in the full equation:

Variable	Beta	t	Sig t
Meaningfulness	.428	9.148	.0000
Attachment	.164	3.584	.0004
Knowledge of results	.150	3.236	.0013
Responsibility	-.044	-1.025	.3061

Thus, experienced attachment to coworkers explains more variance in general satisfaction than experienced responsibility, which had a significant negative relationship to this outcome. Experienced attachment also explains more variance in growth satisfaction than knowledge of results, as well as experienced responsibility.

Hypothesis Set H4: Moderating Effects on Interpersonal  
Job Characteristic-CPS Relationships

**H4A. Need for Influence (Ninf)**

Hypothesis 4A1 states that the relationship between required interaction and meaningfulness is moderated by Ninf. Entering the interaction variable (required interaction x Ninf) at step 3, following required interaction in step 1 and Ninf in step 2, added .015 ( $p=.01$ ) to the cumulative R-squared of .04. This means that the moderating effect of Ninf on the relationship between required interaction and experienced meaningfulness explains 1.5 percent of the variance in respondents' experience of meaningfulness, above and beyond the effects of required interaction and Ninf alone. Hypothesis 4A1 is thus supported.

Hypothesis 4A1.1 states that moderation by Ninf explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in the relationship between required interaction and meaningfulness.  $f^2$  is .02, and H4A1.1 is supported.

Hypothesis 4A2 states that the relationships between collaboration and influence and experienced responsibility are moderated by Ninf. The interaction term for collaboration and Ninf added .002 ( $p=.33$ ) to the cumulative R-squared of .006, and the interaction term for influence and Ninf added .004 ( $p=.20$ ) to a cumulative R-squared of

.03. Thus, H4A2 is not supported.

Hypothesis 4A2.1 states that moderation by Ninf explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in these relationships. Effect sizes for moderation by Ninf of both collaboration ( $f^2 = .002$ ) and influence ( $f^2$  of .004) are very small, and H4A2.1 is not supported.

Hypothesis 4A3 states that the relationship between feedback from agents and knowledge of results is moderated by Ninf. The interaction term for feedback from agents and Ninf added .0002 ( $p=.91$ ) to the cumulative R-squared of .25, and H4A3 is not supported.

Hypothesis 4A3.1 states that moderation by Ninf explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in this relationship.  $f^2$  is .0003, and H4A3.1 is not supported.

#### **H4B. Need for Affiliation (Naff)**

Hypothesis 4B1 states that the relationship between required interaction and experienced meaningfulness is moderated by Naff. The interaction term for required interaction and Naff added .003 ( $p=.30$ ) to the cumulative R-squared of .03, and H4B1 is not supported.

Hypothesis 4B1.1 states that moderation by Naff explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in this relationship.  $f^2$  is .003, and H4B1.1 is not supported.

Hypothesis 4B2 states that the relationship between social integration and experienced attachment to coworkers is moderated by Naff. The interaction term for social interaction and Naff added .007 ( $p < .05$ ) to the cumulative R-squared of .40, and H4B2 is statistically supported.

Hypothesis 4B2.1 states that moderation by Naff explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in this relationship.  $f^2$  is .012, and H4B2.1 is supported, with a small effect size.

Hypothesis 4B3 states that the relationship between feedback from agents and knowledge of results is moderated by Naff. The interaction term for feedback from agents and Naff added .0003 ( $p = .68$ ) to the cumulative R-squared of .26, and H4B3 is not supported.

Hypothesis 4B3.1 states that moderation by Naff explains a small increase, equal to an  $f^2$  larger than .01, in additional variance in this relationship.  $f^2$  is .0009, and H4B3.1 is not supported.

#### Hypotheses Sets 5 and 6: Intended and Unintended Effects of NCM Job Design

Thirty-eight subjects (29 SNs, 6 CCs, and 3 NCMs) were dropped from the sample for these analyses because they did not meet inclusion criteria for comparison of job characteristics by job category. As outlined in chapter 3, these criteria included: (1) a minimum of two years of RN experience, (2) at least one year in the present job

category, and (3) at least half-time employment on an inpatient service.

The demographic profile of the respondents from each job category who met these criteria for inclusion is displayed in Table 12. One-way ANOVAs for age, education, and years of experience by job category indicated that no two groups were significantly different in age at the .05 level. There were significant differences among all three groups in education, with NCMs having more education than CCs, and CCs more than SNs. NCMs (x=16) also had significantly more years of experience than SNs (x=14). As previously indicated, effects of the demographic variables were controlled by entering the set of demographic covariates as step 1 in the regressions.

Means and standard deviations for the job characteristic variables for each job category are reported in Table 13. The number of subjects per category was further reduced due to missing data. A multivariate analysis of variance in job characteristics among job categories was significant at the  $p < .01$  level (see Table 14). Based on this finding, analysis progressed to testing hypotheses concerning perceived differences in specific job characteristics between NCM and SN jobs.

Hypothesis 5A states that there is a significant relationship between working in the NCM job and perceived autonomy. For the sample of SNs and NCMs meeting the

**Table 12**  
**Demographic Profile of Respondents From Each Job Category**

Job Title	Age		Education <sup>1</sup>					Years of RN Experience		Clinical Area				
	M	SD	Dip	ADN	BSN	MSN or higher	M	SD	M/S	CC	Peds	OB	Other <sup>2</sup>	
	Staff Nurse	40	9.8	17%	35%	46%	2%	14	8.4	29%	28%	10%	8%	25%
Care Coordinator	42	8.0	10%	16%	44%	30%	16	7.7	45%	10%	5%	3%	37%	
Case Manager	40	9.2	-	7%	37%	56%	17	6.2	47%	10%	14%	4%	25%	

<sup>1</sup> Does not add to 100% due to rounding / missing data

<sup>2</sup> "Other" includes inpatient specialties such as telemetry, oncology, and psychology

**Table 13**  
**Means and Standard Deviations For Job**  
**Characteristics by Job Category**

Variable	SN (n=254)		CC (n=36)		CM (n=53)	
	M	SD	M	SD	M	SD
Autonomy	5.1	0.93	5.4	1.00	6.2	0.59
Job Identity	4.2	1.10	4.3	1.20	4.8	1.10
Feedback from Work	5.0	0.98	4.5	1.10	5.0	1.20
Collaboration	3.7	1.10	4.1	0.91	4.4	0.74
Influence	6.9	1.90	7.7	1.40	7.4	1.50
Social Integration	3.7	0.69	3.6	0.72	3.7	0.79
Role Conflict	3.4	0.99	3.5	0.88	3.7	0.92
Role Ambiguity	3.4	0.77	3.8	0.76	3.9	0.94
Skill Variety	5.7	0.90	5.9	0.76	6.0	0.75
Task Significance	6.2	0.74	6.0	0.65	6.1	0.79
Feedback from Agents	3.9	1.40	4.1	1.30	4.4	1.40
Required Interaction	6.4	0.72	6.7	0.56	6.8	0.44
Role Overload	3.7	1.60	4.3	1.30	4.6	1.30

**Table 14**

**Multivariate Analysis of Variance in Characteristics  
By Job Category**

<b>Test Name</b>	<b>Value</b>	<b>Approx. F</b>	<b>Hypoth. DF</b>	<b>Error DF</b>	<b>Sig. of F</b>
Pillais	0.42087	6.74504	26.00	658.00	0.000
Hotellings	0.64394	8.09878	26.00	654.00	0.000
Wilks	0.59726	7.41655	26.00	656.00	0.000
Roys	0.37214				

N = 374

criteria for inclusion, the R-squared for the set of covariates including age, education, years of experience, and clinical area was .04 ( $p=.08$ ). The increment in R-squared for the variable representing the contrast coded vector for SN and NCM jobs was .144 ( $p<.01$ ). This means that working as a NCM, rather than a SN, uniquely explains 14 percent of the variance in autonomy, beyond that explained by demographic differences. Hypothesis 5A is therefore supported.

The increment in R-squared for site at step 3 was .06 ( $p=.002$ ). This means that site uniquely explains 6 percent additional variance beyond that accounted for by demographics and job category. A Tukey pair-wise comparison by site indicated that the mean for site 5 ( $x=4.9$ ) was significantly lower than the means for sites 8 ( $x=5.7$ ) and 3 ( $x=5.6$ ), at the .05 level.

Hypothesis 5A1 states that job category explains a medium amount of variance in perceived autonomy, equal to an  $f^2$  of at least .15.  $f^2$  for this finding is .18. Hypothesis 5A1 is therefore supported.

Hypothesis 5B states that there is a significant relationship between working in the NCM job and perceived job identity. The R-squared for the set of covariates was .02 ( $p=.55$ ). The increment in R-squared for the contrast between SN and NCM jobs was .05 ( $p<.01$ ). This means that working as a NCM, rather than a SN, uniquely explains 5

percent of the variance in job identity, beyond that explained by demographic differences, and Hypotheses 5B is supported.

The increment in R-squared for site as step 3 was .08 ( $p < .01$ ). This means that site uniquely explains 8 percent additional variance beyond that accounted for by demographics and job category. A Tukey pair-wise comparison by site indicated that the means for sites 5 ( $x=3.8$ ) and 1 ( $x=4.0$ ) were significantly lower than the means for sites 7 ( $x=4.8$ ) and 8 ( $x=4.6$ ) at the .05 level.

Hypothesis 5B1 states that job category explains a small-medium amount of variance in perceived job identity, equal to an  $f^2$  of at least .10. The  $f^2$  for this finding is .06; therefore, H5B1 is not supported.

Hypothesis 5C states that there is a significant relationship between working in the NCM job and perceived job feedback. The R-squared for the set of covariates was .04 ( $p=.13$ ). The increment in R-squared for the contrast between SN and NCM jobs was .00001 ( $p=.98$ ). This means that working as a NCM, rather than a SN, does not uniquely explain meaningful variance in feedback from work. Hypothesis 5C is not supported.

The increment in R-squared for site at step 3 was .05 ( $p=.02$ ). This means that site uniquely explains 5 percent additional variance. A Tukey pair-wise comparison by site indicated that the mean for site 5 ( $x=4.6$ ) was significantly

lower than the means for sites 6 ( $x=5.5$ ), 2 ( $x=5.3$ ), and 7 ( $x=5.3$ ) at the .05 level.

Hypothesis 5C1 states that job category explains a small-medium amount of variance in perceived job feedback, equal to an  $f^2$  of at least .05. This hypothesis is not supported.

Hypothesis 5D states that there is a significant relationship between working in the NCM job and perceived collaboration with physicians. The R-squared for the set of covariates was .11 ( $p<.01$ ). This means that demographic differences accounted for 11 percent of the variance in collaboration. Examining the betas for individual variables within the set revealed that the two strongest, significant explanatory variables were education (beta = 4.1,  $p<.01$ ) and working in intensive care (beta = 3.36,  $p<.01$ ).

The increment in R-squared for the contrast between SN and NCM jobs was .04 ( $p<.01$ ). This means that working as a NCM, rather than a SN, uniquely explains 4 percent of the variance in collaboration, and Hypothesis 5D is supported.

The increment in R-squared for site at step 3 was .10 ( $p<.01$ ). This means that site uniquely explains 10 percent additional variance, beyond that accounted for by education, clinical area, and job category. A Tukey pair-wise comparison by site indicated significant differences between multiple pairs of means:

1. Site 7 ( $x=4.5$ ) was higher than sites 2 ( $x=3.1$ ),

- 1 ( $x=3.4$ ), and 5 ( $x=3.6$ );
2. Site 3 ( $x=4.1$ ) was higher than sites 2 and 1;
  3. Site 8 ( $x=4.0$ ) was higher than sites 2 and 1;
  4. Site 4 ( $x=3.9$ ) was higher than sites 2 and 1; and
  5. Site 6 ( $x=3.9$ ) was higher than site 2.

Hypothesis 5D1 states that job category explains a medium amount of variance in perceived collaboration, equal to an  $f^2$  of at least .15. The  $f^2$  for this finding .05; therefore, H5D1 is not supported.

Hypothesis 5E states that there is a significant relationship between working in the NCM job and perceived influence with other disciplines. The R-squared for the set of covariates was .02 ( $p=.69$ ). The increment in R-squared for the contrast between SN and NCM jobs was .002 ( $p=.45$ ). Hypothesis 5E is not supported. The increment in R-squared for site at step 3 was .01 ( $p=.79$ ).

Hypothesis 5E1 states that job category explains a small-medium amount of variance in perceived influence with other disciplines, equal to an  $f^2$  of at least .10. The  $f^2$  for this finding is .002; therefore, H5E1 is not supported.

#### **Set H6: Unintended Negative Effects of NCM Job Design**

Hypothesis 6A states that there is a significant relationship between working in the NCM job and perceived social integration. The R-squared for the set of demographic covariates was .03 ( $p=.31$ ). The increment in R-squared for the contrast between SN and NCM jobs was .002

( $p=.54$ ), and H6A is not supported. The increment in R-squared for site at step 3 was .04 ( $p=.07$ ).

Hypothesis 6A1 states that job category explains a small-medium amount of variance in perceived social integration, equal to an  $f^2$  of at least .05. This hypothesis is not supported.

Hypothesis 6B states that there is a significant relationship between working in the NCM job and perceived role conflict. The R-squared for the set of covariates was .03 ( $p=.17$ ). The increment in R-squared for the variable representing the contrast for SN and NCM jobs was .03 ( $p<.01$ ), and H6B is supported. This means that working in the NCM, rather than the SN job, uniquely accounts for 3 percent of the variance in role conflict, beyond that explained by demographics.

The increment in R-squared for site at step 3 was .06 ( $p<.01$ ). A one-way ANOVA by site yielded an F ratio of 2.5 ( $p<.05$ ), but a Tukey pair-wise comparison indicated no two groups were significantly different at the .05 level. Examining the betas for individual sites in the full regression equation revealed that sites 4 (beta=2.77,  $p=.006$ ) and 3 (beta=1.98,  $p=.05$ ) were significantly explanatory for role conflict.

Hypothesis 6B1 states that job category explains a small-medium amount of variance in perceived role conflict, equal to an  $f^2$  of at least .05. The  $f^2$  for this finding is

.03; therefore, H6B1 is not supported.

Hypothesis 6C states that there is a significant relationship between working in the NCM job and perceived role ambiguity. The R-squared for the set of covariates was .03 ( $p=.19$ ). The increment in R-squared for the contrast between SN and NCM jobs was .04 ( $p<.01$ ), and H6C is supported. This means that working in the NCM, rather than the SN job, uniquely accounts for 4 percent of the variance in role ambiguity, beyond that explained by demographics.

