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An examination of time control

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Rice University, 1989
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AN EXAMINATION OF TIME CONTROL

by

Therese M. Macan

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Abstract

AN EXAMINATION OF TIME CONTROL

Therese M. Macan

The popular literature on time control claims that learning time control behaviors results in increased job performance and fewer job tensions. This study examines the relationships of one's control of time to job stress, job performance and job satisfaction from a correlational perspective. In addition, a test of a time and stress management seminar and its effect on job performance, job satisfaction and job stress in an organizational setting is made. Time control is defined as consisting of not only the typically taught behaviors (making lists, goal setting) but also a perception of control of time.

178 employees of a large southwestern social service agency completed several scales including the Time Control instrument (see Macan et al., 1987) and provided demographic information. Supervisors provided performance ratings.

In general, the results do not support the conventional notions of time management. First of all, Time Control was not found to be a unitary concept. Instead, Time Control was found to be multi-dimensional, consisting of four relatively individual factors. The factors were: perceived control of time, goal setting/prioritizing, mechanics - scheduling, planning, and work organization. Only those who perceived control of their time reported fewer job-induced and somatic tensions and were more satisfied in their job situation. The relationship between time control and job performance was non-significant. In addition, perceived control of time was not significantly correlated with the other factors.
Overall, those tending toward Type B and those on the job fewer months accounted for the variance in individual differences on three of the four time control factors. Individual differences due to education, age and minority/nonminority also played a role.

In addition, an evaluation of a time and stress management training seminar was made. Acknowledging the limitations of the data on 20 training and 24 control group participants, the results of this study do not support the claims made by time management consultants. The findings indicated that time control training was not related to increased job performance ratings or fewer tensions four- to-five months following training.

Taken as a whole, the present results call into question the assertions made by advocates of time management training.
Acknowledgements

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Additional thanks are due to Jay Bohner. With Jay's help, the collection of these data was made possible. I would also like to thank all the participants who shared their "time control" experiences.

Most importantly, I want to dedicate this work to my family and friends for their continual loving support. I thank my family for their support, both financially and emotionally, and for their faith in me from the beginning. I also want to thank my friends, Amy Jurcyk and Theodore Hayes, for their help. Last but not least, I express my thanks to my soon-to-be husband, Warren, for adding his editorial comments to my writing of the thesis and who I hope will continue to put up with me in future endeavors.
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Introduction

There is a voluminous popular literature that lauds the benefits of time control. Examples of some book and magazine article titles include: "Time is Money", "How to Get Control of Your Time and Your Life", "Put Time on Your Side", and "How to Get the Most Out of Your Time". However, surprisingly little research has been conducted examining outcomes related to time control. Perhaps it is because time control is typically viewed as a fad or a craze and not held in very high esteem by researchers in the field. The fact is, many organizations promote efficient use of company time and spend much money for employees to learn these time management behaviors. This promotion of time control stems from the untested popular belief that poor time management behaviors, such as not allocating time properly, may not only increase employee stress but may also impair performance.

More research that examines the potential relationships of one's control of time to job stress and job performance is necessary. In an effort to meet past research deficiencies, this paper addresses three central concerns: (1) to develop an instrument that measures self-reported time control and to examine the underlying structure of time control, (2) to determine what person and environmental factors account for the individual differences on this measure of time control, and (3) to assess relationships between employees' reported time control, their job performance, job satisfaction and measures of affective and somatic experiences of stress from a correlational perspective. Finally, an analysis of the effects of a time management training intervention on worker's time control activities and perceptions as well as worker performance, satisfaction and stressors in an organizational setting is presented.
What is Time Control?

Numerous articles and books continue to be presented on time management. The classic in the field, Lakein's (1973) widely read book *How to Get Control of Your Time and Your Life*, describes time management as a two-step process. In the first step, an individual determines his/her needs and wants and then ranks them with regard to their importance. "The tasks or goals that you **need** to perform are prescribed by the organization, while those that you **want** to perform are imposed by your personal value system or related to your long-term career goals" (Schuler, 1979). Specific activities at this first step include setting goals to achieve these needs/wants and prioritizing the tasks to accomplish them. The second step is then to match these tasks of utmost importance with the time and resources available by planning, scheduling and making lists. In this way, one can accomplish the tasks and goals which can improve one's effectiveness in work and life (Lakein, 1973).

