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AN ABSTRACT OF THE THESIS of Connie L. True for Master of Science in Psychology presented November 6, 1987.

Title: The Influence of Work Station Architecture on Work Perceptions and Work Behavior.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:

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A field study was conducted to find whether open office architecture is related to employees' perceptions of their jobs and their work groups, and to their behavior in and around their work stations. Fifty-two employees in the administrative division of a large manufacturing operation volunteered to participate by answering a questionnaire and allowing their work stations to be analyzed for levels of visual access and visual exposure, the two independent

variables. Access and exposure, at first theorized to be independent and interacting functions, were found to be too highly correlated in this open office setting to test as originally planned. The design was modified by combining the measures of access and exposure, thereby creating a new independent variable called visual information. Under the modified design, results supported a prediction that less visual information would correlate with more positive responses to survey items about employees' job characteristics, and a prediction that less visual information would correlate with higher rates of work station occupancy. But there was no support for a prediction that more visual information would correlate with more positive responses to survey items about employees' work groups, nor was there support for a prediction that more visual information would correlate with fewer numbers of personal items displayed at employees' work stations. Suggestions were made for more appropriate tests of the original design in order to determine whether visual access and visual exposure operate as independent and interacting dynamics.

THE INFLUENCE OF WORK STATION ARCHITECTURE
ON WORK PERCEPTIONS AND WORK BEHAVIOR

by

CONNIE L. TRUE

A thesis submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE
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1988

TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

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THE INFLUENCE OF WORK STATION ARCHITECTURE ON WORK PERCEPTIONS AND WORK BEHAVIOR

INTRODUCTION

Work stations constructed in open office settings have been described alternately as aids to the growth of work group cohesion or as hinderances to effective job performance. This field study investigates how work station architecture affects employees' perceptions of their jobs and their work groups, and whether behavioral evidence of those effects can be found.

Since the appearance of open offices, social scientists and architects have searched for ways to measure the effectiveness of open offices and the workers who use them. Architects have traditionally analyzed the space itself while social scientists have analyzed human responses to the space. Efforts to make connections spatial design and human responses are most evident in the fields of environmental psychology and behavioral architecture.

Much of the research in environmental psychology regarding open offices relies on Altman's (1975) theory of privacy regulation, the most widely accepted and comprehensive theoretical statement on environment and human behavior. Altman himself has shown little interest in

the particular issues associated with office architecture, but his theory has served as the basis for many studies concerned with workers' responses to open office architecture, their job performance, and teamwork and social cohesion in work groups occupying open offices.

Archea (1977), an advocate of behavioral architecture, contends that Altman's theory of privacy regulation is flawed because his analysis of the concept of environment is too general. He believes that Altman (as well as most other environmental psychologists) has failed to consider the basic structure of the environment. He also argues that social and physical environments should be explicitly separated when examining the process of privacy regulation.

Before describing this study's hypothesized outcomes, an explanation of Altman's and Archea's theoretical approaches to privacy regulation is given.

Altman's Theory of Privacy Regulation

Altman (1975) proposes that all interpersonal exchanges are managed by privacy regulating mechanisms. Privacy regulating mechanisms are broadly drawn, sometimes overlapping categories of behavior. Specifically, Altman sets forth four categories of behavioral mechanisms. Verbal and paraverbal communications are spoken words and the tone of voice used to say them. Nonverbal communications are visible cues signaled by body movements and stances. Environmentally oriented actions use objects in the physical

environment to manage social relationships, by opening a door, for example, or arranging furniture in a room. Cultural practices are customs, rules, and norms (such as etiquette, dress, or the distances within which interpersonal exchanges occur) which are used to control personal accessibility. Individuals use these mechanisms alone or in combination to achieve a desired level of social interaction (Altman 1975, Altman 1977, Altman & Chemers 1980).

Altman (1975) calls privacy regulation a fundamental human process. Its importance lies in its function--the regulation of self-other boundaries.

[P]rivacy mechanisms define the limits and boundaries of the self. When the permeability of those boundaries is under the control of a person, a sense of individuality develops. But it is not the inclusion or exclusion of others that is vital to self definition; it is the ability to regulate contact when desired (Altman 1975, p. 50).

Individuals purposefully seek out or avoid interaction; they respond to others' invitations, failures, or refusals to interact. The goal is to have continuous control over interaction, though not necessarily a given degree of interaction.

Altman dismisses the notion that privacy is solely a physical or environmental process. Some societies and cultures have little need to resort to the use of environmental objects such as walls, doors, or screens to regulate social contact. Societies that lack

environmentally based mechanisms ensure the individual's ability to control self-other boundaries by compensating with alternative verbal and nonverbal practices.

Rather than discuss privacy as a physical accomplishment, Altman emphasizes the interrelationship of behavioral and psychological techniques. For example, the subjective assessment of privacy is a psychological technique that might be used in conjunction with one of the behavioral techniques already described above. Discrepancies between desired levels and achieved levels of privacy prompt further behavioral and psychological adjustments (Altman 1976).

Archea's Model of Spatial Behavior

Archea (1977) has no argument with Altman's description of the privacy dynamic as a self-other boundary regulation process. Nor does he question that any number of behavioral mechanisms or psychological processes may be employed on behalf of privacy regulation. Archea criticizes, however, Altman's treatment of environment. In Archea's view, Altman has described and analyzed how the environment can be used, but he has not described and analyzed what the environment is.

Archea charges that Altman confounds the individual with his surroundings. Archea objects to Altman's conceptualization of clothing, personal space, and territories as successively more remote layers of the

environment surrounding an individual. Such a notion means that those layers closest to the individual function as extensions of the self. They are consequently always present with the self, just as one's vocabulary and knowledge are always present with the self. He protests that by this logic there is no way to determine when a surrounding environmental layer becomes sufficiently remote to be distinguished from the individual. Environment and individual are confounded.

Archea further argues that, although much research implicitly assumes the physical environment, too often it fails to make an explicit differentiation between social and physical surroundings. When this happens environment falls into consideration primarily as social and psychological phenomena, composed of "symbolic qualities superimposed upon it by its inhabitants" (Archea 1977, p. 117).