The increment in R-squared for site at step 3 was .06 ( $p<.01$ ). A Tukey pair-wise comparison indicated that the mean for site 4 ( $x=3.9$ ) was significantly higher than the means for sites 7 ( $x=3.1$ ), 8 ( $x=3.3$ ), 1 ( $x=3.4$ ), and 3 ( $x=3.4$ ), at the .05 level.

Hypothesis 6C1 states that job category explains a medium amount of the variance in perceived role ambiguity, equal to an  $f^2$  of at least .15. The  $f^2$  for this finding is .04; therefore, H6C1 is not supported.

Although no differences were hypothesized between the NCM and SN jobs for the remaining five characteristics, contrasts were run to provide a comprehensive analysis. Findings from these regressions were as follows:

<u>Variable</u>	<u><math>\Delta R^2</math> for Covariates</u>	<u><math>\Delta R^2</math> for Job</u>	<u><math>\Delta R^2</math> for Site</u>
Skill variety	.03(p=.23)	.01 (p=.07)	.05(p=.02)
Significance	.03(p=.25)	.003(p=.29)	.05(p=.03)
Required interaction	.02(p=.49)	.035(p<.001)	.02(p=.39)
Feedback from agents	.01(p=.83)	.016(p=.02)	.07(p<.001)
Role overload	.07(p=.002)	.027(p=.002)	.03(p=.12)

These findings mean that for respondents in this study, working in the NCM job, as opposed to the SN job, uniquely explains significant increases in variance in required interaction, feedback from agents, and role overload, beyond that explained by differences in age, education, clinical area, and years of experience.

Regarding the other significant effects, all clinical areas except med/surg were significantly negatively related to role overload. This indicates that nurses working in med/surg reported significantly higher levels of role overload than nurses working in intensive care, pediatrics, obstetrics/nursery, and other inpatient areas.

A Tukey pair-wise comparison for feedback from agents by site indicated significant differences (p=.05) between the means for several sites: sites 2 (x=4.7), 7 (x=4.5), and 1 (x=4.2) were higher than site 5 (x=3.3), and site 2 was also higher than site 3 (x=3.7).

### Further Examination

The contribution of individual characteristics within the sets and the full equations for well-being outcomes required further examination. Table 15 displays the full results of the regressions of the well-being outcomes on the job characteristic sets.

An examination of the betas for each variable in the core dimensions set reveals that task significance was not a statistically significant explanatory variable for any of the four well-being outcomes. This may be a consequence of range restriction for the task significance scale. Also, task significance was intercorrelated with skill variety ( $r=.37$ ), autonomy ( $r=.32$ ), and feedback from work ( $r=.33$ ,  $p$  values all  $<.01$ ). This shared variance may minimize its individual contribution.

Within the interpersonal relationship characteristic set, two variables were consistently nonsignificant: collaboration and social integration. As noted in chapter 3, there were differences in the patterns of responses for these scales between SNs and NCMs that may have affected their overall performance. These issues are explained in detail in the discussion of findings.

Results for another variable within this set, required interaction, were also different than predicted. Although expected to be positively related to general and growth satisfaction and negatively related to burnout and stress,

Table 15

**Hierarchical Regressions Predicting  
Outcomes From Characteristics**

Predictors	Outcomes							
	General Satisfaction		Growth Satisfaction		Burnout		Job Stress	
	Beta	t-value	Beta	t-value	Beta	t-value	Beta	t-value
<b>1. Task Characteristics</b>								
Variety	0.10	1.9	0.32	6.9**	0.03	0.6	0.19	3.3**
Identity	0.21	4.3**	0.11	2.4*	-0.16	-2.9**	-0.08	-1.4
Significance	0.01	0.3	0.05	1.1	-0.01	-0.2	0.01	0.2
Autonomy	0.20	4.0**	0.26	5.8**	-0.10	-1.9	-0.08	1.4
Feedback from Work	0.22	4.5**	0.17	3.8**	-0.22	-4.1**	-0.14	-2.6*
	R <sup>2</sup> = .248**		R <sup>2</sup> = .365**		R <sup>2</sup> = .117**		R <sup>2</sup> = .056**	
	Adj. R <sup>2</sup> = .238**		Adj. R <sup>2</sup> = .356**		Adj. R <sup>2</sup> = .105**		Adj. R <sup>2</sup> = .044**	
<b>2. Interpersonal Relationship Characteristics</b>								
Required Interaction	-0.09	-1.9	-0.06	-1.4	0.08	1.6	0.15	2.9**
Collaboration	0.05	1.0	0.004	0.09	0.05	0.9	-0.02	-0.4
Influence	0.11	2.3*	0.09	2.0*	-0.13	-2.4*	-0.07	-1.2
Integration	0.06	1.6	0.005	0.1	-0.05	-1.0	-0.07	-1.4
Feedback from Agents	0.22	4.5**	0.13	2.9**	-0.08	-1.5	-0.01	-0.2
	R <sup>2</sup> = .324**		R <sup>2</sup> = .390**		R <sup>2</sup> = .147**		R <sup>2</sup> = .086**	
	Adj. R <sup>2</sup> = .306**		Adj. R <sup>2</sup> = .373**		Adj. R <sup>2</sup> = .123**		Adj. R <sup>2</sup> = .061**	
	ΔR <sup>2</sup> = .075**		ΔR <sup>2</sup> = .025**		ΔR <sup>2</sup> = .029*		ΔR <sup>2</sup> = .029*	
<b>3. Role Characteristics</b>								
Conflict	-0.2	-3.7**	-0.02	-0.2	0.16	3.0**	0.07	1.2
Overload	-0.25	-5.1**	-0.08	-1.5	0.45	8.6**	0.42	7.0**
Ambiguity	-0.04	-0.9	-0.15	-3.3**	-0.01	-0.2	-0.05	-0.8
	R <sup>2</sup> = .476**		R <sup>2</sup> = .418**		R <sup>2</sup> = .426*		R <sup>2</sup> = .272**	
	Adj. R <sup>2</sup> = .457**		Adj. R <sup>2</sup> = .396**		Adj. R <sup>2</sup> = .405**		Adj. R <sup>2</sup> = .246**	
	ΔR <sup>2</sup> = .151**		ΔR <sup>2</sup> = .028**		ΔR <sup>2</sup> = .279**		ΔR <sup>2</sup> = .186**	
<b>4. Site</b>								
2	-0.06	-1.3	-0.07	-1.4	-0.01	-0.3	0.04	0.8
3	-0.02	-0.5	-0.05	-1	-0.09	-1.9	0.02	0.4
4	-0.04	-0.7	-0.1	-1.9	0.04	0.8	0.004	0.1
5	-0.03	-0.6	-0.05	-1.1	-0.03	-0.6	0.003	0.1
6	-0.03	-0.6	-0.02	-0.5	-0.15	-3.5**	-0.03	0.6
7	-0.10	-2.2*	-0.19	-4.0**	-0.04	-0.8	-0.11	2.1*
8	-0.07	-1.6	-0.05	-1	-0.01	-0.2	0.13	2.5*
	R <sup>2</sup> = .486**		R <sup>2</sup> = .445**		R <sup>2</sup> = .457**		R <sup>2</sup> = .305	
	Adj. R <sup>2</sup> = .457**		Adj. R <sup>2</sup> = .412**		Adj. R <sup>2</sup> = .426**		Adj. R <sup>2</sup> = .265	
	ΔR <sup>2</sup> = .01		ΔR <sup>2</sup> = .028*		ΔR <sup>2</sup> = .03**		ΔR <sup>2</sup> = .033*	

N = 413

\*p &lt; .05

\*\*p &lt; .01

required interaction was a significant negative explanatory variable ( $p=.05$ ) for general satisfaction and a significant positive explanatory variable ( $p<.01$ ) for job stress.

Within the role characteristic set, role ambiguity was not significantly explanatory for general satisfaction, burnout, or stress. Similar to task significance, this may be related a low alpha due to range restriction and intercorrelation with other variables in the set (i.e.,  $r=.41$  with role conflict and  $.64$  with role overload,  $p<.01$  for both).

#### **Combined Effects of Job Characteristics**

To evaluate the combined effects of the variables in the model, the significant explanatory variables in the full equation for each outcome are presented in Table 16, and patterns in these results are summarized below.

Role overload explained the largest amount of variance in three of the four outcomes: general satisfaction, burnout, and job stress. These results indicate that role overload had a significant inverse relationship with general satisfaction in which every one unit increase in role overload was accompanied by a  $.25$  decrease in satisfaction. Role overload had significant positive relationships with burnout and stress which explained increases of  $.45$  and  $.42$ , respectively.

Skill variety and task identity were significantly explanatory for the three outcomes of general and growth

Table 16

**Significant Predictors in Full Regression  
Equations For Outcomes**

<u>Characteristics</u>	<u>Outcomes</u>							
	<u>General Satisfaction</u>		<u>Growth Satisfaction</u>		<u>Burnout</u>		<u>Job Stress</u>	
	<u>Beta</u>	<u>t-value</u>	<u>Beta</u>	<u>t-value</u>	<u>Beta</u>	<u>t-value</u>	<u>Beta</u>	<u>t-value</u>
Role Overload	-0.25	-5.0**	-	-	0.45	8.7**	0.42	7.2**
Skill Variety	0.15	3.2**	0.33	6.9**	-0.11	-2.4*	-	-
Task Identity	0.15	3.3**	0.09	1.4*	-0.09	-2.0*	-	-
Role Conflict	-0.20	-3.6**	-	-	0.19	3.4**	-	-
Feedback from Agents	0.18	3.9**	0.11	2.4*	-	-	-	-
Autonomy	0.11	2.5*	0.21	4.5**	-	-	-	-
Role Ambiguity	-	-	-0.15	-3.2**	-	-	-	-
Required Interaction	-	-	-	-	-	-	0.10	2.1*

N = 413

\* p &lt; .05

\*\*p &lt; .01

satisfaction and burnout. Increases in these variables were associated with higher levels of satisfaction and lower levels of burnout.

Variables that were significantly explanatory for two outcomes include role conflict, feedback from agents, and autonomy. Role conflict was negatively related to general satisfaction and positively related to burnout. Feedback from agents and autonomy were both positively related to general and growth satisfaction.

Role ambiguity and required interaction were each significant explanatory variables for one outcome. Role ambiguity had a significant negative relationship with growth satisfaction, and required interaction had a significant positive relationship with job stress. Overall, these results suggest that different well-being outcomes have different antecedent characteristics.

## CHAPTER 5. DISCUSSION, CONCLUSIONS, AND FURTHER RESEARCH

The discussion presented in this chapter employs the eight original research questions as an organizing framework; however, the sequence of questions has been changed to permit discussion of the most important findings first. These findings can be summarized as follows:

1. The new characteristics account for significant increases in explained variance in all four outcomes, and some of these increases are quite large (e.g., role variables account for a 28 percent increment in explained variance burnout, beyond that accounted for by the core and interpersonal job characteristics).

2. The new psychological state, experienced attachment to coworkers, explains significant additional variance in general ( $f^2 = .02$ ) and growth satisfaction ( $f^2 = .03$ ), over and above the original CPS.

3. There is a general lack of support for the dispositional difference moderators.

4. After controlling for individual differences, the NCM job explains significant increases in a combination of positive and negative characteristics. Some of these increments are substantial (e.g.,  $f^2$  for autonomy is .18).

Within each of the eight sections, key findings are summarized and interpreted within the context of prior research and opportunities for further study are identified. The chapter concludes with summary recommendations for

revisions to the theoretical model and further investigation.

**What are the important characteristics  
of professional human service jobs?**

The results of this study strongly support the importance of interpersonal aspects of human service professionals' jobs to work-place well-being. Sets of characteristics of interpersonal relationships and work roles explain statistically and practically significant amounts of additional variance, beyond that explained by characteristics of the work itself, in general and growth satisfaction, burnout, and stress. Moreover, among the eight significant explanatory variables in the full regression equations for outcomes, five are characteristics of interactions with others: role overload, role conflict, feedback from agents, role ambiguity, and required interaction.

Beyond statistical significance, these results have practical significance based on the effect sizes involved. As one example, the role characteristics add close to 30 percent additional explained variance in burnout, over and beyond the 15 percent explained by characteristics of the work and inter-personal relationships. Thus, role characteristics explain almost twice as much variance as the other characteristics. Moreover, this increment equates to an effect size ( $f^2 = .48$ ) that exceeds Cohen's (1977)

definition of large (.35). This means that in comparison to other relationships assessed with regression analysis, there is a very strong link between role characteristics and burnout among nurses in this study. At another level, it means that role stressors may be key antecedents of burnout among human service professionals, which has important implications for the design of these jobs.

Additional examples of substantial effects can be found in the six instances in which the actual  $f^2$  exceeded the predicted:

1. Hypothesis 1A1.1 predicted that the core dimensions explain variance in job satisfaction equal to an  $f^2$  of at least .20, and the actual  $f^2$  is .33.
2. Hypothesis 1A2.1 predicted that the interpersonal job characteristics explain additional variance in general job satisfaction equal to an  $f^2$  of at least .05, and the actual  $f^2$  is .11.
3. H2C1.1 predicted that feedback from work explains variance in knowledge of results equal to an  $f^2$  of at least .15, and the actual  $f^2$  is .51.
4. H2C2.1 predicted that feedback from agents explains variance in knowledge of results equal to an  $f^2$  of at least .05, and the actual  $f^2$  is .18.
5. H2C3.1 predicted that role ambiguity explains variance in knowledge of results equal to an  $f^2$  larger than the .01, and the actual  $f^2$  is .14.

6. H2D1.1 predicted that social integration explains variance in experienced attachment equal to an  $f^2$  .15, and the actual  $f^2$  is .57.

The direction of relationships between characteristics and outcomes is generally as predicted. Characteristics of work are positively related to satisfaction and negatively related to burnout and stress. Role characteristics, on the other hand, are negatively related to satisfaction outcomes and positively associated with burnout and stress. Characteristics of interpersonal relationships are positively related to satisfaction and negatively related to stress and burnout, with the exception of required interaction.

Although required interaction was hypothesized to be a positive job characteristic, it was found to be significantly related to increased job stress. Results suggest that for subjects in this study, the more interaction with others required to do the job, the higher the stress level. A possible explanation is that interdependence with other service professionals in responding to the needs of multiple clients may contribute to stressful feelings of being unable to meet the demands of the job. Specifically, when individuals have to work with others to get something done, they have less control over the process, but may still feel accountable for the outcomes. Additionally, the communication required to work

with others can be time-consuming, yet the hospital is often a very time-pressured environment. Required interaction may thus create feelings of stress.