The traditional definition of time management is too limited. When thinking of a good time manager, many imagine a person who carries an appointment book with a list of things to do, is punctual and organizes his/her work area well. Typically time management is thought of as simply these outward signs. In contrast, besides including very concrete activities, such as scheduling or goal setting, time control might also include another component, the more abstract sense or perception of control over time. In fact, Lakein (1973) writes "Good time management means that people gain best use of their time, and therefore, their lives. Thus, a primary objective of time management is to achieve greater control or mastery over one's time and life, which ultimately results in greater freedom." To emphasize the full scope of these time management activities and the perception of control of
time, a more encompassing term, Time Control, of which the traditional notion of time management is a part, will be used in this research. Within this proposed definition, Time Control may not be viewed solely as a learned behavior; it could be viewed from a new dimension as an attribute or personality trait.

**Review of Theoretical Literature**

One major criticism of past studies (Hanel, 1981; Hall & Hursch, 1982; Morgan, 1984; Lakein, 1973) examining time management has been that typically no theoretical framework has guided the research. Following is a review of relevant research, borrowed from the stress literature, that provides a theoretical background for this study. It is not the intention of this study to provide a test of a theoretical model. This perspective is only provided as an explanation of the conceptual basis of this research.

The theoretical literature on stress suggests that an interaction between characteristics of the person and the environment affects well-being. The primary sources of job stress are believed to emerge from a lack of person-work environment fit (French, 1973; Ivancevich, Matteson & Preston, 1982; Van Harrison, 1978). The person-environment (PE) fit theory distinguishes between two types of fit between a person and the environment. There is a fit between the needs and values of the person with the opportunities supplied by the environment for one to meet these needs and values. For example, employees who feel a need to succeed in their present position in order to be competitive for a career promotion they value may perceive stress if the environment (e.g., projects, family) lacks opportunities for them to achieve these needs and values. There is also the fit between demands of the environment and the abilities of the person to
meet these demands. For instance, employees' work may vary in the types of projects assigned and employees may vary in their abilities to handle this work. When employees' environmental demand exceeds their capacity, stress results. Any potentially stressful environmental element can be a stressor. The key is that stressors are appraised by the worker who determines whether or not they are stressful. Therefore, according to the PE fit theory, a perceived lack of fit between the person and the environment implies conditions that this worker would appraise as "high in stress". Beehr and Newman (1978) define job stress as a condition wherein job-related factors interact with the worker to change his or her psychological and/or physiological state so that the person is forced to deviate from normal functioning. Thus, "stress" can be defined as a perceived discrepancy of important needs and values. The greater the need or value, the greater the "stress."

An individual may or may not try to reduce this discrepancy or discomfort through various psychological or behavioral coping strategies. Coping is defined as "efforts, both action-oriented and intrapsychic, to manage environmental and internal demands and conflicts among them, which tax or exceed a person's resources" (Lazarus & Launier, 1978). However, coping with stressful situations is not limited to the efforts of the "stressed" person alone. Coping processes in the broadest sense refer to any attempts to deal with stressful situations. These may include attempts made by the organization (e.g., job redesign) or adaptive responses made by external parties (e.g., social support, government legislation) (Beehr & Newman, 1978). Basically, there are four approaches to dealing with stress: 1) physiological intervention - meditation, biofeedback, relaxation; 2) job design or redesign; 3) cognitive intervention - change person's perception of the situation; and 4)
behavioral intervention - teach people to act differently

One potential behavioral coping intervention is time control. In fact, Schuler (1979) proposes that time control is "one very useful strategic technique for dealing with stress" (p. 851) in his paper entitled "Managing stress means managing time." Traditionally, part of the time control process is to identify needs and wants in terms of their importance and match them with the time and resources available. Schuler asserts that "If you are not able to attain or fulfill a need or desire, then according to definition, you are in stress." Time control, then, "is a process by which you are more likely to attain or fulfill a need or desire" (Schuler, 1979).

Why study Time Control?

The effective use of time to increase worker productivity and to alleviate stress has been a concern of business and industry for a long time. In fact, how people spend their time at work has been of interest to management since 1911 with the time and motion studies conducted by Frederick Taylor (Taylor, 1911). One major reason for this concern is the belief that time is money. Recently, Dorney (1988) commented that most people don’t know their time’s value. To demonstrate the cost of time, he provided a crude estimate of the value of an employee’s hour by dividing the weekly salary plus benefits by 40 hours. Thus, the value of each hour on the job for a person earning $50,000 in salary and benefits annually is approximately $33.65.