Archea proposes an alternative explanation of how behavior relates to the environment in which it occurs. He identifies the chief means of privacy regulation as "selective conspicuousness, a process whereby individuals deliberately position themselves in an area to attain a desired level of personal interaction. This involves, among other things, the simultaneous orchestration of visual access and visual exposure.

Visual access is "the ability [of individuals] to

monitor [their] immediate spatial surroundings by sight" (Archea 1977, p. 123). Visual access sets up a proactive cognitive circumstance in which individuals purposefully process information gathered from their surroundings. The degree of access assists or hinders in monitoring a setting and the behavior of those who share it.

Visual exposure is "the probability that [individuals'] behavior can be monitored by sight from [their] immediate physical surroundings" (Archea 1977, p. 124). Visual exposure is not the opposite of access. Instead, exposure "establishes the degree of accountability" for behavior (Archea 1977, p. 124). Individuals may voluntarily enter exposed situations in order to purposefully convey information about themselves, or they may involuntarily endure exposed situations.

Archea describes visual access and visual exposure as independent functions. A person's visual access depends first on where walls, doors, or windows in a physical setting are placed, and second on where that individual is located within the setting and the direction he or she faces (orientation).

A person's visual exposure also depends on the placement of items in the physical setting. But the exposed person's orientation makes little difference here; instead others' locations and orientations within the setting determine the degree of the individual's exposure.

Consider the location and orientation of an individual in an enclosed setting. Someone who stands in the corner of a large room facing its center can see everything going on in the room, provided no physical barriers block his or her vision. This individual has high visual access. By turning and facing the wall the individual now has low visual access. The potential for this individual's exposure, however, is the same regardless of whether he or she faces the center of the room or faces the wall. In other words, exposure depends on the locations and orientations of others in the setting, provided again there are no physical barriers.

Of course, most settings do contain physical items which block or alter visual information. Archea's fundamental point is that the physical environment is independent of individuals and endures beyond behaviors which take place within it. Physical aspects of an environment must be conceptualized and measured separately from psychological or social aspects of an environment, even though they have common elements.

For example, the location of an employee's office may reveal a great deal about a company's hierarchy. Since hierarchy reflects social structure, location may be properly considered as part of the company's social environment. But office location also has a direct bearing on what occupants hear, see, and respond to. The setting in

which an office is located contains architectural elements that channel and obstruct the flow of information. The placement of windows, dividers, and walls in an area facilitates, hinders, concentrates, segregates, or diffuses information. Information flow in turn has a profound impact on the behavior of the people in that setting.

Because the physical environment regulates the distribution of information, spatial design influences the probability that occupants will choose one privacy regulating mechanism over another. With information received by way of visual access, individuals make judgments and form perceptions. With information sent by way of visual exposure, they inform others of whether and how interpersonal exchanges may proceed. Interaction of these two kinds of visual information result in appropriate interpersonal behavior.

Archea explains his model of spatial behavior:

The framework begins with the notion that each person is the center of a dynamic field of information about surrounding events and activities, to which his or her behavior is a continuous adjustment. As one's ability to monitor surrounding activities increases, so does one's awareness of emerging behavioral opportunities. Similarly, as the likelihood of being monitored by others increases, so does the person's accountability for his or her own behavior. Thus, the regulation of interpersonal behavior is influenced by the possibilities of monitoring the behavior of others (access) and by the possibilities that others can monitor one's own behavior (exposure).

Even though all sensory modalities are involved in this process, information conveyed visually is the most effective in governing one's participation in

an ongoing situation. In physically bounded settings, the potentials for seeing others (visual access) and for being seen by them (visual exposure) will vary as functions of the positions of walls and other visual barriers. In this manner, the spatial organization of the surroundings mediates the range of behavioral options and obligations which are apparent to those within the setting. The crux of this thesis is the notion that the arrangement of the physical environment regulates the distribution of the information upon which interpersonal behavior depends (author's emphasis) (Archea 1977, p. 121).¹

This investigation relates the two major components of Archea's model of spatial behavior, visual access and visual exposure, to the perceptions and behaviors of employees who work in open office settings. The design seeks first to determine whether individuals' perceptions of their jobs and their work groups vary in relation to the degree of visual access they have while at their work stations. It seeks also to determine whether individuals' behavior varies in relation to the degree of visual exposure they have while at their work stations.

The Effects of Visual Access

A two-part survey is employed to measure the effects of visual access. One part uses Hackman and Oldham's

¹Archea proposes a series of components in this model, the most important of which are visual access and exposure to an enclosed area. Other components operating in the information field include (a) gradients of access and exposure (abrupt changes in the amount of visual information in the form of doors or corners of walls), (b) information terminals such as telephone and computers which distribute certain classes of information by bypassing usual physical constraints, and (c) the human ability to encode and decode information.

(1975) Job Diagnostic Survey to assess perceptions of job characteristics. The second part uses a scale taken from Taylor & Bower's (1973) Survey of Organizations to assess perceptions of the work group. The predictions regarding visual access are (1) that low visual access will correlate with more favorable perceptions of the job and (2) that high visual access will correlate with more favorable perceptions of the work group.

The hypothesis for low visual access predicts that employees who occupy work stations with less visual access to the general work area will be less able to monitor their work group. With fewer identified opportunities to interact, more time will be available to focus on tasks associated with the job (Goodrich 1982, Sundstrom, Burt & Kamp 1980). Therefore, employees with low visual access to the work area are expected to give more favorable responses to survey items in the Job Diagnostic Survey which measure perceptions of job characteristics.

The hypothesis for high visual access predicts that employees who occupy work stations with more visual access to the general work area will engage in more interpersonal communication with their co-workers. Greater visual access offers increased chances to identify opportunities for appropriate personal encounters and communication (Archea 1977, see also Brooks & Kaplan 1972, Hedge 1982). Therefore, employees with higher visual access are expected

to respond favorably to survey items from the Survey of Organizations which measure perceptions of effectiveness and cohesion of the work group.

The Effects of Visual Exposure

To measure the effects of visual exposure, evidence is sought that individuals are using privacy regulating mechanisms. Using a method based on work done by Hansen and Altman (1976), personal items at individual work stations are counted. In addition, an estimate is obtained of the amount of time individuals spend at their work stations. These types of activities--personalization and occupancy--are territorial behaviors, and are considered a subsystem of the privacy regulation process (Altman 1975). The predictions regarding visual exposure are (1) that low visual exposure will correlate with more personalization and occupancy and (2) that high visual exposure will correlate with less personalization and occupancy.