It may also be that the nature or circumstances of the interaction contribute to job stress. For example, a staff nurse may have to tell a family member who is calling to check on a patient that s/he is not doing well, or a case manager may have to tell a sick patient that there is a problem with insurance coverage for a particular therapy. Interaction with others in the context of illness and death may well be a major source of stress for health professionals.

It may also be helpful to restate a central thesis of this study introduced in Ch. 1: the primary importance of interpersonal relationships in the work-place is not related to increasing human contact for employees in solitary jobs; rather, interpersonal job characteristics are important because individuals doing jobs that require interaction with others experience the quality of these relationships as critical antecedents of work-place well-being. This may explain why characteristics that describe the nature of working relationships, such as influence with others and feedback from agents, are more explanatory of positive work-place well-being outcomes than the level of required interaction itself.

Collaboration, influence, and social integration were

not among the significant explanatory variables in the full equations. However, as previously noted, psychometric problems with the collaboration and social integration scales may have adversely affected their performance.

Regarding collaboration specifically, NCMs responded negatively to items within the clarification subscale. For example, NCMs apparently do not regard asking physicians how involved they expect the NCM to be in health care decisions as collaborative behavior. These items were created in the early Eighties and may no longer be applicable, or actually have the opposite meaning, for nurses practicing in new jobs 15 years later. As a result of this response pattern, clarification was a significant, negative explanatory variable for general satisfaction among NCMs. This was not an issue for the SNs, and since they comprised the largest group, their responses dominated findings for the total sample. These conflicting patterns resulted in positive but nonsignificant effects for collaboration in the regression analyses, with the negative relationship between clarification and general satisfaction for NCMs weakening the overall effects of the collaboration variable.

Differences in response patterns between SNs and NCMs may also have created problems with the social integration scale. In this case, dropping item 3 regarding discussing personal problems with coworkers substantially increased internal consistency reliability for SNs but not for NCMs.

Although social integration was a positive, nonsignificant explanatory variable for general satisfaction in the total sample, it was positive and significant ( $b = .10, p < .04$ ) for SNs, but negative for NCMs and nonsignificant in this smaller sample ( $b = -.31, p < .09$ ). Again, it appears that differences between groups within the sample may have weakened the effects in total.

A possible explanation for the negative relationship between social integration and general satisfaction for NCMs may be that they are a smaller, more isolated group who particularly seek out coworkers to complain when they are dissatisfied. Because of the cross-sectional, correlational design of the study, the direction of causality cannot be determined.

Role overload appears to be the single most important characteristic, explaining the largest amount of variance in general satisfaction, burnout, and job stress. This is important in view of Dear et al.'s (1985) finding that SNs reported higher levels of role overload, as compared to role conflict and ambiguity.

While role overload explains large amounts of variance in three outcomes, others are only explanatory for one specific outcome, and different characteristics appear to be important to different outcomes. At the level of the full regression equations, for example, role ambiguity is significantly explanatory only for growth satisfaction.

Similarly, required interaction is only significant in the full equation for job stress.

Moving to a more detailed level of analysis, the relative contributions of each set of characteristics to explaining well-being outcomes present interesting patterns of similarities and differences. Among the three sets, characteristics of the work itself explain the largest amount of variance in both general ( $f^2 = .33$ ) and growth satisfaction ( $f^2 = .59$ ), which supports the JCM. In contrast, role characteristics explain the largest amount of variance in both burnout ( $f^2 = .49$ ) and job stress ( $f^2 = .26$ ). Although interpersonal relationship and role characteristics contribute substantial increments in explained variance for general satisfaction ( $f^2$ 's of .12 and .29, respectively), these two sets contribute less to the explanation of growth satisfaction ( $f^2$  of .05 for each).

Possible explanations for links between specific types of characteristics and outcomes are as follows:

1. Characteristics of work and satisfaction -- Given that both the characteristics and outcomes are positive (i.e., increases in each are considered desirable), it is not surprising that they would move together. More importantly, this link suggests that the nature of the work itself is of central importance in individuals' global assessments of how well a job meets their needs (general satisfaction). Regarding growth satisfaction, this finding

supports Locke's (1983: p. 1319) assertion that "Growth is made possible mainly by the nature of the work itself."

2. Role stressor characteristics and burnout, stress --

Again, both the characteristics and outcomes are of a negative nature. At a deeper level of analysis, however, it makes sense that role stressors would be strongly linked to burnout: (1) this syndrome is observed among individuals in the helping professions; (2) the key characteristic of their work is its interpersonal nature; and (3) role stressors are quintessential interpersonal constructs, involving social cues and expectations sent from one individual to another. Similarly, it may be the expectations communicated from others, more than the work itself, that leads individuals to feel stressed by their inability to get enough done.

3. Interpersonal job and role characteristics and general versus growth satisfaction -- Given that general satisfaction is a more global assessment, it seems logical that a more comprehensive set of variables would be linked to this outcome, whereas, again, satisfaction with opportunities for personal growth and development is rooted in the work itself.

There are also interesting differences within the sets. For example, within the task characteristics set, variety is the strongest explanatory variable for growth satisfaction ( $b=.32$ ,  $p<.01$ ), but is nonsignificant for general satisfaction ( $b=.10$ ). Conversely, identity is a significant

explanatory variable for general satisfaction ( $b=.21, p<.01$ ) and nonsignificant for growth satisfaction ( $b=.11$ ). A similar pattern holds for these characteristics in explaining burnout and job stress. Variety is the strongest explanatory variable for stress ( $b=.19, p<.01$ ), but nonsignificant for burnout ( $b=.03$ ), whereas identity is significantly explanatory for burnout ( $b= -.16, p<.01$ ), but not for stress ( $b= -.08$ ).

Again, the point is that these outcomes appear to have different antecedents. Due to a lack of previous research to guide the development of sets tested in this study, it was necessary to evaluate the same groups of characteristics for each outcome. Findings concerning the specificity of characteristic-outcome links can be used to refine these sets in future studies.

Returning to the full regression equations, it is difficult to compare results concerning the importance of specific individual characteristics with findings from previous research because most of that evidence is from correlation or single-predictor regression analyses; however, there are two studies that are appropriate for comparison. Glisson and Durick (1988) found that skill variety and role ambiguity were the two most explanatory variables for general job satisfaction among human service professionals. Results from this study support their findings for skill variety, but not for role ambiguity.

This study's results support Jackson et al.'s (1986) findings that role conflict and caseload, as a set, are significantly associated with emotional exhaustion. It is important to note, however, that Jackson and her colleagues used caseload size as an objective measure of workload, whereas this study used a perceptual measure of role overload. Although Jackson et al. found that role conflict accounted for all of the variance explained by the set, role overload is the most explanatory variable for burnout in this study. Perhaps perceived role overload is a more sensitive indicator than objective measures of workload, due to differences in individuals' ability to handle the work.

In summary, results support findings from prior research regarding important links between work-place well-being and characteristics of the work itself (Fried and Ferris, 1987; Hackman and Oldham, 1980), interpersonal relationships (Evans et al., 1976; Hackman and Lawler, 1971; Sims and Szilagyi, 1976), and work roles (Dear et al., 1985; Jackson and Schuler, 1985). In conjunction with this body of research, conclusions from the present study indicate that the JCM provides a less than comprehensive framework for the design of professional service jobs. Moreover, the findings of this study support its major premise: interpersonal job dimensions are important explanatory constructs for the work-place well-being of human service professionals; lending credence to recommendations that

characteristics of interpersonal relationships (Riordan and Griffeth, 1995) and work roles (Abdel-Halim, 1981; Tumulty, 1992) should be integrated in the theoretical framework for job design.

**In what ways do current job design theories seem inadequate to capture important characteristics and outcomes of professional human service jobs?**

As the dominant job design paradigm, the JCM does not include five of what this study suggests are eight of the most explanatory antecedents of work-place well-being for human service professionals: role overload, role conflict, feedback from agents, role ambiguity, and required interaction. The JCM also fails to address negative outcomes, such as burnout and stress.

As a result of these omissions, the following relationships are missed:

1. Links between role overload, conflict, and ambiguity and lower general ( $f^2 = .29$ ) and growth satisfaction ( $f^2 = .05$ );
2. Positive relationships between feedback from agents and general ( $r = .37$ ) and growth satisfaction ( $r = .29$ );
3. Link between required interaction and increased stress ( $r = .15$ );
4. Relationship between task identity and lower levels of burnout ( $r = -.24$ ).

Since theory provides an explanation that guides the

development of hypotheses, the omission of constructs from a theory means that relationships between the omissions and the constructs in the theory will not be studied. As a result, potential connections will not be identified because they are not assessed. Stated in simpler terms, you can't see something you don't look at.

In the case at hand, the interpersonal relationship and role characteristics, as well as the negative well-being outcomes, are not included in the JCM. As a result, a number of important relationships have been missed because they were not considered. For example, because the JCM does not map the job design domain as well as it might, researchers studying burnout may not give a lot of attention to job redesign as a possible antidote to emotional exhaustion. Yet findings from this study suggest that increasing human service professionals' opportunities to see a whole piece of work (e.g., follow the same case over time) is meaningfully related to decreased burnout. The chance to see work through to a point of closure and observe client outcomes is different than seeing streams of strangers in need of help. Although one school of thought might suggest that individuals in the helping professions would benefit from a break from the same cases, findings from this study suggest that seeing a whole case may lessen feelings of emotional exhaustion. This has important implications for the design of professional human service jobs.

In the example above, a potentially positive effect was missed. Equally, if not more importantly, negative effects may also be missed because they are not considered. To illustrate, suppose morale is low among a group of employees. An organizational psychologist uses the JDS to determine that these individuals are particularly dissatisfied with opportunities for challenge and growth and that their job is low in autonomy. In the process of redesigning the job to increase autonomy, a change may be introduced that also increase feelings of ambiguity. The organizational psychologist may readminister the JDS and find that job incumbents now feel more autonomous. But because role ambiguity is not assessed, the psychologist has no way of knowing that this job characteristic has also increased and may wonder why growth satisfaction has not improved as expected.

To summarize, results from this study suggest several specific inadequacies in current job design theory. Again, this strongly supports the need for extended, more comprehensive theory in this domain.

**Are there other critical psychological states  
in addition to those identified by the JCM?**

Findings from this study definitely support the existence of additional CPS. Specifically, experienced attachment to coworkers added a small, but meaningful amount of additional variance in general and growth satisfaction

beyond that explained by the original CPS. It also explained more variance in general satisfaction than responsibility, and more variance in growth satisfaction than either knowledge of results or responsibility.

As previously noted, the CPS have received much less research attention than other components of the JCM. The few studies that have been done focused almost exclusively on the original three CPS. Although additional psychological states have been proposed, including arousal level (Gardner and Cummings, 1988) and perceived impact (Thomas and Velthouse, 1990), my review of this literature identified only one other study that evaluated the mediating effects of a CPS not specified in the JCM. Fox and Feldman (1988) found support for arousal, operationalized as attention state, as a mediator of relationships between variety, identity, and autonomy and general job satisfaction, effort, and performance. Given that job design research has been almost completely restricted to the original three CPS for the last 20 years, the support for experienced attachment in this study represents an important finding.

#### Construct Validity of the Experienced Attachment Scale

As previously noted, internal consistency reliability for the experienced attachment to coworkers scale in this study was .86, as compared to the following correlations between this scale and the other three psychological states:

experienced meaningfulness .34( $p < .01$ ), experienced responsibility .22( $p < .01$ ), and knowledge of results .31( $p < .01$ ). The average inter-correlations between the original three CPS were as follows: experienced meaningfulness .33, experienced responsibility .25, and knowledge of results .31. Thus, the experienced attachment scale appears to have acceptable discriminant validity, and relationships between experienced attachment and the three original CPS are similar in size and pattern to relationships between each original CPS and the other two.

Further construct validity evidence is needed for this scale. It would be especially interesting to see if experienced attachment is negatively related to social alienation, as expected, and positively related to other constructs which may function as antecedents, such as group cohesion.

#### Recommendations for Further Study

There is a definite need for further study of experienced attachment, including but not limited to two suggested aspects. First, the relationship between experienced attachment to coworkers and social alienation should be investigated for theoretical and practical reasons, as well as construct validation of the scale. Perhaps experienced attachment serves as an antidote to social alienation, as meaningfulness does for personal alienation (Korman, 1992).

Alienation has damaging effects on employees and organizations. For individuals, alienation involves feelings of apathy, withdrawal, and isolation (Korman, 1992). In the work-place, alienation is associated with reduced effort, performance, and availability for work (Cummings and Manring, 1977). If experienced attachment to coworkers is negatively related to social alienation, this would raise interesting questions about the personal and organizational consequences of layoffs and frequent job changes, for both the employees who leave and those who stay.

The second suggested avenue for further investigation involves expanding the attachment construct to reflect a general attachment to others in the work setting, or developing a parallel scale for experienced attachment to clients. Although relationships with clients in the hospital are usually of a shorter duration, they may be intense and contribute to feelings of connectedness with others. In other types of settings, such as longterm care, relationships with clients could last as long or longer than some relationships with coworkers. Outside the health care field, the potential also exists for longterm relationships in other human service professions, such as social work and teaching.

The finding that the CPS are primarily partial mediators suggests that there may be additional

psychological states to be identified and studied. There is also a need for further evaluation of the contribution of experienced responsibility. As previously noted, its marginal results in this study may be a function of range restriction or the omission of internal motivation as an outcome. An alternative explanation may be that nurses already feel a high level of responsibility for serious consequences; therefore, added responsibility is not strongly linked to positive outcomes. Further research with human service professionals is needed to explore these questions.

**How are the characteristics of professional service jobs affected by changes incorporated in the NCM job?**

As compared to SNs, the NCM job appears to combine higher levels of both positive and negative characteristics. Specifically, NCMs report significantly higher levels of autonomy, job identity, collaboration with physicians, and feedback from agents; however, they also report significantly higher levels of required interaction and role conflict, ambiguity, and overload. As previously suggested, because these characteristics have opposite effects on outcomes and are significantly negatively related to each other, increasing them simultaneously would be expected to have mixed effects.

Work redesign changes the structure of people's jobs in an attempt to increase their perception of positive job

characteristics. Although the identification of links between specific tasks and perceived characteristics has not been a major research focus, there is some evidence to suggest that activities can be related to more than one characteristic (Rothstein and Tonges, 1997; Tonges, 1993b). Thus, changes designed to increase a particular positive characteristic may also increase a negative one. For example, consider the possibility that cross-training an employee to perform additional functions may increase perceptions of skill variety, but may also increase feelings of role overload. In this case, each characteristic would be expected to exert opposite effects on job satisfaction and burnout (i.e., variety is related positively to satisfaction and negatively to burnout, and overload has the opposite pattern of relationships). Ultimately, effects associated with increases in the positive may be offset by increases in the negative characteristic.