From a more psychological perspective, one’s process of time allocation is also thought to be linked to work motivation and organizational behavior. Naylor, Pritchard & Ilgen (1980) define work motivation "as the process of allocating personal resources in the form of time and energy to various acts in
such a way that the anticipated effect resulting from these acts is maximized" (p. 159). As evidenced in their definition, time control is the essence of motivation. McGrath and his colleagues (1984) have also incorporated a time allocation dimension in their studies of temporal "entrainment" of task performance and worker task completion rates.

An examination of time control would also allow a test of the general belief that time control reduces stress. If an executive has allocated time properly so a project is completed for an important meeting, many time pressures, frustrations and stressful situations will be spared. Why such concern about stress?

Research has suggested that a certain amount of stress may be functional for health and task performance, but beyond a point it can be dysfunctional (Warshaw, 1979). A large number of empirical studies (e.g., Dohrenwend & Dohrenwend, 1974; Elliott & Eisdorfer, 1982; Goldberger & Brenitz, 1982; Gunderson & Rahe, 1974; Kobasa, 1979; Paykel, 1974) have provided strong evidence that stress may have negative effects in the form of somatic and psychological diseases. In fact, stress in now believed to be a contributing factor in more than half of all cases of disease (Pelletier & Peper, 1977). Both everyday annoyances of life or "hassles" (Lazarus, 1971) and major life changes (Holmes & Rahe, 1967) can contribute to illness and depression. In 1980, Ivancevich & Matteson (1980) estimated the cost associated with stress alone to be approximately $75 to $90 billion each year. Given rising medical costs and inflation over the years, it is projected that these figures have increased to approximately $145 to $170 billion for 1987 (U.S. Health Care Financing Administration, 1987).

People have become more health conscious and have searched for ways to manage stress. Consequently, the number of stress and wellness programs
to help alleviate stress has increased. The financial impact of stress has also prompted organizations to respond with increased interest in these programs, particularly as their medical costs for employees have increased (Edwards & Gettman, 1980). In fact, McKeon (1981) estimated that organizations spend over $137 billion each year on employee training in general. This training can range from basic skills to job enrichment and from interpersonal skills to time and stress management. While much money is spent providing training and development programs, little is spent on assessment of the social outcomes of these activities (Goldstein, 1980), time control being no exception. In fact, although Schuler's (1979) assertion that time control can be a useful technique for dealing with stress is plausible, empirical evidence to support his statement is lacking.

**Past Research on Time Management**

A limited amount of previous research has been conducted on time management. King, Winett & Lovett (1986) examined the differential effects of time management and social support on modifying stress-producing behaviors of 56 working wives from dual-earner families (i.e., both partners working). A program was designed "to train working wives to use specific time-management skills to increase the time available to pursue activities they identified as stress-reducing" (i.e., "high priority activity"). Following exposure to the training, King et al. reported a significant effect for treatment condition. Subjects receiving the time management training showed significantly greater increases in their knowledge of time and stress management and greater time spent in an enjoyable or relaxing "high priority" activity than those not receiving training. Trained subjects also reported a greater amount of self-efficacy for time/stress management
related behaviors. These findings held regardless of the amount of social support received by the women. These same effects were found after three months.

Earlier studies examining the effects of time management training are limited by either small sample sizes, restricted samples or restricted means of assessing the time management training. These past studies have exclusively investigated the effects of a time management manual on subjects' perceived improvements. In general, findings showed that time management training can change how one spends time. For instance, Hanel (1981) tested the effectiveness of a self-instruction time management manual with a managerial staff. In personal interviews, participants said they performed more time management behaviors after reading the manual. Also, subjects were able to provide written examples of these changed behaviors. In addition, colleagues said they saw improvements in the subjects' time management behavior. Hall & Hursch (1982) found an increase in time spent on tasks labeled by four university faculty or staff participants as "high-priority" (i.e., spend more time planning new research projects, spend more time writing articles, complete current projects) after participants read a time management manual. Participants also reported greater satisfaction and productivity following exposure to the manual.