The hypothesis for low visual exposure predicts that employees who occupy work stations with less visual exposure will spend more time at their work stations and exhibit more personal items at their work stations, reflecting the greater ease with which they have been able to establish control and defend against unwanted intrusions and monitoring.

In contrast, the hypothesis for high visual exposure predicts that employees who occupy highly exposed work

stations will spend less time at their work stations and exhibit fewer personal items at their work stations. Occupants of work stations with high visual exposure cannot prevent other work group members from monitoring their behavior and will be less successful at limiting entrance into their spaces. Their lack of control will be reflected in a lack of personal markers. To reduce exposure, they will leave their work stations more often.

Work stations may fall into one of four possible combinations of high or low visual access and high or low visual exposure. Figure 1 summarizes the hypothesized outcomes for employees who occupy each kind of station.

		<u>ACCESS</u>	
		<u>Low</u>	<u>High</u>
<u>EXPOSURE</u>	<u>Low</u>	Favorable Job Perceptions High Desk Occupancy More Personal Objects	Favorable Group Perceptions High Desk Occupancy More Personal Objects
		-----	-----
	<u>High</u>	Favorable Job Perceptions Low Desk Occupancy Fewer Personal Objects	Favorable Group Perceptions Low Desk Occupancy Fewer Personal Objects

Figure 1. Hypothesized outcomes for groups occupying work stations of each possible combination of visual access and visual exposure.

LITERATURE REVIEW

Much of the evidence regarding office design or visual information in an enclosed area is embedded in a wide ranging body of research which addresses both social and physical aspects of the environment. The first section of the literature review briefly outlines some fundamental concepts of spatial design and social interaction. The second section describes recent studies of open office design, privacy in the office, and teamwork among work group members.

Two measures of perception are used in this study to seek evidence of the effects of visual access. The section reviewing employee perceptions of job and work group focuses on theories underlying job design and organizational climate, concepts concerned with explaining the formation of employee perceptions.

The concluding section covers research on human territorial behavior as it relates to the measures used in this study to determine whether evidence of the effects of visual exposure exists.

Spatial Design and Social Interaction

The idea that spatial design (the physical arrangement

of furniture, walls, or windows) influences social interaction is not new. Sommer's (cited in Ciolek 1983) concept of sociopetal space describes an environment which suggests familiarity, focused interaction, and heightened mutual attentiveness among its users. A living room or office conference room may be a sociopetal space. In contrast, sociofugal space suggests anonymity, avoidance, and unfocused interaction. Waiting lounges in airports and bus stations are normally sociofugal. Newman's (cited in Ciolek 1983) concept of defensible space in urban residential areas is in a similar vein.

Research on spatial design and behavior grew out of Festinger's (cited in McGrath 1984) studies of the notion that proximity increases chances for interpersonal encounters and therefore communication. Communication in turn facilitates group cohesion. These studies deal with residential environments and public settings, however, and therefore discuss different architectural issues than the design of office work stations (Brown 1982, Lawrence 1984, Steele 1981, Yancy 1971).

Open Office Design and Privacy in the Office

Architects distinguish among four basic styles of office layout: (a) conventional, (b) pool, (c) landscape, and (d) open (Louis Harris & Associates, Inc. 1979). Because components from any of the styles may be combined, and distinctions are sometimes difficult to describe

without pictures, the latter three styles are commonly grouped in the literature of environmental psychology simply as open office plans. The strong attractions of open office planning are reduced heating, ventilation and air conditioning costs, and flexibility in spatial arrangements. In addition, open offices allow a greater number of workers access to natural light and a view of the outdoors, qualities that workers have indicated are important to them (Wineman 1982a).

The effectiveness of open office planning is in controversy. Some findings suggest communication among workers is enhanced by open offices and that the ability to monitor ongoing group activity provides a sense of social cohesiveness and continuity across various jobs (Brooks & Kaplan 1972, Hedge 1982, see review in Oldham & Brass 1979). These findings have been challenged by other research which indicates that workers are less happy in open offices than in conventional offices (Marans & Spreckelmeyer 1982, Oldham & Rotchford 1983, Sundstrom, Herbert & Brown 1982). Workers themselves rate the "ability to concentrate without noise and distractions" highest on their list of requirements for getting their jobs done (Louis Harris & Associates, Inc. 1979). Apparently, the open office falls short in this respect (Wineman 1982b).

When Goodrich (1982) interviewed office workers, they described in specifics the kind of offices that would best

serve their needs. First, physical boundaries should be defined to provide clear distinctions between the work space itself and the area outside the work space. Second, the boundaries should surround the individual and give a sense of being enclosed. Finally, the space should accommodate only one entrance. Without these things, workers reported they felt susceptible to interruptions, vulnerable, unprotected, and unable to control their own space.

In everyday language privacy is defined as the ability to defeat intrusions and interruptions. Perceptions of privacy correspond strongly to the degree of physical enclosures (Sundstrom, Town, Brown, Foreman & McGee 1982). Quite simply, more walls make more privacy. Nearly everyone, regardless of task or rank, wants more privacy, meaning more enclosures and fewer distractions (Sundstrom, Burt & Kamp 1980).

In assessing the impact of layout on occupant responses, environmental psychologists have concentrated on that part of Altman's theory concerned with the gap between desired levels and achieved levels of privacy. Generally their strategy is to measure a physical layout for barriers, enclosures, noise and illumination levels, or visual distraction. This information is then related to whether individuals perceive the level of privacy they have achieved is adequate in comparison to the level of privacy they desire.

Typically spatial environment has been considered in conjunction with or as a component of the social environment. Social psychologists have focused particularly on the social context created by the group. The group has the power to impose values and perceptions on its members, to elicit conformance to group norms, and to define role requirements. Brooks and Kaplan (1972) found that when people could not manipulate their environment to achieve greater privacy--and generally they either could not or did not because office design lies within management's realm--they adopted group norms that dictated the acceptability of less privacy.

Some researchers report that group structure and dynamics overpower a setting's potential for regulating privacy. For example, Sundstrom, Town, Brown, Foreman and McGee (1982) compared work groups and found privacy rates varied in accordance with members' status in the group despite the fact that all groups occupied "essentially equivalent enclosures." They found that relatively low-ranked secretaries gave lower privacy ratings than managers and administrators because higher-ranking employees and visitors felt free to walk unannounced into secretarial work spaces.