Three of the hypothesized differences between characteristics of NCM and SN jobs were not supported: higher levels of job feedback and influence with other disciplines, and lower social integration. A possible explanation for NCMs reporting higher levels than SNs of feedback from agents, but not feedback from work, is that information about issues such as length of stay and cost management may be received in reports from supervisors. Thus, although this information is about the results of

NCMs' work, it comes through agents, rather than directly from the work itself.

Regarding the findings for influence, the wording of this scale asks about the frequency with which other disciplines ask and act on "nurses'" opinions. While administering the survey to one group of NCMs, questions arose as to which nurses' opinions the items referred to, SNs' or NCMs'. It is possible that the general nature of this wording contributed to a lack of differentiation between jobs. Revising the items to refer to "my opinion" should clarify this issue.

Several hypotheses regarding the magnitude of differences between characteristics of the two jobs were not supported. Although statistically significant, the effect sizes ( $f^2$ ) for these characteristics were smaller than anticipated: identity (.06 vs .10), collaboration (.05 vs .15), role conflict (.03 vs .05), and role ambiguity (.04 vs .15). While not as large as expected, these differences are meaningful and in the predicted range of small to medium. The lack of prior research in this area made it difficult to predict the exact size of the differences with greater accuracy.

Three of the significant differences between NCM and SN job characteristics were not predicted: higher levels of required interaction, feedback from agents, and role overload. Again, there was limited prior research to guide

these hypotheses, and the findings of this study should prove helpful to other researchers in this regard.

Finally, site was an important covariate in these analyses. Differences within organizations appear to have important links to perceived job characteristics, over and above the effects of individual differences and job category. It is interesting to note that site was generally more important in explaining variance in perceived characteristics than the set of individual demographics. These findings are discussed in more detail later in the chapter.

In summary, results of this study suggest that the NCM job is associated with differences in a number of motivational characteristics found to have positive and negative consequences for work-place well-being. Further study of nursing and other types of case manager jobs is needed to continue to evaluate the characteristics and consequences associated with this job design. More broadly, we need to know more about the combined effects of job design changes. Such knowledge could be used to facilitate job enrichment and minimize the inadvertent introduction of negative characteristics.

**Do specific characteristics have the relationships predicted with specified psychological states?**

Results from both correlational and regression analyses supported predictions concerning specific characteristic-CPS

relationships with six exceptions worthy of note. Among the characteristic-CPS links specified by the JCM, there were two anomalies in which a characteristic correlated most highly with a non-specified CPS. For the new characteristics, there was an instance in which a characteristic correlated most highly with a non-specified CPS, as well as three cases in which characteristics did not add significant explained variance in the predicted CPS.

As previously noted, correlational analysis indicated that although both relationships were statistically significant, autonomy was most strongly related to experienced meaningfulness ( $r=.21$ ,  $p<.01$ ), not predicted responsibility ( $r=.13$ ,  $p<.05$ ). The autonomy-responsibility anomaly may be related to range restriction within the responsibility scale; however, autonomy's relationship with meaningfulness has been a consistent finding (Fried and Ferris, 1987; Hackman and Oldham, 1975; Johns et al., 1992). The cumulative evidence suggests that the JCM should be revised to reflect this additional characteristic-CPS link.

Although it may be simpler to create a model in which each characteristic is related to one specific CPS, empiric evidence does not uniformly support this approach. It appears that characteristic-CPS relationships may not be as neat as theory suggests, which adds another layer of complexity to job design: not only can changes in the structure of a job affect multiple characteristics, a

characteristic can affect more than one CPS.

Fortunately, in the case of autonomy, these effects are positive, with increases in autonomy linked to increases in both meaningfulness and responsibility. Perhaps this finding can provide some insight into the motivational mechanisms underlying empowerment.

The second correlational anomaly was that task identity was most strongly related to knowledge of results ( $r=.32$ ,  $p<.01$ ), not predicted meaningfulness ( $r=.21$ ,  $p<.01$ ). It is interesting to note that Hackman and Oldham (1975, 1976) also found that task identity was not as strongly related to meaningfulness as predicted; however, they reported a link with responsibility, whereas this study found a link to knowledge of results.

Other studies of nurses have found a strong link between numerous characteristics, including task identity, and knowledge of results (Rothstein and Tonges, 1997). Knowledge of results also appears to be particularly important in explaining nurses' outcomes (Holladay and Bullard, 1991; Tonges, 1993b). It is understandable that doing a whole piece of work would put one in a position to know the results. A possible explanation for the central role of knowledge of results in nurses' jobs may lie in the potential life and death consequences of their actions.

Turning to the new characteristics, role overload was most strongly correlated with knowledge of results ( $r= -.23$ ,

$p < .01$ ), not predicted meaningfulness ( $r = -.13$ ,  $p < .05$ ). To reiterate the rationale for my prediction, I reasoned that individuals experiencing role overload would find their work less meaningful because positive feelings related to successfully meeting some expectations could be offset by the frustration of not having enough time to accomplish all that is expected. While there is some support for this, findings suggest that when individuals feel they have too much to do, they may work harder but find it difficult to assess their effectiveness. Like autonomy, it appears that role overload may affect more than one CPS.

Results from hierarchical regression analysis tested specific predictions and did not afford an assessment of unpredicted relationships. These findings did not support the predicted links between required interaction-experienced meaningfulness, collaboration-experienced responsibility, and role conflict-experienced responsibility.

The zero-order correlation between required interaction and meaningfulness was significant, but small, and required interaction did not add significant explanation in this CPS beyond the core dimensions. In the context of this set of regression variables, it had a negative beta. Although the effect size is not large ( $r = .17$ ,  $p < .01$ ), correlation analysis indicates that required interaction has the strongest relationship with experienced attachment. Perhaps interdependence under positive conditions fosters feelings

of attachment to coworkers (i.e., positive conditions in which others cooperate in doing what you need to get your work done).

Collaboration was not significantly related to experienced responsibility or any other CPS. Again, it is possible that problems with NCM subjects and the clarification subscale contributed to these results. Further investigation of the use of the clarification subscale with nurses in advanced roles is needed to assess its validity with this population. In the meantime, it is recommended that the clarification and assertiveness subscales be used separately to permit more specific analysis and interpretation of findings.

Finally, role conflict was correlated in the predicted negative direction with experienced responsibility ( $r = -.08$ ), but the relationship was not statistically significant ( $p = .11$ ). It also failed to add significant explanation beyond the specified characteristics of work and interpersonal relationships ( $f^2 = .002$ ). Of the CPS in the model, knowledge of results is most strongly correlated with role conflict in this sample ( $r = -.41$ ,  $p < .01$ ). Again, knowledge of results has been found to be a particularly salient psychological state in other studies with nursing samples (Holladay and Bullard, 1991; Rothstein and Tonges, 1997; Tonges, 1993b). To explain the connection between role conflict and knowledge of results, one could make the

argument that being caught in the crossfire of conflicting demands and expectations can make it difficult to evaluate one's performance.

**Do specific psychological states play the predicted mediating role in characteristic-outcome relationships?**

Before discussing the meaning of these results, some introductory comments about mediation may be helpful. Mediation can be thought of as a series of relationships among at least three variables. In complete mediation, the first variable directly affects the second, which in turn directly affects the third, but the first variable only affects the third indirectly, through its relationship with the second variable in the sequence.

Experienced attachment completely mediates the relationships between social integration and the four outcomes. This means that social integration increases an individual's feelings of attachment to coworkers, which in turn affects each of the well-being outcomes, but social integration has no effect on the outcomes other than through its relationship with experienced attachment.

Knowledge of results also completely mediates the relationship between its specified set of characteristics (i.e., feedback from work, feedback from agents, and role ambiguity) and the job stress outcome. Knowledge of results partially mediates relationships between this set and the

other three outcomes. This means that the set of characteristics has a direct effect on knowledge of results and also has a direct effect on satisfaction and burnout. Thus, the total effect of the set of characteristics on these outcomes is a combination of its direct effect on them plus its indirect effect through increased knowledge of results.

Renn and Vandenberg (1995) and others (Feldman and Lynch, 1987) have suggested that job characteristics' direct effects may represent an individual's immediate affective reaction to the job, whereas indirect effects through the CPS may represent the individual's more thought out and longterm assessment. However, as these researchers pointed out, this interpretation cannot be tested with cross-sectional data (Renn and Vandenberg, 1995).

Answers to questions about the mediating roles of experienced meaningfulness and responsibility are not as straightforward. In descending order of magnitude, meaningfulness partially mediates relationships of its specified set of characteristics (i.e., variety, identity, significance, required interaction, and role overload) with growth satisfaction ( $f^2 = .30$ ), general satisfaction ( $f^2 = .25$ ), and burnout ( $f^2 = .11$ ). Thus, a meaningful portion of the relationship between the set of job characteristics and outcomes is due to the effect of the characteristics on experienced meaningfulness. Meaningfulness does not mediate

the relationship between these characteristics and stress, which means that the characteristic directly affect stress or may be mediated by a different CPS.

Although most predictions concerning the mediating role of experienced meaningfulness for this set of characteristics were partially supported, it should also be noted that individual characteristics within this set may be more fully mediated by other CPS. As previously indicated, the following unpredicted relationships appear to be stronger than those specified in the model: required interaction-experienced attachment, and task identity and role overload-knowledge of results.

The mediating role of experienced responsibility received the least support. This CPS partially mediated the relationship between the specified set of characteristics (i.e., autonomy, collaboration, influence, and role conflict) and growth satisfaction ( $f^2 = .03$ ); however, results did not reveal a meaningful mediating role for the relationships of these characteristics with general satisfaction, burnout, and stress. Again, although responsibility partially mediates the relationship between this set and growth satisfaction, the effect size is small, and the following CPS may more fully mediate relationships of these individual characteristics: autonomy and influence-experienced meaningfulness and role conflict-knowledge of results.

In summary, results support Renn and Vandenberg's (1995) conclusion that the CPS generally mediate characteristic-outcome relationships, indicating that these psychological states make a contribution to our understanding of individuals' reactions to their jobs and should be retained in the model. However, as other researchers have also found (Johns et al., 1992), characteristic-CPS relationships are not as precise as the model suggests. Again, key examples of the diffuse nature of characteristic-CPS relationships include the links between autonomy and both meaningfulness and responsibility and identity and both knowledge of results and meaningfulness.

The CPS are primarily partial mediators, indicating that characteristics have both direct and indirect effects on outcomes. The interpretation of these effects as immediate and affective (direct) versus longterm and cognitive (indirect) should be tested with longitudinal data and analysis of the characteristics' lagged effects, through the CPS, apart from their immediate effects on outcomes (Renn and Vandenberg, 1995).

Effects sizes suggest that experienced meaningfulness and knowledge of results are the strongest mediators of the characteristic-outcome relationships in this model. It is important to note, however, that other research has found that responsibility mediates relationships with internal

motivation (Johns et al, 1992), an outcome not assessed in this study. Again, the evidence from this and other studies (Johns et al., 1992) strongly suggests that different outcomes have different antecedents and mediators.

**Do dispositional differences other than Growth  
Need Strength moderate relationships between  
interpersonal job characteristics and the CPS?**

The hypothesized moderating effects of  $N_{inf}$  and  $N_{aff}$  received much less support than other aspects of the model tested in this study. Only two of the seven hypotheses in this set were supported: moderation of the relationship between required interaction and experienced meaningfulness by  $N_{inf}$  and moderation of the relationship between social integration and experienced attachment by  $N_{aff}$ . Additionally, the effect sizes involved were small ( $f^2$  for  $N_{inf} = .016$  and  $f^2$  for  $N_{aff} = .012$ ).

Earlier job characteristics researchers found support for the moderating effects of GNS using subgroup analysis. These analyses compared characteristic-outcome correlations for the third of the sample with the highest GNS scores to correlations for the third with the lowest GNS (Hackman and Lawler, 1971), or the highest to the lowest quartile (Hackman and Oldham, 1976). To determine if the observed lack of support for  $N_{inf}$  and  $N_{aff}$  was analysis-dependent, data for each hypothesized relationship were reanalyzed by splitting the sample at the median value for the

dispositional difference, computing correlations between the characteristic and CPS for the high and low groups, transforming the coefficients to Fisher's  $z$ , and evaluating the differences between the  $z$  scores for significance. These results failed to support any of the moderating hypotheses. Although a median split provides a more stringent test than contrasting the top and bottom third or quartile, subgroup analysis does not appear to yield more supportive results.

Other possible explanations for the lack of support for specific moderating hypotheses include the following:

1. Moderation of collaboration-experienced responsibility by  $N_{inf}$ : As previously noted, findings suggested that collaboration is not meaningfully related to experienced responsibility; however, problems with the collaboration scale may have contributed to this result.

2. Moderation of influence and experienced responsibility by  $N_{inf}$ : Influence appears to be most strongly related to experienced meaningfulness.

3. Moderation of required interaction and experienced meaningfulness by  $N_{aff}$ : There is a modest relationship between required interaction and experienced meaningfulness ( $r=.11$ ,  $p<.05$ ), but this characteristic also appears to be linked to experienced attachment ( $r=.17$ ,  $p<.01$ ). Again, however, neither relationship is very strong.

Based on these possibilities, avenues for further study

could be suggested, such as assessing the moderating effect of Ninf on the relationship between influence and meaningfulness or of Naff on the required interaction-attachment relationship. However, given the general lack of support in this area, the investment of additional research resources does not seem warranted.

In contrast, evaluation of the moderating effects of the third dispositional difference in the model, Nach, may still be justified. The lack of support for moderation of the feedback from agents-knowledge of results relationship by Ninf or Naff could mean that this is a strong characteristic-CPS link, regardless of dispositional differences. Alternatively, these results could be attributed to evaluation of the wrong moderators.

As previously noted, Nach has repeatedly been proposed as a moderator of the JCM, with some supportive empirical evidence from Orpen (1985) and others. Possible moderating effects of Nach on, for example, the relationships between feedback from agents and knowledge of results, and in turn, the well-being outcomes, should be investigated. Additionally, the effects of the fourth moderator included in the model, job competence, have not been directly tested (Johns et al., 1992; Kulick et al., 1987). Should moderation by Nach or job competence not be supported, however, this could signal the time to abandon the search for JCM moderators in favor of a simpler, non-contingency

theory (Korman, 1973).