Although findings showed that training by means of a manual or seminar can change the amount of time spent in "high priority" activity, these findings indicated that training does not seem to impact stress or performance. King, et al. (1986) found that neither of the two global stress measures in their study showed reliable differential change across conditions at posttreatment. The effects of time management training in a peer counseling format for 67 freshman on academic probation was examined by Morgan (1984) in her
doctoral dissertation. The freshman were randomly assigned to one of three groups: 1) experimental - received time management counseling, 2) placebo - unstructured "rap sessions", and 3) control - received no treatment. A fourth group consisted of students who were not contacted and received no treatment. No differences in grade point averages were found among the four groups. Morgan's results suggest that time management training of freshman on academic probation does not lead to improved academic performance as measured by grade point averages. However, it was not possible to examine any potential change in time management behaviors after training because no measures were gathered.

**Direction of This Study**

The present study strives to address three main points lacking in the literature on time control. Each issue will be examined individually in the following sections. The most obvious void in past studies is a measure of time control. Therefore, the first main point is to develop a measure of self-reported time control and to examine the psychometric properties of this instrument. Specifically, what is the underlying structure of self-reported time control? Then, the question, "What accounts for individual differences on time control?" is addressed. The third objective of this research is to take a correlational approach and examine the relationship of time control with regard to job performance, job satisfaction and worker stress. To address these first three issues, 178 employees of a large southwestern social service agency completed several scales including the time control instrument and provided demographic information. Supervisors provided performance ratings. Additionally, an exploratory test of a time and stress management training seminar and its effects on job performance, job satisfaction and
worker stress in an organizational setting is made. This analysis is cautiously labeled as exploratory because of a low return of questionnaires by trained participants in the study.

Point #1 - What is the underlying structure of self-reported time control?

Past studies examining the effects of time management training have been flawed by either small sample size (Hall & Hursch, 1982), restricted samples (Morgan, 1984) or, more importantly, by assessment of outcome behaviors only. In fact, no measure of time control or conventional time management behaviors has been used in past research. Instead, typical assessment of time control consists of an outcome measure, that is, the amount of time spent in what the subject has labeled a "high priority" activity. Within these studies, a "high priority" activity could be either job defined and/or personally defined. However, trying to examine whether time management training via a manual or through personal instruction can increase time spent on a task does not provide a clear and direct evaluation of time management training. Do participants actually adopt and use the behaviors taught to increase their time spent on the "high-priority" activity?

Given that no measure of time control could be found in the published research, a behavioral self-report scale was constructed (see Macan, Shahani, Dipboye, & Phillips, 1987). The time control questionnaire was created from a compilation of tips, ideas, and techniques, repeated throughout several how-to books on time management. Items were constructed to represent 13 topic areas which included: setting goals and priorities, learning to say "NO", making a things-to-do list, organizing, planning, delegating, and procrastinating. Some items were taken directly from the appendices of these books. A total of 76 items resulted from these efforts.
In order to refine the questionnaire and eliminate any overlapping items, the 76 items were administered to 123 undergraduates. A 46-item time management questionnaire resulted after discarding redundant or similarly worded items at this phase (Macan et al., 1987).

Although this instrument had been tested using college students, it had not been administered in an employed sample. Therefore, the psychometric properties of the questionnaire with an employed sample were examined and addressed the following question: What is the underlying structure of self-reported time control?

Method

Description of the agency

The study population consisted of members of a southwestern public social service agency employing approximately 2200 individuals. The agency is responsible for delivering social services and benefits to clients in the community. Tasks involve determining eligibility for benefits, counseling, providing child protective services or providing aid for the aged and disabled.

The agency has an in-house staff development training department responsible for providing various employee development programs including time and stress management. During the initial stages of this study period, the agency was experiencing uncertainty concerning their state financial allocations, and rumors of budget cuts and layoffs were circulating. In addition, the city's economy was still in a slump.

Subjects

Questionnaires were distributed to 257 employees. One hundred eighty-two employees returned the survey yielding 178 (65% response rate)
usable questionnaires. Four were deleted due to missing data. Further subgroupings of these original participants are described where appropriate.

The subjects were predominantly female (85%) with an average age of 35 years. Almost half (47%) of the respondents were Black, 37% White, 11% Hispanic and 6% other (Asian, Indian). They had been employed in the agency for an average of four years. The jobs represented by the respondents were clerical (26%), caseworker (70%) and administrative/supervisory positions (4%). All but 2.5% of the respondents fulfilled the minimum educational standard (high school diploma). The highest educational attainment of the subjects was as follows: 14%, high school diploma or GED equivalent; 21%, some college work; 51%, college degree; and 12%, masters degree.