Employee Perceptions of Job and Work Group

A number of instruments have been constructed to analyze worker productivity and satisfaction (Cook,

Hepworth, Wall & Warr 1984). Two such instruments adapted for use in this study provide standardized measures of employees' perceptions of fundamental job characteristics and of their work groups.

Job Design. Researchers who study the design of the job itself use two general approaches. On the one hand, industrial psychologists and human factors engineers focus on the technicalities of the man-machine system. These studies are necessarily limited to a single kind of job and are quite specialized. The study of spatial design under these circumstances is directly related to the physical requirements of the work station used in a job (see McCormick 1976).

The other approach to job design attempts to categorize job attributes that workers are responding to when they exhibit differing levels of productivity or satisfaction. These researchers look for the core dimensions of jobs (such as complexity, challenge, or autonomy) and then measure these attributes across a wide range of jobs. Because jobs of many kinds are studied at once, space design, if it is considered at all, is viewed as a component of social or interpersonal aspects of the jobs. Relevant to the current investigation is Hackman and Oldham's (1975, 1976) Job Characteristics Model which is based on a theory of how job design affects worker motivation.

Hackman and Oldham's (1975) Job Characteristics Model evolved from a line of research which includes Herzberg's two-factor theory of satisfaction and motivation, and Emery and Trist's socio-technical systems theory (cited in Hackman & Oldham 1976). Hackman and Oldham's theory describes the relationships between job characteristics and individual responses to the work. The model identifies five core job dimensions which prompt three psychological states which in turn lead to several personal and work outcomes. Links between job dimensions and psychological states, and between psychological states and outcomes, are moderated by the individual's need for growth. The instrument Hackman and Oldham created to analyze worker-job relationships is the Job Diagnostic Survey (JDS). The JDS is used in this research to measure employees' perceptions of their jobs.

Work Groups. Organization theorists rarely study directly the issues of physical work space (see Pfeffer 1982). (Only Steel (1973) has systematically analyzed spatial and physical components of the organization.) Instead, they have directed their attentions to social systems, norms, and group dynamics. Their attempts to locate and measure sources of influences on workers have resulted in, among other things, development of the concept of organizational climate.

Schneider (1975) defines climate as shared descriptions of stable organizational properties, the core

ingredients of which are styles of interpersonal relations and forms of organizational policies. Organizations have many climates; there are climates for motivation, creativity, or leadership, for example.

Climate perceptions provide a frame of reference to guide individuals in interpreting events and behavior in complex social settings such as organizations. To successfully adapt their behavior to organizational styles and forms, people must be able to attribute some degree of stability and order to their environment, not in the sense that it is unchanging, but in the sense that it is predictable.

Climate perceptions of individual workers are more likely to be influenced by organizational processes (communication, leadership, conflict management) than by organizational structures (centrality of decision making, organization size, levels in hierarchy) (Lawler, Hall & Oldham 1974). Organizational processes have a direct and immediate impact on employees because they require interpersonal exchanges. Individuals confront, respond to, and interact daily with group members and other co-workers. These actions are fed back into the setting, become new information demanding new responses, and ultimately result in shared climate perceptions (see James & Jones 1974, 1976, Jones & James 1979). Even though workers possess other information than that which they gather from moment to

moment, and even though personal experience and group history reduce the need to monitor ongoing activity (Archea 1977), continually changing information in the environment requires ongoing adjustments.

Climate research has repeatedly revealed seven or eight major variables concerned with overall organizational climate (York 1985), one of which is the work group. The Survey of Organizations created by Taylor and Bowers (1973) is among the most widely used instruments for measuring climate perceptions. It includes a scale specifically regarding work groups that is used in this research.

Territorial Behavior

By far most of the literature on territorial behavior concerns animals. The human territorial behavior most often studied is personalization. Personalizing or marking a space communicates that it is "owned" by a person or group. Researchers of human territoriality generally have chosen public places as experimental settings to evaluate individual responses to territorial encroachment (see Becker 1973).

Altman's (1975) work is again the benchmark. He considers territorial behavior a subsystem of the privacy regulation process. Altman identifies primary, secondary, and public territories. Primary territories are owned and used exclusively by the occupants, are clearly identified, controlled on a relatively permanent basis, and are central

to the day-to-day lives of the occupants. A home is an example of a primary territory. Secondary territories exhibit many of the same dimensions as primary territories, but to a lesser degree. An office is an example of a secondary territory. Public territories are open for use by everyone; occupancy within them is short. A bus is an example of a public territory.

Altman and Chemers (1980) theorize that territorial behavior reveals the status of a social system and that high rates of such behavior are associated with viable and stable systems. Cues, symbols, occupancy, and personal objects are evident when a space has been successfully marked for use, and indicate the value of a space to its user. Clear signals of ownership of a space reduce conflict, uncertainty, and inappropriate behavior (see also Becker & Mayo 1971).

Davis and Altman (1976) used a "concept of analogous places" to assess territories in organizations. Comparing organizational patterns of behavior and movement to those in residential areas, they found, just as with residential settings, that increased personalization becomes evident as one moves along a gradient from public territories to places controlled by individuals.

Several studies have counted and categorized visual markers to measure territorial behavior (Brown & Werner 1985, Hansen & Altman 1976). Oldham and Rotchford (1983)

used occupancy rates and personal markers to measure responses to work stations and found negative relationships between the degree of openness at the work station and both variables. They cautioned, however, that personal markers and occupancy may reflect something other than ownership of a space.

This study collects data on occupancy rates and the presence of personal objects to test hypotheses concerning visual exposure.

METHOD

Participants

The study took place in the administrative division of a large manufacturing operation. Department managers solicited participants for the study. Fifty-two employees from five departments volunteered; they were assured of confidentiality, and signed informed consent forms prior to participating in the study. The five departments represented were design engineering (n = 14), mechanical engineering (n = 5), accounting (n = 13), data processing (n = 11) and personnel (n = 9). Six participants were managers; the remaining were professional and clerical employees. Participants represented approximately one-third of the total number of workers employed in the five departments.