**What are the combined effects of multiple characteristics on well-being outcomes?**

Three aspects of this question are addressed: (1) the relative effects of characteristics within sets; (2) the combined effects of characteristics that are inversely related; and (3) the importance of site as a contextual covariate.

**Relative Effects of Characteristics within Sets**

Discussion of the effects of characteristics within sets began in the first section, addressing characteristic-outcome relationships. The key point is that a characteristic may be important as evidenced by a significant zero-order correlation with an outcome, but not be among the most important in explaining variance, as evidenced by the lack of a significant beta in the full equation. As an example, the correlation between role conflict and job stress was .36 ( $p < .01$ ), but the beta for role conflict in the full equation was .07 ( $p = .27$ ). Additionally, influence had a significant beta upon entering with the characteristics of the interpersonal relationships set in step 2 of the regressions for general and growth satisfaction and burnout; however, influence did not explain significant amounts of variance in the full equations for any of these outcomes.

These results can be discussed in terms of their

statistical, theoretical, and practical meaning. From a statistical perspective, significant zero-order correlations may be partially attributable to shared variance with a third variable (i.e., A is related to B, and B with C, so A is significantly correlated with C).

If C is regressed on A and B, however, B may explain a statistically significant amount of the variance in C, while A does not. In this case, B's significance means that it explains a statistically reliable amount of variance in C within the context of that specific set of variables (i.e., in the presence of A), as opposed to anything else that has not been measured and included. Thus, in another set of variables that are more explanatory of C, variable B's contribution to explained variance may not be significant. In addition to variable specificity, additional issues in interpreting individual betas from a set include: (1) the regression weights are dependent on the particular sample on which they were calculated (Schmitt and Klimoski, 1991), and (2) when multiple tests are conducted using the same data, the actual level of significance is generally larger than that stated (Daniel and Terrell, 1989).

The explanation outlined above indicates that correlational findings have to be carefully interpreted to avoid being confused by spurious relationships, and individual regression weights also have to be interpreted with an understanding of their variable and sample

specificity. Discussion of the findings from this research is primarily focused on interpreting regression weights, rather than correlations, recognizing that this interpretation must be made within the context of these variables and subjects.

On a theoretical or model building level, these ideas suggest that relationships among constructs are relative, underscoring the importance of including the "right" (most explanatory) variables and carefully dissecting their interrelationships. Otherwise, the researcher may be studying and over-interpreting variables from one corner of a much bigger picture.

On a practical level, this would result in less understanding and ability to influence attitudes and behavior. In this study, however, the total amount of variance explained by the extended model (e.g., total adjusted  $R^2$  is .46 for general satisfaction and .43 for burnout) suggests that these job characteristics explain a large amount of variance in the work-place well-being in this sample.

#### Effects of Inversely Related Characteristics

There are two major groups of characteristics among the significant explanatory variables in the full equations for outcomes: those with positive relationships to desired outcomes and/or negative relationships with undesired outcomes (i.e., variety, identity, feedback from agents, and

autonomy), and those with the opposite pattern of relationships (i.e., role overload, conflict, and ambiguity).

Between these characteristics, significant negative correlations are as follows: (1) overload-identity,  $r = -.18$  ( $p < .01$ ), (2) conflict-identity,  $r = -.22$  ( $p < .01$ ), (3) ambiguity-identity,  $r = -.25$  ( $p < .01$ ), (4) conflict-feedback agents,  $r = -.20$  ( $p < .01$ ), (5) conflict-autonomy,  $r = -.17$  ( $p < .01$ ), (6) ambiguity-feedback agents,  $r = -.24$  ( $p < .01$ ), and (7) ambiguity-autonomy,  $r = -.17$  ( $p < .01$ ).

Given that these characteristics have opposite effects on outcomes and are significantly inversely related to each other, a job design change that increases characteristics from both groups simultaneously would be expected to create mixed effects on well-being outcomes. One possible scenario is that the positive effects of increasing one type of characteristics would be offset by the negative effects of increasing another. Examples of this phenomenon earlier in the chapter illustrated the potential effects of a change that increased both autonomy and ambiguity or variety and overload.

It is also possible that a combination of job design changes could increase several characteristics, some of which are related to increases in positive outcomes and others related to increases in negative outcomes. For example, a staff nurse with several years of experience may

begin to feel that she has the knowledge and judgement for more independent clinical decision-making than her present job allows, and she transfers into a case manager job. Findings from this study suggest that she will enjoy a higher level of autonomy as a NCM, but she will also have work more interdependently with others. While autonomy is a significant explanatory variable for increased general and growth satisfaction, required interaction is significantly explanatory for increased job stress. Thus, this job change could be expected to have mixed well-being consequences.

#### The Importance of "Site"

Results suggest that site is an important contextual covariate in work-place well-being. Unlike other variables discussed, however, "site" in itself is not a construct; rather, it is proxy for a number of organizational constructs. In this study, the sites were complex health care organizations, which could be analyzed in terms of dimensions such as structure, culture, and climate. In contrast to individual/dispositional differences and perceived characteristics, which are studied at an individual or micro level, the study of organizations occurs at a macro level of organizational behavior. In this research, site represents a combination of organizational constructs that comprise the context within which individuals do their jobs and may thereby influence perceived characteristics, CPS, and/or outcomes.

As an example, site 6 was a significant, negative explanatory variable in the full equation for burnout. This finding suggests that nurses at site 6 may be less burned-out than nurses from the other sites; however, it should also be noted that only 13 of 191, or 7 percent, of the surveys were returned from this site, as compared to a 28 percent response rate from the other sites. It is possible that these 13 respondents represent a more enthusiastic or positive element within the staff of this organization.

More importantly, site added a significant increase in explained variance beyond demographics and job category in regressions for a number of characteristics. Specifically, site was significant for autonomy, job identity, feedback from work, collaboration, role conflict, and feedback from agents. In each case, a Tukey pair-wise comparison was performed to identify significant differences between means for specific sites at the .05 level. Results of these comparisons for each characteristic are summarized and discussed below:

1. Autonomy -- Nurses from sites 8 and 3 reported higher levels of autonomy than their counterparts at site 5. Hospitals 8 and 3 are academic health centers serving as the primary teaching hospital for a medical school, whereas hospital 5 has teaching affiliations. This may suggest that something about working in primary teaching hospitals such as, for example, working with residents and medical students

on a more regular basis, is related to higher levels of perceived autonomy among nurses.

However, the other five sites that 8 and 3 were not different from included two other hospitals with teaching affiliations and one community hospital, as well as two other primary teaching facilities. Because site was included in this study as a proxy covariate, there is not enough information to develop a fuller explanation of these differences.

2. Job identity -- Nurses from sites 7 and 8 reported higher levels of job identity than nurses from sites 5 and 1. Hospitals 7 and 8 are public facilities (i.e., owned and run by federal and state governments), whereas hospitals 5 and 1 are private. Because care in public hospitals is often tied to an assistance (e.g., Medicaid) or benefits program (e.g., Veterans Administration), it is possible that nurses working in these hospitals see more patients repeatedly, which may be associated with feelings of seeing a whole piece of work. Again, however, 7 and 8 were not different from the three other private hospitals.

3. Job feedback -- Nurses at site 5 reported less job feedback than nurses from sites 6 and 7. Overall, nurses from hospital 5 reported lower levels of a number of different job characteristics. This hospital is located in a suburban, fairly conservative area, and it was in the process of merging with another organization at the time of

data collection. Perhaps the anxiety and disruption associated with this organizational change adversely affected reported job characteristics. Alternatively, this may generally be an unhappy place for nurses to work.

4. Collaboration -- Nurses from sites 7, 3, 8, 4, and 6 reported more collaboration with physicians than nurses from sites 1 and/or 2. Hospital 1 is a community hospital, and Hospital 2 has teaching affiliations. In contrast, hospitals 3, 8, 4, and 6 are primary teaching hospitals. It may be that a higher level of contact with residents and medical students is associated with higher levels of perceived collaboration among nurses.

5. Role conflict -- Although the Tukey comparison indicated no two means were significantly different, a one-way ANOVA for site was significant, and sites 4 and 3 were significant explanatory variables in the full equation. Both of these facilities are primary teaching hospitals, thought to be among the most complex of organizations, with many players and high potential for conflict between service, academic, and research objectives.

6. Feedback from agents -- Sites 2, 7, and 1 were higher than site 5. Again, there is a pattern of nurses from Hospital 5 reporting lower levels of positive job characteristics.

The influence of organizational characteristics and conditions on nurses' quality of work-life was the subject

of a major research program during the nursing shortages of the Eighties. The Magnet Hospitals study (McClure, Poulin, and Sovie, 1982) was designed to identify those hospitals throughout the U.S. that had reputations for being "good places to work" and "good places to practice nursing," and which had been particularly successful in attracting and retaining professional nurses. Based on a nomination and review process, 41 magnet hospitals were identified. Thus, there is precedence for the idea that some hospitals are much better places for nurses to work than others.

In-depth on-site study or comparison of magnet with nonmagnet hospitals was not done as part of the original research; however, findings from an intensive follow-up study of 16 of the magnet hospitals by Kramer and Schmalenberg (1988) suggest that these organizations foster and promote conditions that may increase perceptions of characteristics such as autonomy, social integration, and influence. Job characteristics may thus provide part of the explanation for the success of magnet hospitals as employers of professional nurses.

In concluding this section, two important points need to be emphasized:

1. To gain a better understanding of the influence of organizational factors, the situational component of the theoretical framework could be broadened to include organizational constructs (Griffin et al., 1981; Roberts and

Glick, 1981). For example, these constructs could include structure, and dimensions such as centralization of decision-making, formalization, and configuration; and culture, including values and managerial culture; and climate (e.g., warmth, peer relationships, rewards).

2. From an applied perspective, redesign in an organization in which conditions are conducive to creating higher levels of the positive characteristics (or lower levels of the negative) is likely to be more successful. Thus, organizational factors may create boundary conditions on the effectiveness of redesign interventions.

#### **Summary of Recommended Revisions to the Model for Further Investigation**

As indicated throughout this chapter, the findings from this research strongly support both the need for an extended model of service job design and the importance of interpersonal and work role characteristics in this model. Further research is needed to refine the model, and findings from this study suggest the following recommendations for revision:

1. Link autonomy and influence with other disciplines primarily to experienced meaningfulness;
2. Link task identity, role conflict and overload primarily to knowledge of results;
3. Link required interaction to experienced attachment;
4. Increase the specificity of characteristic-outcome

relationships (i.e., role ambiguity and growth satisfaction, required interaction and job stress); and

5. Expand the set of outcomes to include internal motivation.

It is also recommended that LISREL analysis be used to facilitate the identification of multiple relationships between a characteristic and the CPS (e.g., autonomy and experienced meaningfulness and responsibility). As previously suggested, the collaboration subscales should be used separately and the influence with other disciplines items should be revised to refer specifically to the respondent. Finally, potential moderating effects of Nach and job competence, rather than Ninf and Naff, should be evaluated.

## CHAPTER 6. LIMITATIONS OF THE STUDY

This research offers a number of contributions, as specifically outlined in Chapters 1 and 5; however, similar to most other studies, it also was conducted under conditions involving choices between imperfect alternatives and resource constraints. In this chapter, known limitations of the study are identified, and the most important and/or complex issues are discussed in further detail.

Limitations of this study include the following:

1. A cross-sectional design limits inference about causality and its direction.
2. The self-reported data may be subject to social desirability bias and percept-percept method variance.
3. Several potentially important constructs, such as compensation, supervision, and other organizational factors, were omitted, as was a deeper evaluation of the characteristics and effects of relationships with clients, including the effects of patients' illness and death on the well-being of health care professionals.
4. This is a particularly turbulent time in health care, as hospitals merge and downsize in response to managed care pressures. These environmental tensions may have influenced subjects' perceptions and attitudes.
5. Although it is recognized that additional corollary relationships exist between characteristics and other CPS,

the specification of job characteristic-CPS relationships was limited to one major link between each characteristic and a CPS in an effort to make the model clearer, more concise, and facilitate theory development.

6. Examination of moderator effects was limited to interpersonal job characteristic-CPS relationships. Other components of the model that were not evaluated include the links between job activities and perceived characteristics, proposed moderating effects of Nach and job competence, and relationships with performance outcomes.

7. Integration of the subjective SIP perspective was beyond the scope of this research.

8. The sample of sites was not random.

9. Use of a sample that included subjects from only one occupation created some problems with range restriction and may limit generalizability.

Of these, the most important may be the limitations on inference concerning causality and direction. Correlation and regression analysis of cross-sectional data does not provide proof that job characteristics affect work-place well-being. An alternative explanation for such findings could be that satisfied individuals tend to describe the characteristics of their jobs more positively. James and Tetrick (1986) tested alternative models of the relationships between job characteristics and attitudinal measures and reported that confirmatory analyses supported

the postcognitive model, in which satisfaction occurs after perceived job characteristics in causal order; however, these investigators also found evidence of a reciprocal relationship between these variables.

It appears likely that attitudes are affected by both job characteristics and social cues (Fried and Ferris, 1987; Griffin, 1983) and that perceived job characteristics and work-place well-being reciprocally affect each other over time. Further research is needed to achieve a better understanding of these complex interrelationships.

Regarding the method variance issue, a recent meta-analytic comparison of percept-percept correlations with multi-source correlations in different areas of organizational behavior research found that job design was the least tainted topic (Wagner and Crampton, 1990). Thus, method variance in job characteristics research may be less of a problem than previously thought.

The use of a non-random sample of sites may be a limitation because of the potential for undetected bias. Although non-random, the sample did include hospitals that differed on a number of dimensions, including ownership, size, teaching status, location, and the presence of a nursing union. This heterogeneity may have strengthened the study by increasing generalizability.

The findings can be generalized to professional nurses working in acute care hospitals. There may be

generalizability to other human service disciplines and case managers working in other fields, but research with more diverse samples is needed to assess this.

In conclusion, the limitations of this study are acknowledged, and efforts were made to minimize their effects, wherever possible. Priorities for further research include testing the remaining components of the model, especially links to performance, conducting quasi-experimental, longitudinal research to better assess the direction of relationships, and evaluating the model with subjects from other service professions, including case managers from different fields.

## **CHAPTER 7. IMPLICATIONS OF THIS RESEARCH**

A number of important theoretical and practical implications can be drawn from this study. This chapter presents implications for theory building and applications for individuals and organizations.