All participants volunteered to complete the questionnaire. The importance of honest, accurate responses was stressed, and respondents were assured of the anonymity of their responses. All participants were offered a summary of the results for their participation in the project.

**Procedure**

The Work Activity Questionnaire (see Appendix A), which includes the time control scale was self-administered; instructions for completion were located on the cover page. A letter explaining the research project accompanied each survey. The Work Activity Questionnaires also included other scales: job-induced tension, somatic tension, job satisfaction, role ambiguity, role overload, life satisfaction, family satisfaction, job involvement, and Type A/B behavior pattern. In the present study, only those scales and variables most directly related to the hypotheses of this thesis were examined. The remaining scales and variables were included in order to be
able to examine other possible trends with collection of more data at a later date.

First Administration - Time 1

Questionnaires were distributed using two methods. One hundred nineteen were distributed in person. Respondents completed the questionnaire during staff meetings or were given company time to complete. Participants knew this project was being conducted through Staff Development and Rice University. In order to avoid calling attention to the true focus of the study, we told them that we were interested in gathering their opinions about some training needs. Completion of the questionnaire required 30 minutes to one hour. Seven subjects chose not to complete the survey (94% response rate).

A second batch of questionnaires was mailed to employees through organizational mail. A cover letter asked their help in this project sponsored by Staff Development and Rice University. The mailing was to those forty employees who were scheduled to attend time and stress management training during the study period and two to three each trainee’s unit coworkers. This selection avoided singling out the training participant and thus revealing the purposes of the study. Addressed stamped envelopes were included for return to the researcher at Rice University. Training participants were given additional time, just before the time and stress management seminar began, to complete the questionnaire (95% response rate). Only 32 out of 99 coworkers surveyed returned completed forms (32% response rate).
Measure

The Time Control scale items were interspersed with other items comprising the following scales: job-induced tension, somatic tension, job satisfaction, role ambiguity, role overload, interrole conflict, and work/family conflict. The scales relevant to this research will be discussed in later sections.

Time Control Scale. Forty-six items were used to assess time control activities and perceptions. The scale items were intended to measure the extent to which these time control activities are used or time control perceptions experienced, not the individual's evaluation of the effectiveness or appropriateness of such behaviors or perceptions. Participants responded to each item using a 5 point Likert-type scale ranging from (1) seldom true to (5) very often true. Negatively worded items were reverse scored so that responses on the upper ends of the scale indicated more frequent use or perception of time control as prescribed by the literature.

Results

What is the underlying structure of self-reported time control?

An exploratory factor analysis was conducted to examine the underlying structure of self-reported time control for an employed sample. Participants' responses to the 46 items were subjected to a common factor analysis with squared multiple correlations in the diagonals. The factors were rotated using an orthoblique rotation. Four factors were retained that accounted for 62% of the overall variance. The four factors were labeled as:
Factor 1 - Perceived control of time (eigenvalue=6.75)
Factor 2 - Goal setting / Prioritizing (eigenvalue=3.11)
Factor 3 - Mechanics - making lists, planning (eigenvalue=1.85)
Factor 4 - Work organization (eigenvalue=1.74)

Definition of the factors and examples of items significantly predicting each factor are found in Table 1. Interfactor correlations on the four factors were computed (Table 2). None of the factors were significantly correlated with each other. The results indicated that the structure of time control is not unidimensional, but rather consists of four relatively independent factors. The factor pattern can be found in Table 3.

Table 1
Definition of factors and examples of items comprising each factor

FACTOR 1 - Perceived control of time

Definition: The extent to which a person believes he or she can directly affect how his/her time is spent.

Examples of items:
2. I find myself overwhelmed by trivial and unimportant tasks. (R)
4. I feel in control of my time
8. I must spend a lot of time on unimportant tasks. (R)
11. I find myself so involved in small details that I lose sight of the overall objectives. (R)
12. I find it difficult to keep to a schedule because others take me away from my work. (R)
Table 1 continued.

FACTOR 2 - Goal setting/Prioritizing

**Definition:** Refers to the setting of goals concerning what the person wants or needs to accomplish and the resulting tasks to achieve these goals are prioritized.