Construction of the Survey²

Perceptions of Job Characteristics. Employees' perceptions of job characteristics were assessed using items from the Job Diagnostic Survey (JDS) (Hackman & Oldham 1975). The JDS contains seven 3-item subscales, each with seven response alternatives scored from 1 (low) to 7 (high). The items are written in two different formats

²A copy of the survey is attached as Appendix A.

and one item from each subscale is reverse scored. The subscales assess the following five core job characteristics:

1. Skill Variety. The degree to which a job requires a variety of different activities and a number of different skills and talents of employees.

2. Task Significance. The degree to which a job has substantial impact on the lives or work of other people, within the organization or externally.

3. Task Identity. The degree to which a job requires completion of a whole and identifiable piece of work, i.e., doing a job from beginning to end with a visible outcome.

4. Autonomy. The degree to which a job provides freedom, independence, and discretion to employees in scheduling the work and determining procedures.

5. Feedback from Job. The degree to which carrying out required job activities results in employees obtaining direct and clear information about the effectiveness of their performance.

The following two characteristics are supplementary dimensions Hackman and Oldham included in the JDS.

6. Feedback from Agents. The degree to which employees receive clear information about performance from supervisors or from co-workers.

7. Dealing with Others. The degree to which a

job requires employees to work closely with others to carry out the work, within the organization or externally.

Hackman and Oldham report internal reliability coefficients ranging from .58 to .78 and means of between 3.98 to 5.49 for the seven subscales.

Also used is the Motivating Potential Score (MPS). Hackman and Oldham use this summary score of the job's characteristics to represent the potential for a job to elicit intrinsic challenge and motivation on the part of the worker. MPS is an index which combines scores from the five core job characteristics according to the formula:
$$\text{MPS} = (\text{Skill Variety} + \text{Task Significance} + \text{Task Identity}) / 3 \times \text{Autonomy} \times \text{Feedback from Job}$$
 According to the Job Characteristics Model, the first three characteristics together prompt a psychological state called "experienced meaningfulness," which refers to the degree workers feel their jobs are valuable and worthwhile. The fourth characteristic, Autonomy, prompts a psychological state called "experienced responsibility," which refers to the degree workers sense that they are personally accountable for the results of their work. The fifth characteristic, Feedback from Job, prompts a psychological state called "knowledge of results," which refers to the extent workers know on a continual basis how effectively they are performing. A low score on any one of the first three characteristics cannot by itself reduce the MPS to near zero

since these three subscales are additive. However, a near-zero score on either Autonomy or Feedback will produce a low MPS score.

Perceptions of Work Group. Employees' perceptions of their work groups were measured using a seven-item scale taken from the Survey of Organizations (Taylor & Bowers 1973). The items have response alternatives from 1 (low) to 5 (high). Taylor and Bowers report an internal reliability coefficient of .96 for the scale, which assesses such issues as the degree of cooperation and the level of task motivation among work group members.

Occupancy Estimate and Location of Work Station. In addition to responding to the survey items described above, participants were asked to estimate the amount of time they spent at their primary work stations and to mark the location of their work stations on a sketch of the floor plan of their departmental work areas. Sketches of the five work areas are attached as Appendix B.

Office Layout

In four of the five departments, department managers occupied conventional private offices, enclosed on three sides by floor-to-ceiling walls; the fourth wall contained the doorway and a floor-to-ceiling window with venetian blinds. Managers' offices were located in the core facing outside windows. Professional and clerical workers occupied work stations in the area surrounding the conventional

offices. These work stations were built in the open office style using moveable partitions, the majority of which were about five feet high. Generally, a work station was defined by two or three partitions and some other piece of office furniture, such as a three- or four-drawer file cabinet. Most work stations were located near the building's exterior windows. Virtually every employee in these four departments could see the outdoors. A main traffic corridor through the work area separated the work stations and the centrally placed managers' offices.

The fifth department was located in a totally enclosed section of the building without access to outside light or view. Conventional enclosed offices in this section were on a corridor separated from the floor space containing open office work stations.

Procedure

Administering the Survey. The survey was administered on a single day during normal work hours to four groups of participants in twenty-minute intervals. Groups of 10 to 15 individuals were generally composed along departmental lines. Prior to completing the survey, participants read and signed an informed consent form which assured the confidentiality of their answers.

Analyzing Work Stations. Participants' work stations were analyzed after normal work hours. By standing in and

around each work station, the following information was collected:

Measures of Visual Access.

1. The number of co-workers the occupant sees from his or her work station.

2. Whether from his or her work station the occupant sees co-workers who enter the department work area, i.e., walk along the main corridor through the work area. Yes was counted as 1, no as 0. The decision to code this element in a binary fashion was based on two considerations. First, the amount of traffic through any part of the corridor undoubtedly varies from place to place. The degree of variability, however, could not be ascertained because work areas were analyzed after hours. All work stations which afforded their occupants the ability to see an entry to the department work area were therefore treated equally by assigning a rating of 1. Second, without knowing whether an occupant was seated or standing, or was oriented to have visual access to the main corridor, it is difficult to evaluate the impact of seeing co-workers temporarily enter the area. A binary score was judged to be a conservative estimate of the effect of visual access.

Measures of Visual Exposure.

3. The number of co-workers who see the occupant from their work stations.

4. Whether co-workers who enter the work area see the occupant at his or her work station. Yes was counted as 1, no as 0. The rationale for choosing a binary code to measure visual exposure is similar to that described above for visual access.

Personal Objects.

5. The number of personal objects placed in and around the work station. Items such as photographs, inscribed objects, cartoons, artistic items, and personalized desk paraphernalia were counted as personal objects.

RESULTS

Modification of the Original Design

Under the original design, participants were placed in one of four cells constructed by ranking work stations according to high or low visual access and high or low visual exposure (see "Analyzing Work Stations," above). From the summed scores for visual access, a median score was first determined and then work stations with scores falling on either side of the median were ranked "high" or "low." Visual exposure was treated similarly. The four resulting types of work stations were (a) high access/high exposure, (b) high access/low exposure, (c) low access/high exposure, and (d) low access/low exposure.

In practice, however, only three of the four types of work stations occurred. Fifteen work stations fell into the high access/high exposure cell; no work stations fell into the high access/low exposure cell; 8 fell into the low access/high exposure cell; and 29 fell into the low access/low exposure cells. A Pearson's product moment correlation confirmed that visual access and exposure were highly correlated, $r(52) = .75$, $p < .001$.