### **Implications for Theory Development and Research**

The findings and conclusions from this study make several important contributions to our theoretical knowledge of relationships among job characteristics, psychological states, and well-being outcomes. The basic conclusion from this study is that the interpersonal aspects of nurses', and possibly other human service professionals' jobs are important in explaining work-place well-being. At a theoretical level, the implication from this conclusion is that these dimensions should be incorporated in job characteristics theory.

Support for the effects of interpersonal job and work role characteristics on well-being suggests potentially fruitful new directions for job characteristics theory and research. This work should focus on job-connected interpersonal relationships as a link between technical aspects of tasks and the social context of the organization, potentially leading to a more comprehensive understanding of individuals' reactions to their jobs.

Another conclusion is that job characteristics can be negative, as well as positive, in their effects. Moreover,

job design changes can affect both types of characteristics, resulting in mixed consequences for work-place well-being. This implies a need to expand the set of outcomes addressed by job characteristics theory to include negative dimensions of well-being, such as burnout and stress.

Support for experienced attachment to coworkers as an additional psychological state indicates that this construct warrants further development and study. This CPS may mediate other job characteristics of a social nature, which have not yet been identified, and/or there may be other CPS that anchor and mediate this type of characteristic.

Coupled with the conclusion that GNS and contextual satisfactions should no longer be included as moderators in the JCM (Johns et al., 1992; Teigs et al., 1992), the general lack of support for moderating effects of Ninf and Naff in this study raises questions about the usefulness of moderators in job characteristics theory. Given that Nach and competence have not yet been systematically evaluated, it is premature to abandon the search for moderators, but the current trend may lead to a noncontingency model.

Finally, as outlined in Chapter 3, conclusions from this study imply a need for revision of specific relationships within the tested model. Specifically, autonomy and influence should be linked primarily to meaningfulness; task identity, role conflict and overload should be linked primarily to knowledge of results; and the

specificity of the links between role ambiguity-growth satisfaction and required interaction-stress should be reflected in the revision. Further research is needed to test and continue to refine this model.

Given the current and anticipated growth in professional/white collar service jobs and the growing popularity of the case management approach, results from this study also have useful implications at an applied level.

#### **Implications for Individuals**

Work-place well-being has important personal and organizational consequences. At a personal level, many individuals spend the majority of their waking hours at work. Work-related stress has been linked to depression (Motowidlo et al., 1986), and burnout is characterized by a combination of negative feelings, including emotional exhaustion and low personal accomplishment (Maslach and Jackson, 1981). At an organizational level, job dissatisfaction (Price and Mueller, 1981, 1986) and burnout (Maslach, 1982) are linked to turnover, and burnout and stress are negatively related to employee performance (Maslach, 1982; Motowidlo et al., 1986). Clearly, it is in the best interest of both individuals and organizations to know more about job characteristics and design and use this knowledge to enhance work-place well-being.

The conclusions concerning negative and positive

characteristics in the same job and mixed consequences of work redesign imply that individuals need to think about the possible cons, as well as the pros, associated with changes in jobs. The implication for individuals is to learn as much as possible about a job in its entirety when contemplating a change, or more specifically, to evaluate all the ways the new job differs from one's current position, not just how it is different in some particular positive way. Nurses specifically need to be aware of the potential for problems with role overload, conflict, and ambiguity in the nurse case manager job.

Given the conclusion about the importance of social job characteristics, individuals should try to assess the nature of coworker relationships when evaluating a job opportunity. Findings from this study suggest that feelings of attachment to coworkers are positively related to well-being. Thus, the consequences of disrupting working relationships should be taken into consideration when deciding to change jobs.

#### **Implications for Organizations**

Knowledge about the effects of individual factors, as well as the combined effects of sets of characteristics, can be used to guide the design and redesign of professional service jobs. The implication of the conclusion that specific outcomes are associated only, or primarily, with certain characteristics, is that organizations can focus on the development of particular characteristics based on the

desired goal.

For example, a hospital interested in improving general job satisfaction should make an effort to reduce role overload and conflict and increase feedback from agents, whereas another hospital that wants to increase growth satisfaction should focus on developing more skill variety and autonomy and minimizing role ambiguity.

Because role overload explains the most variance in three of the four well-being outcomes (general satisfaction, burnout, and stress), changes in this characteristic could benefit a hospital more than any one of the others. Again, given that many hospitals are currently downsizing through attrition and/or layoffs, and cross-training employees to assume additional responsibilities, the importance of role overload has significant implications for administrators. Specifically, the short term savings from these actions may be more than offset by the long term costs to employee well-being, and in turn, performance and turnover. The consequences of disrupting coworker relationships should also be considered in decisions to downsize and redistribute employees.

The implication for practice of the conclusions concerning negative and positive characteristics and mixed consequences of work redesign is that we need to learn more about the combined effects of job design changes. This knowledge could help us to enrich a job without introducing

unintended negative characteristics at the same time.

In view of the turmoil within health care (Lumsdon, 1995), this is especially valuable and timely information for nursing and other health care professions. Conclusions about NCM job characteristics imply a specific need for attention to role stressors in this job. In order to address these concerns, however, it is necessary to have more information about the specific aspects of the job that give rise to perceptions of role overload, conflict, and ambiguity.

Hackman and Oldham (1980) developed a set of principles for implementing work redesign that suggests general interventions (e.g., to increase skill variety, combine tasks). However, these implementing principles only address the core dimensions of the JCM, and it is not clear that they are research-based. Rizzo, House, and Lirtzman (1970) suggested that role stressors are intervening variables which mediate the effects of various organizational practices. Specifically, role conflict is associated with violations of the principles of unity of command and single accountability, and role ambiguity is related to conditions such as lack of a clear idea of job scope and responsibility, vague task definition, inconsistent direction from a supervisor, and lack of clarification regarding the function of each member in a group.

In the absence of research concerning specific links

between job activities and perceived characteristics, definitive recommendations for interventions to reduce perceived role stressors in the NCM job cannot be made. However, several suggestions are offered for evaluation.

There is a growing trend in hospitals to create NCM jobs by integrating utilization review/management, discharge planning, and sometimes, quality improvement and social service functions, into one position. Given the financial pressures hospitals are experiencing and the overlap among these jobs and case management, this approach is understandable; however, it appears to contribute to higher levels of role stressors.

For example, a NCM who is expected to inform patients that they need to go home because their insurance company is denying payment for further hospitalization (utilization review), while she is also trying to function as a patient advocate (clinical case management), may well experience feelings of role conflict. Similarly, adding the responsibility for responding to numerous calls from insurance companies for information (utilization review) to a day of seeing patients and families and working with other disciplines to expedite care (clinical case management) is likely to lead to feelings of role overload. The point is not that some additional functions cannot be integrated, but rather that tasks must be consistent with the purpose of the job and the resulting workload must be realistic.

While there may always be some ambiguity associated with a relatively new job, some possible interventions to clarify the NCM role include the development and distribution of a specific job description, a thorough orientation, and multiple opportunities for communication, including regular meetings with the manager and peer group. Again, however, specific sources of role ambiguity and the effectiveness of such interventions must be evaluated.

In conclusion, a revolution is occurring in the world of work, and a combination of factors -- including the shift to service employment and the emergence of case management job design -- have created the need for an expanded job characteristics model. As work and assignments continue to evolve, the more we know about job characteristics and their links to work-place well-being, the better prepared we will be to design jobs that enhance personal and work outcomes. It is hoped the results of this study will contribute to this goal.

## **APPENDIX A**

### **Comparison of Respondents and Nonrespondents**

The mean age for the nonrespondents was 39, and their mean years of experience was 14. Educationally, 33 percent had diplomas, 27 percent associate degrees, 27 percent baccalaureate, and 13 percent Master's or higher degrees. Clinically, 27 percent worked in med/surg, 27 percent in intensive care, 6 percent in pediatrics, 13 percent in obstetrics/nursery, and 27 percent in other inpatient areas. These subjects appear to be similar to the respondents, except that more of them have diplomas instead of baccalaureate degrees and a higher proportion work on obstetrical/nursery rather than med/surg units. Overall, the respondents appear to be reasonably representative of the total sample.

### **Comparison of Respondents with National Norms**

The age distribution for nurses working in hospitals nationally (Moses, 1990) and for respondents in this study was as follows:

	National	This Study
Less than 30	22%	13%
30-34	23%	14%
35-39	18%	19%
40-44	13%	20%
45-49	9%	15%
50-54	7%	10%

55-59	.4%	5%
60-64	2%	3%
≥ 65	.5%	.3%

This data indicates that respondents were slightly older than the national norms from data collected in 1988. Nationally, the largest percentage of nurses fell in the 30-39 years old category, whereas the largest percentage of respondents fell in the 35-44 age range. This may be partially explained by the trend toward higher age levels in nursing, attributed to nurses continuing to work through their childbearing years (Moses, 1990).

Educationally, the national distribution for nurses working in hospitals was 34 percent diploma, 32 percent associate degree, 30 percent baccalaureate, and 4.3 percent Master's degree (Moses, 1990). In comparison, respondents in this study have more education. A possible explanation may be that more of the sites in the study were urban, academic medical centers, and the staffs of this type of hospital tend to have more education in comparison to rural and community hospitals. In summary, respondents appear to be reasonably representative of the population of nursing working in hospitals nationally.

## **APPENDIX B**

### **Power Analysis to Plan Study**

The goal is to obtain a final sample that includes a total of 400 subjects: 65 NCMs, 65 CCs, and 270 SNs. Hypotheses will be tested with hierarchical regression analyses. Using ES estimates derived from the literature, Model Two error, an alpha of .05, and a sample of 400 subjects, the power to detect a significant effect on general satisfaction at each step is as follows:

- Step 1, the five original JCM core dimensions are entered: cumulative R-squared of .23 (Johns et al., 1992) and power approaches 1.0.

- Step 2, the five characteristics of interpersonal relationships are entered: increase in R-squared of .05 and power approaches is .99.

- Step 3, the three new work role characteristics are entered: increase in R-squared of .05 and power is .95

- Step 4, hospital site is entered as a potential covariate (Since the hospital at which each nurse is employed is a nominally scaled research factor with eight categories, a set of 8-1 or 7 variables is required to fully represent hospital group membership of the subjects: increase in R-squared of .02 (Price and Mueller, 1986) and power is .70.

Hypotheses concerning differences between the characteristics of NCMs' and SNs' jobs will also be

evaluated with regression analyses. Ethridge's (1987) findings for differences between NCMs and SNs in perceived autonomy were also analyzed using Borenstein and Cohen's (1988) statistical power computer program, and the standardized effect size was 1.04, which is quite large. Cohen's (1988) tables indicate that for a medium effect size (i.e.,  $d = .50$ , which corresponds to a biserial  $r = .304$ ), 65 subjects are needed in each group to achieve power of .80 ( $p = .05$ ). Using a medium ES ( $f^2 = .15$ ) for job category and a sample of 333 subjects (i.e., 270 SNs and 65 CMs), the power to detect a significant effect on perceived job characteristics at each step is as follows:

- Step 1, age, education, clinical area, and years of experience are entered as a set of covariates: cumulative R-squared of .05 (Agho, 1993) and power is .97.

- Step 2, job category is entered as the variable representing the vector contrasting NCM and SN jobs: increase in R-squared of .15 and power approaches 1.0.

- Step 3, hospital site is entered as 7 variables: increase in R-squared of .02 (Price and Mueller, 1986) and power is .52.

The power in step 3 is less than optimal due to the combination of a small ES and a large number of variables in this set; however, power is more than sufficient to test hypotheses concerning the effect of job category on perceived characteristics. Alternatively, all 11 covariate

variables could be entered in the first step of a two-step regression with power of .94 in Step 1 and power approaching 1.0 in Step 2. Thus, power appears to be sufficient to detect meaningful relationships among the variables of interest in this research if sample size goals can be reached.

**APPENDIX C****Job Diagnostic Survey Subscales****Skill Variety**Item:

1. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

Responses:

Seven point scale from Very little to Very much. Scoring is from 1 to 7.

Items:

2. The job requires me to use a number of complex or high-level skills.
3. The job is quite simple and repetitive.(R)

Responses:

Seven point scale from Very inaccurate to Very accurate. Scoring is from 1 to 7.

**Task Identity**Item:

1. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic

machines?

Responses:

Seven point scale from "My job is only a tiny part of the overall piece of work" to "My job involves doing the whole piece of work, from start to finish." Scoring is from 1 to 7.

Items:

2. The job provides me the chance to completely finish the pieces of work I begin.
3. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.(R)

Responses:

Same as for Skill Variety #2 and #3.

**Task Significance**

Item:

1. In general how significant or important is your job?  
That is, are the results of your work likely to significantly affect the lives or well-being of other people?

Responses:

Seven point scale from Not very significant to Highly significant. Scoring is from 1 to 7.

Items:

2. This job is one where a lot of other people can be affected by how well the work gets done.

3. The job itself is not very significant or important in the broader scheme of things.(R)

Responses:

Same as for Skill Variety #2 and #3.

**Autonomy**

Item:

1. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on you own how to go about doing the work?

Responses:

Seven point scale from Very little to Very much. Scoring is from 1 to 7.

Items:

2. The job gives me considerable opportunity for independence and freedom in how I do the work.
3. The job denies me any chance to use my personal initiative or judgement in carrying out the work.(R)

**Feedback from the work itself**

Item:

1. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing-aside from any "feedback" co-workers or supervisors may provide?

**Responses:**

Similar to Autonomy #1.

**Items:**

2. Just doing the work required by the job provides many chances for me to figure out how well I am doing.
3. The job itself provides very few clues about whether or not I am performing well.(R)

**Responses:**

Same as Skill Variety #2 and #3.

**Experienced meaningfulness of the work****Items:**

1. The work I do on this job is very meaningful to me.
2. Most of the things I have to do seem useless or trivial.(R)
3. Most people on this job find the work very meaningful.
4. Most people on this job feel the work is useless or trivial.(R)

**Responses:**

Seven point scale from Disagree strongly to Agree strongly.

Scoring is from 1 to 7.

**Experienced responsibility for the work****Items:**

1. I feel a very high degree of personal responsibility for the work I do on this job.

2. I feel I should personally take the credit or blame for the results of my work on this job.
3. Whether or not this job gets done right is clearly my responsibility.
4. Most people on this job feel a great deal of personal responsibility for the work they do.
5. Most people on this job feel that whether or not the job gets done right is clearly their own responsibility.

Responses:

Same as for Experienced meaningfulness.