**Examples of items:**
18. I set short-term goals for what I want to accomplish in a few days or weeks.
21. I finish top priority tasks before going on to less important ones.
23. During a workday I evaluate how well I am following the schedule I have set down for myself.
24. I set priorities to determine the order in which I will perform tasks each day.

FACTOR 3 - Mechanics of Time Control

**Definition:** Refers to the behaviors typically associated with managing time, such as making lists, scheduling.

**Examples of items:**
25. I carry a notebook to jot down notes and ideas.
26. I schedule activities at least a week in advance.
31. I make a list of things to do each day and check off each task as it is accomplished.
32. I carry an appointment book with me.
Table 1 continued.

FACTOR 4 - Work Organization

Definition: Refers to both a general organized approach to work projects as well as maintenance of an organized work environment.

Examples of items:
9. At the end of the workday I leave a clear, well-organized workspace.
13. I can find the things I need for my work more easily when my workspace is messy and disorganized than when it is neat and organized. (R)
40. I have some of my creative ideas when I am disorganized. (R)
41. When I am somewhat disorganized I am better able to adjust to unexpected events. (R)
42. I find acting before thinking through the consequences of my actions. (R)

NOTE: Items followed by (R) indicate reverse scoring of the item.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Factor 2</td>
<td>0.18</td>
<td>0.75</td>
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<td></td>
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<tr>
<td>Factor 3</td>
<td>0.06</td>
<td>0.21</td>
<td>0.72</td>
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</tr>
<tr>
<td>Factor 4</td>
<td>0.21</td>
<td>0.14</td>
<td>0.08</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Note: Standardized item coefficient alphas are displayed in the diagonals.

Factor 1 - Perceived control of time
Factor 2 - Goal setting / Prioritizing
Factor 3 - Mechanics of Time Control
Factor 4 - Work organization
Items comprising each factor were determined based on the factor coefficients in Table 3. Examination of these standardized regression weights and item content indicated that three items ( #5, #6, and #10) should be deleted because they do not add to the prediction of their respective factor. Therefore, factor 1 and factor 2 consist of 13 items, factor 3 is made up of 10 items. Finally, factor 4 is comprised of 7 items. Inter-item reliability was quite good. The coefficient alphas for each of the four factors ranged from .83 to .67 and are displayed in the diagonal of Table 2.

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>11- involved in detail</td>
<td>72*</td>
<td>6</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>02- overwhelmed by tasks</td>
<td>63*</td>
<td>-5</td>
<td>10</td>
<td>-22</td>
</tr>
<tr>
<td>08- work alot on unimp tasks</td>
<td>59*</td>
<td>-20</td>
<td>4</td>
<td>-5</td>
</tr>
<tr>
<td>03- underest time on task</td>
<td>55*</td>
<td>-4</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>12- others are disruption</td>
<td>54*</td>
<td>-7</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>38- lose sight of objectives</td>
<td>50*</td>
<td>11</td>
<td>-18</td>
<td>10</td>
</tr>
<tr>
<td>01- take on too many tasks</td>
<td>49*</td>
<td>-4</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>36- workdays unpredictable</td>
<td>47*</td>
<td>-1</td>
<td>-3</td>
<td>18</td>
</tr>
<tr>
<td>14- procrastinate</td>
<td>42*</td>
<td>-31*</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>34- scheduling is wasted time</td>
<td>36*</td>
<td>8</td>
<td>-20</td>
<td>21</td>
</tr>
<tr>
<td>30- list forgotten</td>
<td>32*</td>
<td>-10</td>
<td>-7</td>
<td>27*</td>
</tr>
<tr>
<td>10- too much socializing</td>
<td>24</td>
<td>-23</td>
<td>13</td>
<td>22 deleted</td>
</tr>
<tr>
<td>15- long-term objs in mind</td>
<td>-38*</td>
<td>17</td>
<td>26*</td>
<td>2</td>
</tr>
<tr>
<td>04- feel in control of time</td>
<td>-55*</td>
<td>21</td>
<td>-10</td>
<td>0</td>
</tr>
<tr>
<td>23- evaluate set schedule</td>
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<td>70*</td>
<td>12</td>
<td>-9</td>
</tr>
<tr>
<td>22- review activities daily</td>
<td>-7</td>
<td>61*</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>19- set deadlines</td>
<td>-8</td>
<td>54*</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>35- clothes set out</td>
<td>2</td>
<td>43*</td>
<td>-9</td>
<td>4</td>
</tr>
<tr>
<td>20- try to increase efficiency</td>
<td>-12</td>
<td>43*</td>
<td>7</td>
<td>-9</td>
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</table>
### Table 3. Continued