In light of these results, the independent operation of visual access and visual exposure assumed in the original design could not be supported. The design was consequently

modified.

Under the modified design, scores for visual access and visual exposure were combined to create a new, single independent variable reflecting the overall degree of visual information associated with a work station. A low cumulative number (0 or 1) indicated that a work station was relatively isolated from visual access and visual exposure (n = 16). Work stations with this lowest visual information rate correspond to the original low access/low exposure cell and are considered the most private work stations. An intermediate number (2 or 3) indicated more visual access and exposure (n = 19). Work stations with intermediate visual information rates correspond to both high access/low exposure and low access/high exposure cells; they are considered moderately private work stations. Finally, a high number (4 or more) indicated considerable visual access and exposure (n = 16). Work stations with the highest visual information rates correspond to the high access/high exposure cell and are considered the least private work stations.

In effect, this variable is analogous to Davis and Altman's (1976) private-to-public gradient, except that work stations are described in terms of general visual information rather than in terms of territories.

The dependent variables, which remained the same, were now analyzed in relation to visual information. The

following results are based on the modified design with this single independent variable.

Reliability of Scales

All 52 participants responded to every item regarding job characteristics. Alpha coefficients computed for the job characteristic subscales revealed strong internal consistencies in line with Hackham and Oldham's (1975) JDS research. Table I contains the alpha coefficients, means, and standard deviations for the current research.

TABLE I

JOB DIAGNOSTIC SURVEY SUBSCALE STATISTICS

	Scale Mean	Standard Deviation	Alpha Coefficient

<u>Core Characteristics</u>			
Skill Variety	16.90	3.21	.59
Task Significance	17.37	2.84	.59
Task Identity	14.65	4.15	.64
Autonomy	17.73	2.55	.54
Job Feedback	15.82	3.10	.65
<u>Supplemental Characteristics</u>			
Agent Feedback	13.73	3.89	.79
Dealing with Others	18.29	2.72	.58

The group scale likewise showed strong internal consistency (alpha coefficient = .80). Responses averaged 26.55 with a standard deviation of 3.88.

Multivariate Test

A multiple analysis of variance was computed for the

four dependent variables, (a) perceptions of job characteristics, (b) perceptions of work group, (c) number of personal objects at work stations, and (d) estimate of work station occupancy, by the independent variable visual information, resulting in a significant Hotellings test, $F(8, 74) = 2.764, p < .01$.

Univariate Analyses of Dependent Variables

An analysis of each dependent variable in relation to visual information revealed the following information.

MPS (Job Characteristics). The mean MPS (the summary score for the five core job characteristics) for all participants was 173.62, with a standard deviation of 57.62. Responses of group 1 (lowest visual information) resulted in the highest mean MPS of 200.74, with a standard deviation of 54.83. Responses of group 2 (intermediate visual information) resulted in the lowest mean MPS of 157.80, with a standard deviation of 58.20. Responses of group 3 (highest visual information) resulted in a slightly higher mean MPS of 163.804, with a standard deviation of 52.55.

A univariate analysis of variance for MPS was significant, $F(2, 41) = 3.315, p < .01$). Follow up t tests revealed significant differences between the groups with highest and intermediate MPS scores, groups 1 and 3, $t(31) = 7.815, p < .001$, and between group 1 and group 2, with the lowest MPS score, $t(34) = 9.353, p < .001$. There

was no significant difference between groups 2 and 3, $t(33) = 1.252$, n.s. (The alpha was set at $p < .01$ for these multiple t tests to assure conservative tests for subgroup differences.)

Work Group. Responses from all participants to items regarding perceptions of the effectiveness and cohesion of work groups averaged 26.39, s.d. = 4.00. Group 1 (lowest visual information) averaged 26.82, s.d. = 4.16; group 2 (intermediate visual information) averaged 25.74, s.d. = 4.12; and group 3 (highest visual information) averaged 26.73, s.d. = 3.83.

A univariate analysis of variance did not result in a significant finding, $F(2, 41) = 0.623$, n.s.

Work Station Occupancy. Employees from all departments reported that about 60% of their day was spent at their primary work stations ($\bar{X} = 58.0$; s.d. = 25.3). Respondents' answers ranged from as little as 10% to as high as 95%. Group 1 (lowest visual information) averaged the greatest percentage of time at their work stations, $\bar{X} = 73.4$. Group 2 (intermediate visual information) averaged the least time at their work stations, $\bar{X} = 43.2$. Group 3 (highest visual information) averaged 60.3% of their time at their stations.

A univariate analysis of variance was significant for occupancy rate, $F(2, 41) = 5.670$, $p < .01$. Follow up t tests revealed significant differences between group 1 and

group 3, respectively reporting highest and intermediate work station occupancy, $t(30) = 7.719$, $p < .001$, and between group 3 and group 2, the latter reporting the lowest station occupancy, $t(33) = 8.866$, $p < .001$.

Personalization of Work Space. A count of personal objects was made at 45 work stations. Missing data for work spaces included 6 managerial offices which were locked and darkened, and one work station which was still occupied during the evaluation. The average number of personal objects was 4.2, with a standard deviation of 4.1. Counts of personal objects ranged from 0 to 17. Group 1 (lowest visual information) exhibited an average of 4.9, s.d. = 4.6; group 2 (intermediate visual information) exhibited an average of 3.4, s.d. = 3.3; and group 3 (highest visual information) exhibited an average of 4.7, s.d. = 4.6.

A univariate analysis of variance was not significant, $F(2, 41) = 0.476$, n.s.

Table II presents results of the univariate tests. In summary, two of the four dependent variables varied significantly in relation to the independent variable. Employees occupying the most private work stations gave the most favorable responses when describing the characteristics of their jobs (MPS). Similarly, the rate of work station occupancy was highest at the most private work stations. The other two dependent variables, perceptions of the work

group and personalization of the work station, showed no relation in any systematic way to visual information.