**Knowledge of results**

Items:

1. I usually know whether or not my work is satisfactory on this job.
2. I often have trouble figuring out whether I'm doing well or poorly on this job.(R)
3. Most people on this job have a pretty good idea of how well they are performing their work.
4. Most people on this job have trouble figuring out whether they are doing a good or a bad job.(R)

Responses:

Same as for Experienced meaningfulness.

**General satisfaction****Items:**

1. Generally speaking, I am very satisfied with this job.
2. I am generally satisfied with the kind of work I do in this job.
3. I frequently think of quitting this job.(R)
4. Most people on this job are very satisfied with the job.
5. People on this job often think of quitting.(R)

**Responses:**

Seven point scale from Disagree strongly to Agree strongly.  
Scoring is from 1 to 7.

**Growth satisfaction****Items:**

1. The amount of personal growth and development I get in doing my job.
2. The feeling of worthwhile accomplishment I get from doing my job.
3. The amount of independent thought and action I can exercise in my job.
4. The amount of challenge in my job.

**Responses:**

Seven point scale from Extremely dissatisfied to Extremely satisfied. Scoring is from 1 to 7.

**APPENDIX D****Nurse Collaborative Practice Scale****Items:**

1. I ask MDs about their expectations regarding the degree of my involvement in health care decisions.
2. I negotiate with the MD to establish our responsibilities for discussing different kinds of information with patients.
3. I clarify the scope of my professional expertise when it is greater than the MD thinks it is.
4. I discuss with MDs the degree to which I want to be involved in planning aspects of patient care.
5. I suggest to MDs patient approaches that I think would be useful.
6. I discuss with MDs areas of practice that reside more within the realm of medicine than nursing.
7. I tell MDs when, in my judgement, their orders seem inappropriate.
8. I tell MDs of any difficulties I foresee in the patient's ability to deal with treatment options and their consequences.
9. I inform MDs about areas of practice that are unique to nursing.

**Responses:**

Six point scale from Never to Always. Scoring from 1 to 6.

**APPENDIX E****Influence with Other Disciplines Scale****Items:**

1. Do the other disciplines ask nurses' opinions about patient care problems?
2. Are the other disciplines inclined to take nurses' opinions and suggestions into account?

**Responses:**

Eleven point scale from Rarely to Always. Scoring from 0 to 10.

**Item:**

3. Are the other disciplines friendly and easy to approach if there are problems?

**Responses:**

Eleven point scale from Not at all Approachable to Very Approachable. Scoring from 0 to 10.

**APPENDIX F****Social Integration Scale****Item:**

1. What would you say about the atmosphere in your immediate work group in terms of friendliness? (Your immediate work group consists of the people you see most often while at work.)

**Responses:**

Five point scale from Very friendly to Not friendly at all.  
Scoring is from 5 to 1.

**Items:**

2. To what extent do people in your immediate work group help you find ways to do a better job?
3. To what extent do you discuss personal problems with individuals in your immediate work group?

**Responses:**

Five point scale from Very often to Never. Scoring is from 5 to 1.

**APPENDIX G****Role Conflict and Ambiguity Questionnaire****Role Conflict****Items:**

1. I have to do things that should be done differently.
2. I receive an assignment without the manpower to complete it.
3. I have to buck a rule or policy in order to carry out an assignment.
4. I work with two or more groups who operate quite differently.
5. I receive incompatible requests from two or more people.
6. I do things that are apt to be accepted by one person and not accepted by others.
7. I receive an assignment without adequate resources and materials to execute it.

**Responses:**

Seven point scale from Very false to Very true. Scoring is from 1 to 7.

**Role Ambiguity****Items:**

1. I feel certain about how much authority I have.
2. Clear, planned goals and objectives exist for my job.
3. I know what my responsibilities are.
4. I know exactly what is expected of me.
5. Explanation is clear of what has to be done.

**Responses:**

Seven point scales from Very false to Very true. Scoring is from 7 to 1.

**APPENDIX H****Role Overload Scale of the Michigan  
Organizational Assessment Questionnaire****Items:**

1. I have too much work to do to do everything well.
2. I never seem to have enough time to get everything done.
3. The amount of work I am asked to do is fair. (R)

**Responses:**

Seven point scale from Strongly disagree to Strongly agree.

Scoring is from 1 to 7.

**APPENDIX I****Experienced Attachment to Coworkers Scale**Items:

1. It is difficult to find real friends where I work. (R)
2. There are dependable ties between me and the people I work with.
3. The people that I work with care about each other.
4. Most people at work are just out for themselves. (R)
5. My coworkers and I support each other.
6. Most of the people I work with don't hesitate to go out of their way to help a coworker in trouble.
7. I can be comfortable working with nearly all kinds of staff.
8. No one at work really understands how I feel. (R)
9. When I need help, I have friends at work I can turn to.

Responses:

Seven point scale from Strongly disagree to Strongly agree.

Scoring is from 1 to 7.

**APPENDIX J****Perceived Stress Scale****Items:**

1. I feel a great deal of stress because of my job.
2. Very few stressful things happen to me at work. (R)
3. My job is extremely stressful.
4. I almost never feel stressed at work. (R)

**Responses:**

Five point scale from Disagree strongly to Agree strongly.

Scoring is from 1 to 7.

**APPENDIX K****Emotional Exhaustion Scale of the Maslach Burnout Inventory****Items:**

1. I feel emotionally drained from my work.
2. I feel used up at the end of the workday.
3. I feel fatigued when I get up in the morning and have to face another day on the job.
4. Working with people all day is really a strain for me.
5. I feel burned out from my work.
6. I feel frustrated by my job.
7. I feel I'm working too hard on my job.
8. Working with people directly puts too much stress on me.
9. I feel like I'm at the end of my rope.

**Responses:**

Seven point scale from Very mild, barely noticeable to Very strong, major. Scoring is from 1 to 7.

**APPENDIX L**  
**Need for Affiliation Scale**  
**Personality Research Form**

Items:

1. I choose hobbies that I can share with other people. (T)
2. I am quite independent of the people I know. (F)
3. I go out of my way to meet people. (T)
4. I seldom put out extra effort to make friends. (F)
5. People consider me to be quite friendly. (T)
6. I don't really have fun at large parties. (F)
7. I truly enjoy myself at social functions. (T)
8. I would not be very good at a job which required me to meet people all day long. (F)
9. I spend a lot of time visiting friends. (T)
10. When I see someone I know from a distance, I don't go out of my way to say hello. (F)

11. My friendships are many. (T)
  
12. Sometimes I have to make a real effort to be sociable.  
(F)
  
13. I trust my friends completely. (T)
  
14. I don't spend much of my time talking with people I see  
every day. (F)
  
15. I try to be in the company of friends as much as  
possible. (T)
  
16. Often I would rather be alone than with a group of  
friends. (F)

**APPENDIX M**  
**Need for Influence Scale from**  
**The Index of Personal Reactions**

Items:

1. I would like to be able to influence the actions of others.
2. I like to feel that others are affected by what I have to say.
3. I really enjoy it when others agree with me or see things my way.
4. I feel drawn to a career that would allow me to have an important impact on other people or groups.
5. It pleases me when people follow through with my suggestions.
6. I am really glad when my ideas and opinions have an impact on other people.
7. I prefer to work in those situations where I have some degree of influence over the decisions that are made.
8. I would like feeling that I have had an impact on people's lives.
9. I would like it if my ideas or actions make a difference in this world, even if I am not given credit for it.

Responses:

Five point scale from Not at all characteristic of me to Very much characteristic of me. Scoring is from 0 to 4.

**Research Packet**

Baruch College  
The City University of New York  
17 Lexington Avenue  
New York, New York 10010

August, 1996

Dear Nursing Colleague:

I am writing to ask you to participate in a research project concerning the motivational characteristics of nurses' jobs. I am very interested in studying relationships between characteristics of different nursing jobs and nurses' work-place well-being. **The purpose and potential long-term benefit of this study is the design of more satisfying jobs for nurses.**

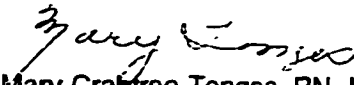
I would greatly appreciate it if you would contribute some of your valuable time and knowledge to achieving this goal. Participation involves completing the enclosed consent, demographic data form, and The Job Characteristics Survey, which should take less than 30 minutes. **Because you are one of a limited number of Nurse Case Managers, your response is especially critical. Please take the time to support nursing research and contribute to our knowledge about emerging jobs in nursing like yours.**

You will note that other than the consent, each form has a code number on it. The purpose of the code is not to identify you by name, but rather to make it possible for me to follow-up on late and/or missing responses. Please be assured that your information will be confidential. The hospital has agreed to let me do the study and provided me with the names of eligible nurses; however, I want to be sure that you know that this project is independent and separate from the hospital, and your responses will remain confidential.

Please complete the materials according to the directions and return them to me in the stamped, self-addressed envelope provided within 2 weeks. If you choose not to participate in the study, please fill out and mail just the brief demographic form. It is important for me as a researcher to have this basic information about those who do not participate, and I would really appreciate your help.

Thank you very much for your time and anticipated assistance with this work. If you have any questions, please feel free to contact me at (201) 783-1680.

Sincerely,

  
Mary Crabtree Tonges, RN, MSN  
Doctoral Candidate  
Baruch College

**CONSENT**

**Principal Investigator:** Mary Tonges, RN, MSN

**Project:** An Extension of The Job Characteristics  
Model for a Service Economy

I am being asked to participate in a research project concerning the motivational characteristics of nurses' jobs and their relationship to work-place well-being.

I have been informed, with respect to my participation, of the procedures involved and the expected benefits from the program. I understand that I will complete a demographic data form and The Job Characteristics Survey and mail them to the investigator. I also understand that my data will be kept confidential within the limits of the law and that I will not be identified by name in any written record. There are no anticipated risks for participation in the study.

I am fully aware of the nature and extent of my participation in this project. I am over 18 years of age, and I agree, with full knowledge, to participate in said project. I may obtain information about the results of the study when they become available.

I also understand that there is no cost to me for participating and that I may withdraw my participation in this project at any time without the loss of benefits to which I am otherwise entitled.

Date: \_\_\_\_\_

Participant's Name: \_\_\_\_\_ Signature: \_\_\_\_\_  
(print)

Participant's Address: \_\_\_\_\_

Code number \_\_\_\_\_

### Demographic Data Form

1. Job title: \_\_\_\_\_
2. Main job responsibility (please check one):
  - \_\_\_\_\_ Provide nursing care to an assigned group of patients on my unit during a shift.
  - \_\_\_\_\_ Coordinate care for a case load of patients during their hospitalization on my unit.
  - \_\_\_\_\_ Manage the care of a case load of patients across different units or settings.
  - \_\_\_\_\_ Other. Please specify: \_\_\_\_\_
3. Age: \_\_\_\_\_ years
4. Highest nursing degree earned (please check one):
  - \_\_\_\_\_ Diploma
  - \_\_\_\_\_ Associate Degree
  - \_\_\_\_\_ Baccalaureate Degree
  - \_\_\_\_\_ Master's or higher degree
5. Experience as an RN: \_\_\_\_\_ years
6. Employed in current job: \_\_\_\_\_ years
7. Clinical area in which I currently work (check one):
  - \_\_\_\_\_ Medical/Surgical
  - \_\_\_\_\_ Critical Care
  - \_\_\_\_\_ Pediatrics
  - \_\_\_\_\_ Obstetrics/Nursery
  - \_\_\_\_\_ Other (please specify) \_\_\_\_\_
8. Work with clinical paths in my practice:
 

YES \_\_\_\_\_ NO \_\_\_\_\_

Thank you very much. Please continue to the survey.

### JOB CHARACTERISTICS SURVEY

On the following pages you will find several different kinds of questions about you and your job. Specific instructions are given at the start of each section. Please read them carefully.

The first part of the questionnaire asks you to describe your job, as **objectively** as you can. Please do **not** use this part of the questionnaire to show how much you like or dislike your job. Instead, try to make your descriptions as accurate and as objective as you possibly can.

You are to **circle** the number which is the most accurate description of your job.

1. To what extent does your job require you to work closely with other people. (either "clients," or people in related jobs in your own organization)?

1-----2-----3-----4-----5-----6-----7

Very little; dealing with other people is not at all necessary in doing the job.

Moderately; some dealing with others is necessary.

Very much; dealing with other people is an absolutely essential and crucial part of doing the job.

2. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

1-----2-----3-----4-----5-----6-----7

Very little; the job gives me almost no personal say about how and when the work is done.

Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.

Very much; the job gives me almost complete responsibility for deciding how and when the work is done.

3. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?

1-----2-----3-----4-----5-----6-----7

My job is only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final product or service.

My job is a moderate-sized "chunk" of the overall piece of work; my own contribution can be seen in the final outcome.

My job involves doing the whole piece of work, from start to finish; the results of my activities are easily seen in the final product or service.

4. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1-----2-----3-----4-----5-----6-----7

Very little; the job requires me to do the same routine things over and over again.

Moderate variety.

Very much; the job requires me to do many different things, using a number of different skills and talents.

5. In general how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1-----2-----3-----4-----5-----6-----7

Not very significant; the outcomes of my work are not likely to have important effects on other people.

Moderately significant.

Highly significant; the outcomes of my work can affect other people in very important ways.

6. To what extent do managers or co-workers let you know how well you are doing on your job?

1-----2-----3-----4-----5-----6-----7

Very little; people almost never let me know how well I am doing.

Moderately; sometimes people may give me "feedback;" other times they may not.

Very much; managers or co-workers provide me with almost constant "feedback" about how well I am doing.

7. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing - aside from any "feedback" co-workers or supervisors may provide?

1-----2-----3-----4-----5-----6-----7

Very little; the job itself is set up so I could work forever without finding out how well I am doing.

Moderately; sometimes doing the job provides "feedback" to me; sometimes it does not.

Very much; the job is set up so that I get almost constant "feedback" as I work about how well I am doing.

Listed below are a number of statements which could be used to describe a job.

You are to indicate whether each statement is an accurate or an inaccurate description of your job.

Once again, please try to be as objective as you can in deciding how accurately each statement describes your job - regardless of whether you like or dislike your job.

Write a number in the blank beside each statement, based on the following scale:

How accurate is the statement in describing your job?