TABLE II
UNIVARIATE TEST RESULTS FOR GROUPS
RANGING ON VISUAL INFORMATION

<u>Dependent Variables</u>	<div>Low Visual Info Moderate Visual Info High Visual Info</div>			F-Test
	-----	-----	-----	
Motivating Potential Score	$\bar{X}$ = 200.7 s.d. = 54.8	157.8 58.2	163.8 52.5	$F(2, 41) = 3.315,$ $p < .01$
Work Group	$\bar{X}$ = 26.8 s.d. = 4.2	25.7 4.1	26.7 3.8	$F(2, 41) = 0.623,$ n.s.
Work Station Occupancy	$\bar{X}$ = 73.4% s.d. = 20.2%	43.2% 28.2%	60.3% 18.5%	$F(2, 41) = 5.670,$ $p < .01$
Personal-ization of Work Space	$\bar{X}$ = 4.9 s.d. = 4.6	3.4 3.3	4.7 4.6	$F(2, 41) = 0.476,$ n.s.

DISCUSSION

The study's original design assumed that visual access and visual exposure were two independent and interacting dynamics. Together they were thought to compose the visual information that individuals use to choose any of several privacy regulating mechanisms. Because access and exposure could not be distinguished as independent functions, however, the design was modified to make visual access and visual exposure a cumulative measure of the general level of visual information. The new independent variable, visual information, was analyzed to determine whether effects of open office architecture could be found. In the following discussion, a work station rated low on visual information describes a relatively private setting, and a work station rated high on visual information describes a relatively public setting.

Under the modified design it was found that participants' perceptions of their jobs related to the general level of visual information, but their perceptions of their work groups did not. Work station occupancy also varied markedly in relation to the level of visual information, but there was no difference in the amount of personalization that occurred across the three groups.

Perceptions of Job and Work Group

As predicted, employees who occupied the most private work stations (work stations rated lowest on visual information) gave the highest scores when describing the characteristics of their jobs. Their jobs were seen as requiring a variety of skills, were important, were identifiable in the final product, were under their control, and provided feedback about how well they were doing. The moderately private and least private groups did not rate their job characteristics as highly. It appears that greater privacy (or lowest visual information in terms of this study) enhances employees' abilities to do their jobs, and this success in job performance is reflected in perceptions of the job itself. As with all correlational studies, however, it is not clear whether secluded work stations give employees greater opportunities to involve themselves in their jobs, or whether employees who are most challenged by their jobs seek out ways to seclude their work stations.

No relationship was found between work station ratings and perceptions of the work group. The hypothesis regarding work groups was that the least private work stations (those with highest visual information) would give highest responses regarding perceptions of cohesion and effectiveness of the work group. The results did not support the hypothesis. Apparently, having less privacy

does not necessarily translate into more opportunities to interact with group members. The lack of evidence connecting work stations and perceptions of work groups may also indicate that employees gather information about their work group from a completely different source than the spatial setting. Elements in the social environment, such as authority or status hierarchies, rather than elements in the physical environment, may provide more clues regarding the formation of work group perceptions.

Work Station Occupancy and Personalization

As predicted, employees who occupied the most private work stations (those rated lowest on visual information) spent the most time at their work stations. Employees occupying the least private work stations spent an intermediate amount of time there, while employees using moderately private work stations spent the least time there. The differences between each pair of groups were significant, but the occupancy rates did not exhibit the predicted descending order from most private to least private work stations. It may be that visual information is not the only or even the primary factor operating to determine work station occupancy. And again, it is not clear whether secluded work stations give employees greater opportunities to devote time to their jobs, or whether employees who require time at their work stations seek ways to seclude their stations.

The findings regarding personalization of work stations revealed no pattern. This dependent variable appeared to have no connection to the visual circumstance of work stations.

Generally, neither the occupancy nor the personalization results offers much support for the idea that territorial behavior operates as a subsystem of privacy regulation the way Altman (1975) describes it. First, what was assumed to be territorial behavior--occupancy and personalization--may be something else. For instance, employees may be compelled by their job duties to be in or out of their work stations. Or, as Oldham and Rotchford (1983) suggested, employees may personalize their work stations for reasons other than declaring ownership. An employee, for example, who pursues a hobby after work hours may create a highly personalized job station reflecting that interest. To assume these objects have to do with ownership, however, may be incorrect. Second, these results do not support the private-to-public gradient described by Davis and Altman (1975) and which served in this study as the basis for using three levels of general visual information. Territorial behavior may appear in primary, secondary, and public areas as different, and therefore not comparable, kinds of activities (see Becker 1973).

In summary, two of the four dependent variables,

perceptions of job characteristics and occupancy rates, exhibit results in conformance with the predicted outcomes, but only at the lowest level of visual information (the most private work stations). At moderate and high levels of visual information, the findings yield ambiguous results. Possibly a threshold effect is operating--beyond the lowest level of visual information, so much information is available to work station occupants that it becomes difficult to ascertain how or whether the information is being used. A second possibility, discussed further below, is that the measurements used to define the levels of visual information were inadequate.

Future Research

One of the major purposes of this design was to test Archea's idea that visual information can be analyzed as two related but independent functions. But in the open office layout used to test the idea of access and exposure, practically no distinction could be made between the two. The correlation between the two measures was extremely high, $r(52) = .75, p < .001$. In other words, when employees had a good view of their work area, the likelihood of others in the area seeing them was also high. When employees had no view or a limited view of their work area, the likelihood of others seeing them was similarly low.

Two thoughts come to mind when considering this outcome. The first is that the high correlation between

visual access and visual exposure should have been expected. Open office schemes were conceived as a way to minimize differences in spatial circumstances. They were not supposed to provide increased visual access for some employees at the expense of increased visual exposure to others, or vice versa. Regardless of how individuals might arrange the particular details of their work stations, any configuration of two or three 4- to 6-foot partitions results in generally the same outcome: access and exposure that are roughly equal. That was the certainly the case in this study where 44 of the 52 work stations were either high on both access and exposure or low on both access and exposure.

In contrast to this homogeneous environment, imagine what a high access/low exposure setting might look like. It would be a setting in which individuals could see everything going on in an area and not be seen themselves. Examples would be a supervisor who overlooks a work area in which all employees faced a single direction away from the supervisor, a teacher standing at the back of a classroom to monitor students taking a test, or an audience watching actors on a stage. The low access/high exposure setting is the opposite situation. Individuals who find themselves in this setting would be employees working side by side or in front of an instrument panel with several stations, test-taking students on the front rows of a classroom

monitored from behind by the teacher, or stage actors blinded by the footlights. A better test of Archea's access-exposure idea might require using these kinds of settings.