- | 1                  | 2                    | 3   | 4         | 5                    | 6                  | 7                |  |
|--------------------|----------------------|---|-----------|----------------------|--------------------|------------------|--|
| Very<br>Inaccurate | Mostly<br>Inaccurate | Slightly<br>Inaccurate  | Uncertain | Slightly<br>Accurate | Mostly<br>Accurate | Very<br>Accurate |  |
| _____              | 1.                   | The job requires me to use a number of complex or high-level skills.  |           |                      |                    |                  |  |
| _____              | 2.                   | The job requires a lot of cooperative work with other people.   |           |                      |                    |                  |  |
| _____              | 3.                   | The job is arranged so that I do <u>not</u> have the chance to do an entire piece of work from beginning to end.            |           |                      |                    |                  |  |
| _____              | 4.                   | Just doing the work required by the job provides many chances for me to figure out how well I am doing.                     |           |                      |                    |                  |  |
| _____              | 5.                   | The job is quite simple and repetitive.   |           |                      |                    |                  |  |
| _____              | 6.                   | The job can be done adequately by a person working alone - without talking or checking with other people.                   |           |                      |                    |                  |  |
| _____              | 7.                   | The supervisors and co-workers on this job almost <u>never</u> give me any "feedback" about how well I am doing in my work. |           |                      |                    |                  |  |
| _____              | 8.                   | This job is one where a lot of other people can be affected by how well the work gets done.                                 |           |                      |                    |                  |  |
| _____              | 9.                   | The job denies me any chance to use my personal initiative or judgement in carrying out the work.                           |           |                      |                    |                  |  |
| _____              | 10.                  | Supervisors often let me know how well they think I am performing the job.  |           |                      |                    |                  |  |
| _____              | 11.                  | The job provides me the chance to completely finish the pieces of work I begin.   |           |                      |                    |                  |  |
| _____              | 12.                  | The job itself provides very few clues about whether or not I am performing well.   |           |                      |                    |                  |  |
| _____              | 13.                  | The job gives considerable opportunity for independence and freedom in how I do the work.                                   |           |                      |                    |                  |  |
| _____              | 14.                  | The job itself is not very significant or important in the broader scheme of things.  |           |                      |                    |                  |  |

Statements in this section describe interactions with physicians. Please write the number in the blank that most accurately describes how often you use the behavior in your practice:

- |       |   |   |   |   |        |
|-------|---|---|---|---|--------|
| 1     | 2 | 3 | 4 | 5 | 6      |
| Never |   |   |   |   | Always |
- \_\_\_\_\_ 1. I ask MDs about their expectations regarding the degree of my involvement in health care decisions.
- \_\_\_\_\_ 2. I negotiate with the MD to establish our responsibilities for discussing different kinds of information with patients.
- \_\_\_\_\_ 3. I clarify the scope of my professional expertise when it is greater than the MD thinks it is.
- \_\_\_\_\_ 4. I discuss with MDs the degree to which I want to be involved in planning aspects of patient care.
- \_\_\_\_\_ 5. I suggest to MDs patient approaches that I think would be useful.
- \_\_\_\_\_ 6. I discuss with MDs areas of practice that reside more within the realm of medicine than nursing.
- \_\_\_\_\_ 7. I tell MDs when, in my judgement, their orders seem inappropriate.
- \_\_\_\_\_ 8. I tell MDs of any difficulties I foresee in the patient's ability to deal with treatment options and their consequences.
- \_\_\_\_\_ 9. I inform MDs about areas of practice that are unique to nursing.

These questions concern how decisions about patient care are made in your hospital between nurses and health professionals other than physicians. Please write the number in the blank that best describes your situation, based on the following scale:

- |        |   |   |   |   |   |   |   |   |   |        |
|--------|---|---|---|---|---|---|---|---|---|--------|
| 0      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10     |
| Rarely |   |   |   |   |   |   |   |   |   | Always |
- \_\_\_\_\_ 1. Do the other disciplines ask nurses' opinions about patient care problems?
- \_\_\_\_\_ 2. Are the other disciplines inclined to take nurses' opinions and suggestions into account?
- |                         |   |   |   |   |   |   |   |   |   |                   |
|-------------------------|---|---|---|---|---|---|---|---|---|-------------------|
| 0                       | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                |
| Not at all approachable |   |   |   |   |   |   |   |   |   | Very Approachable |
- \_\_\_\_\_ 3. Are the other disciplines friendly and easy to approach if there are problems?

Please circle the number which is the most accurate description of your relationships with co-workers in your immediate area.

1. What would you say about the atmosphere in your immediate work group in terms of friendliness? (Your immediate work group consists of the people you see most often while at work.)

1-----2-----3-----4-----5  
 Not Friendly At All Very Friendly

2. To what extent do people in your immediate work group help you find ways to do a better job?

1-----2-----3-----4-----5  
 Never Very Often

3. To what extent do you discuss personal problems with individuals in your immediate workgroup?

1-----2-----3-----4-----5  
 Never Very Often

This part of the questionnaire asks you to describe some general aspects of your role. Please write the number in the blank that indicates the degree to which the condition exists for you.

1-----2-----3-----4-----5-----6-----7  
 Very False Very True

- \_\_\_ 1. I have to do things that should be done differently.  
 \_\_\_ 2. I feel certain about how much authority I have.  
 \_\_\_ 3. I have too much work to do to do everything well.  
 \_\_\_ 4. I have to buck a rule or policy in order to carry out an assignment.  
 \_\_\_ 5. Clear, planned goals and objectives exist for my job.  
 \_\_\_ 6. I never seem to have enough time to get everything done.  
 \_\_\_ 7. I work with two or more groups who operate quite differently.  
 \_\_\_ 8. I know what my responsibilities are.  
 \_\_\_ 9. I receive incompatible requests from two or more people.  
 \_\_\_ 10. I know exactly what is expected of me.  
 \_\_\_ 11. I receive an assignment without the manpower to complete it.  
 \_\_\_ 12. Explanation is clear of what is to be done.  
 \_\_\_ 13. The amount of work I am asked to do is fair.  
 \_\_\_ 14. I do things that are apt to be accepted by one person and not accepted by others.  
 \_\_\_ 15. I receive an assignment without adequate resources and materials to execute it.

Now please indicate how you personally feel about your job. Each of the statements below is something that a person might say about his or her job. You are to indicate your own, personal feelings about your job by marking how much you agree with each of the statements.

Write the number in the blank for each statement, based on this scale:

How much do you agree with the statement?

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

- \_\_\_ 1. Generally speaking, I am very satisfied with this job.
- \_\_\_ 2. Most of the things I have to do on this job seem useless or trivial.
- \_\_\_ 3. I usually know whether or not my work is satisfactory on this job.
- \_\_\_ 4. The work I do on this job is very meaningful to me.
- \_\_\_ 5. I feel a very high degree of personal responsibility for the work I do on this job.
- \_\_\_ 6. I frequently think of quitting this job.
- \_\_\_ 7. I often have trouble figuring out whether I'm doing well or poorly on this job.
- \_\_\_ 8. I feel I should personally take the credit or blame for the results of my work on this job.
- \_\_\_ 9. I am generally satisfied with the kind of work I do in this job.
- \_\_\_ 10. Whether or not this job gets done right is clearly my responsibility.

For this section, please continue to think about yourself and your own personal feelings. Write the number in the blank that most accurately indicates how you feel about your job using the same scale as above.

- \_\_\_ 1. It is difficult to find real friends where I work.
- \_\_\_ 2. There are dependable ties between me and the people I work with.
- \_\_\_ 3. The people that I work with care about each other.
- \_\_\_ 4. Most people at work are just out for themselves.
- \_\_\_ 5. My co-workers and I support each other.
- \_\_\_ 6. Most of the people I work with don't hesitate to go out of their way to help a co-worker in trouble.
- \_\_\_ 7. I can be comfortable working with nearly all kinds of staff.
- \_\_\_ 8. No one at work really understands how I feel.
- \_\_\_ 9. When I need help, I have friends at work I can turn to.

Now please think of the other people in your organization who hold the same job you do. If no one has exactly the same job as you, think of the job which is most similar to yours.

Please think about how accurately each of the statements describes the feelings of those people about the job.

It is quite all right if your answers here are different from when you described your own reactions to the job. Often different people feel quite differently about the same job.

Once again, write the number in the blank for each statement, based on this scale:

How much do you agree with the statement?

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

- \_\_\_ 1. Most people on this job are very satisfied with the job.
- \_\_\_ 2. Most people on this job feel that the work is useless or trivial.
- \_\_\_ 3. Most people on this job feel a great deal of personal responsibility for the work they do.
- \_\_\_ 4. Most people on this job have a pretty good idea of how well they are performing their work.
- \_\_\_ 5. Most people on this job find the work very meaningful.
- \_\_\_ 6. Most people on this job feel that whether or not the job gets done right is clearly their own responsibility.
- \_\_\_ 7. People on this job often think of quitting.
- \_\_\_ 8. Most people on this job have trouble figuring out whether they are doing a good or a bad job.

Please indicate how satisfied you are with each aspect of your job listed below. Once again, write the appropriate number in the blank beside each statement.

1	2	3	4	5	6	7
Extremely Dissatisfied						Extremely Satisfied

- \_\_\_ 1. The amount of personal growth and development I get in doing my job.
- \_\_\_ 2. The feeling of worthwhile accomplishment I get from doing my job.
- \_\_\_ 3. The amount of independent thought and action I can exercise in my job.
- \_\_\_ 4. The amount of challenge in my job.

For this section, please think about yourself and your own personal feelings again. Please put the number in the blank that most accurately reflects the degree to which you experience the feeling or attitude described.

- | 1                                 | 2  | 3   | 4 | 5 | 6 | 7                     |  |
|-----------------------------------|----|---|---|---|---|-----------------------|--|
| Very Mild<br>Barely<br>Noticeable |    |   |   |   |   | Very Strong,<br>Major |  |
| _____                             | 1. | I feel emotionally drained from my work.  |   |   |   |                       |  |
| _____                             | 2. | I feel used up at the end of the workday.   |   |   |   |                       |  |
| _____                             | 3. | I feel fatigued when I get up in the morning and have to face another day on the job. |   |   |   |                       |  |
| _____                             | 4. | Working with people all day is really a strain for me.                                |   |   |   |                       |  |
| _____                             | 5. | I feel burned out from my work.   |   |   |   |                       |  |
| _____                             | 6. | I feel frustrated by my job.  |   |   |   |                       |  |
| _____                             | 7. | I feel I'm working too hard on my job.  |   |   |   |                       |  |
| _____                             | 8. | Working with people directly puts too much stress on me.                              |   |   |   |                       |  |
| _____                             | 9. | I feel like I'm at the end of my rope.  |   |   |   |                       |  |

Please continue to think about yourself and your feelings. Indicate your own personal feelings about your job by marking how much you agree with each of the statements.

- | 1                    | 2  | 3  | 4 | 5                 |  |
|----------------------|----|--|---|-------------------|--|
| Strongly<br>Disagree |    |  |   | Strongly<br>Agree |  |
| _____                | 1. | I feel a great deal of stress because of my job. |   |                   |  |
| _____                | 2. | Very few stressful things happen to me at work.  |   |                   |  |
| _____                | 3. | My job is extremely stressful.                   |   |                   |  |
| _____                | 4. | I almost never feel stressed at work.            |   |                   |  |

This is the last section of the survey. On this page you will find a series of statements which one might use to describe oneself. Read each statement in the first set and decide if it applies to you. If you agree with a statement or decide that it does describe you, answer TRUE (T). If you disagree with a statement or feel that it is not descriptive of you, answer FALSE (F). Answer every statement, even if you are not completely sure of your answer.

- \_\_\_ 1. I choose hobbies that I can share with other people.
- \_\_\_ 2. I am quite independent of the people I know.
- \_\_\_ 3. I go out of my way to meet people.
- \_\_\_ 4. I seldom put out extra effort to make friends.
- \_\_\_ 5. People consider me to be quite friendly.
- \_\_\_ 6. I don't really have fun at large parties.
- \_\_\_ 7. I truly enjoy myself at social functions.
- \_\_\_ 8. I would not be very good at a job which required me to meet people all day long.
- \_\_\_ 9. I spend a lot of time visiting friends.
- \_\_\_ 10. When I see someone I know from a distance, I don't go out of my way to say hello.
- \_\_\_ 11. My friendships are many.
- \_\_\_ 12. Sometimes I have to make a real effort to be sociable.
- \_\_\_ 13. I trust my friends completely.
- \_\_\_ 14. I don't spend much of my time talking with people I see every day.
- \_\_\_ 15. I try to be in the company of friends as much as possible.
- \_\_\_ 16. Often I would rather be alone than with a group of friends.

For this last set, please choose the number that describes you most accurately using the following scale:

- | 0                                     | 1 | 2 | 3 | 4   |
|---------------------------------------|---|---|---|---|
| Not At All<br>Characteristic<br>Of Me |   |   |   | Very Much<br>Characteristic<br>Of Me  |
| ___ 1.                                |   |   |   | I would like to be able to influence the actions of others.   |
| ___ 2.                                |   |   |   | I like to feel that others are affected by what I have to say.  |
| ___ 3.                                |   |   |   | I really enjoy it when others agree with me or see things my way.   |
| ___ 4.                                |   |   |   | I feel drawn to a career that would allow me to have an important impact on other people or groups.           |
| ___ 5.                                |   |   |   | It pleases me when people follow through with my suggestions.   |
| ___ 6.                                |   |   |   | I am really glad when my ideas and opinions have an impact on other people.                                   |
| ___ 7.                                |   |   |   | I prefer to work in those situations where I have some degree of influence over the decisions that are made.  |
| ___ 8.                                |   |   |   | I would like feeling that I have had an impact on people's lives.   |
| ___ 9.                                |   |   |   | I would like it if my ideas or actions make a difference in this world, even if I am not given credit for it. |

**Thank you very much for your time and assistance.**

**APPENDIX O**

**Human Subjects Committee Approval**

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Grants Office

Baruch College  
The City University of New York  
17 Lexington Avenue, Box 514  
New York, New York 10010  
212 367-1126

**MEMORANDUM**

**To: Professor Hannah Rothstein, Department of Management**  
**✓Ms. Mary Tonges, Department of Management**

**From: Betty Farbman** *B. Farbman*

**Subject: Human Subjects Committee Approval: An Extension of the Job Characteristics Model for a Service Economy**

**Date: May 7, 1996**

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On May 2, 1996 David O'Brien, Chair of the Baruch College Human Subjects Committee, approved the protocol related to the above named project.

Please call this office if you have any questions.

cc: David O'Brien, Chair, Human Subjects Committee

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**AUTOBIOGRAPHICAL STATEMENT**

Mary Crabtree Tonges is an author, lecturer, and consultant in health care management, with particular expertise in work redesign and care delivery models. She has previously held nurse executive positions at Robert Wood Johnson University Hospital, Clara Maass Medical Center, and Northwestern Memorial Hospital.

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