A second thought is that the measures used in this design were too crude to distinguish between access and exposure. Archea himself uses a method of measuring access and exposure which he describes as generating "a series of contours through an iterative process" (Archea 1977, p. 128). The contours apparently show areas of access and exposure in the same way a geographic map shows surface changes on the land. Future research of access-exposure may call for more sophisticated measures than the simple counting method used in this study.

At another level, however, there remain questions about Archea's analysis of the function of visual information in his model of spatial behavior. One is inevitably drawn to the conclusion, even though Archea does not explicitly say so, that individuals who wish to maintain control over interpersonal exchanges are better off in an architectural setting in which they have high visual access and low exposure. In such a setting, these individuals would have all the information they need to adjust and behave appropriately for the circumstances, and to control when and how to deliver information about themselves to others in the setting.

This assumes, however, that the function of visual access, which is to provide information from the environment, is singularly beneficial to the individual. It can also be argued that control over interpersonal exchanges may improve in a setting which limits visual access, and may diminish in a setting which increases access. Visual access certainly provides information which "establishes the range for opportunities available" (Archea 1977, p. 123). But it may also provide useless and unwanted information--visual distractions that get in the way of an individual's ability to deal with more important data. In this circumstance, less visual access may be a positive situation.

Archea's discussion of exposure explicitly acknowledges its dual function. Exposure serves individuals by sending information into the setting; it also makes individuals subject to monitoring and accountability. The functional difference depends on whether they choose to enter an exposed situation with the intent of delivering information to others, or must simply endure exposure, a less favorable spatial circumstance when considering control over interpersonal contacts.

Whether visual access functions to provide pertinent information for behavioral purposes or whether it merely adds unnecessary information which occupants must eventually discard depends on the reason people are in a setting.

Likewise, whether exposure sends relevant information into a setting or whether it makes people-watching easier depends on the reason people are in a setting. It was not possible to address the functional duality of access and exposure with the design created for this study.

Finally, a closer look at the kinds of work conducted at these work stations present clear possibilities for future research. For example, nearly all of the work stations falling into the most private group came from two related departments occupying adjacent floor space. Almost half of the work stations falling into the moderately private group came from a single department, and the bulk of the work stations falling into the least private group came from a single department. According to these preliminary findings, departmental function may be a likely source of variance in these results. One way to determine the affects of open office architecture would be to look at comparable jobs in different departments or perhaps even organizations, and then to examine departmental and organizational differences.

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APPENDIX A

PART I

1. To what extent does your job require you to work closely with other people (either clients or people in related jobs in your company)?

1	-	2	-	3	-	4	-	5	-	6	-	7
Very little: dealing with others is not necessary				Moderately: some dealing with others is necessary				Very much: dealing with others is essential				

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				Moderately: many things are not under my control				Very much: the job gives me almost complete responsibility				

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 activities cannot be seen in the final product				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				

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				Moderately: moderate variety				Very much: the job requires me to do different things				

5. In general, how significant or important is your job? That is, are the results of your work likely to affect significantly the lives or well-being of other people?

1	-	2	-	3	-	4	-	5	-	6	-	7
Not very significant:				Moderately				Highly signifi-				
the outcomes or my work				significant				cant: the out-				
work are <u>not</u> likely								come of my work				
to have important								can affect other				
effects on other people								people in				
								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				Moderately: some-				Very much:				
almost never let me				times people may				managers or co-				
know how well I am				give me feedback;				workers provide				
doing				other times they				me with almost				
				do not				constant feed-				
								back 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				Moderately: some-				Very much: the				
job itself is set				times doing the job				job is set up so				
up so I could work				provides feedback				that I get				
forever without				to me; sometimes it				almost constant				
finding out how				does not				feedback as I				
well I am doing								work about how				
								well I am doing				

PART II

What percentage of an average work day would you estimate that you spend at your desk?

_____ %

PART III

Concerning your immediate work group in the department.

	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
1. To what extent does your work group plan together and coordinate its efforts?	1	2	3	4	5
2. To what extent does your work group make good decisions and solve problems well?	1	2	3	4	5
3. To what extent do persons in your work group know what their jobs are and known how to do them well?	1	2	3	4	5
4. To what extent is information about important events and situations shared within your work group?	1	2	3	4	5
5. To what extent does your work group really want to meet its objectives successfully?	1	2	3	4	5
6. To what extent is your work group able to respond to unusual work demands placed upon it?	1	2	3	4	5
7. To what extent do you have confidence and trust in the persons in your work group?	1	2	3	4	5

PART IV

To what degree are the following statements true of your job itself?

	Very inaccurate	Mostly inaccurate	Slightly inaccurate	Uncertain	Slightly accurate	Mostly accurate	Very accurate
1. The job requires me to use a number of complex or high-level skills.	1	2	3	4	5	6	7
2. The job requires a lot of cooperative work with other people.	1	2	3	4	5	6	7
3. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.	1	2	3	4	5	6	7
4. Just doing the work required by the job provides many chances for me to figure out how well I am doing.	1	2	3	4	5	6	7
5. The job is quite simple and repetitive.	1	2	3	4	5	6	7
6. The job can be done adequately by a person working alone - without talking or checking with others.	1	2	3	4	5	6	7
7. The supervisors and co-workers on this job almost never give me any feedback about how well I am doing my job.	1	2	3	4	5	6	7
8. This job is one where a lot of other people can be affected by how well the work gets done.	1	2	3	4	5	6	7
9. The job denies me any chance to use my personal initiative or judgment in carrying out the work.	1	2	3	4	5	6	7
10. Supervisors often let me know how well they think I am performing the job.	1	2	3	4	5	6	7
11. The job provides me the chance to completely finish the pieces of work I begin.	1	2	3	4	5	6	7
12. The job itself provides very few clues about whether or not I am performing well.	1	2	3	4	5	6	7
13. The job gives me considerable opportunity for independence and freedom in how I do the work.	1	2	3	4	5	6	7
14. The job itself is not very significant or important in the broader scheme of things.	1	2	3	4	5	6	7

12/14/81

APPENDIX B

reception 1

engineers

Personnel

Accounting

STAIRS