<table>
<thead>
<tr>
<th>Description</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>21- finish top priority first</td>
<td>-2</td>
<td>40*</td>
<td>-16</td>
<td>-31*</td>
</tr>
<tr>
<td>45- just starts project, no plan</td>
<td>11</td>
<td>39*</td>
<td>-27*</td>
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<tr>
<td>18- set short-term goals</td>
<td>-14</td>
<td>38*</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>24- set priorities</td>
<td>-12</td>
<td>38*</td>
<td>27*</td>
<td>-28*</td>
</tr>
<tr>
<td>39- use in/out basket</td>
<td>5</td>
<td>35*</td>
<td>-2</td>
<td>-14</td>
</tr>
<tr>
<td>16- review goals</td>
<td>-21</td>
<td>32*</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>07- same day response to mail</td>
<td>-10</td>
<td>32*</td>
<td>6</td>
<td>-29*</td>
</tr>
<tr>
<td>17- break down large projects</td>
<td>-18</td>
<td>29*</td>
<td>26</td>
<td>-2</td>
</tr>
<tr>
<td>06- unable to say no</td>
<td>18</td>
<td>21</td>
<td>-18</td>
<td>13 deleted</td>
</tr>
<tr>
<td>25- carry notebook</td>
<td>0</td>
<td>1</td>
<td>64*</td>
<td>-6</td>
</tr>
<tr>
<td>32- carry appt book</td>
<td>14</td>
<td>9</td>
<td>61*</td>
<td>8</td>
</tr>
<tr>
<td>29- write reminders</td>
<td>8</td>
<td>3</td>
<td>51*</td>
<td>-9</td>
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<tr>
<td>44- fills waiting time</td>
<td>3</td>
<td>3</td>
<td>48*</td>
<td>11</td>
</tr>
<tr>
<td>33- keeps daily activity log</td>
<td>0</td>
<td>19</td>
<td>46*</td>
<td>16</td>
</tr>
<tr>
<td>26- schedule activities 1 wk</td>
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<td>37*</td>
<td>-13</td>
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<tr>
<td>31- list of things to do</td>
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<td>37*</td>
<td>-4</td>
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<td>28- block out time</td>
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<td>9</td>
<td>33*</td>
<td>-5</td>
</tr>
<tr>
<td>27- keep contact file</td>
<td>-19</td>
<td>0</td>
<td>33*</td>
<td>-15</td>
</tr>
<tr>
<td>43- no interrupt workplace</td>
<td>0</td>
<td>23</td>
<td>27*</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: Values are multiplied by 100 and rounded to the nearest integer.

Further descriptive information is provided on the psychometric properties of the time control instrument. Test-retest reliability coefficients for the four scales were calculated from scores obtained by administering the time control scale twice to this group of 178 employees, with a four- to five-month interval between administrations. The respondents who had participated in a time management seminar conducted within the four- to five-month interval between administrations were deleted from this reliability estimate. In addition, not all participants returned the
questionnaire the second time. Based on the remaining 79 participants who
completed the survey both times, analyses revealed moderately high stability
for the instrument given the time interval. The reliabilities are presented in
Table 4.

<table>
<thead>
<tr>
<th>Test-retest reliability coefficients</th>
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<tbody>
<tr>
<td>Factor 1</td>
</tr>
<tr>
<td>Test-retest</td>
</tr>
<tr>
<td>Number of items</td>
</tr>
</tbody>
</table>

Note: Factor 1- Perceived control of time
Factor 2- Goal setting / Prioritizing
Factor 3- Mechanics
Factor 4- Work organization

In addition, the percentage of participants choosing each of the five
possible response options are recorded in Table 5. Responses to all items
spanned the full range of response options. For some items, however,
participants' choices of responses were found to be equally distributed
across the entire 5-point scale; whereas, other items tended to be more
discriminating. A few items (e.g., #25, #35) were also found to represent a
bimodal distribution indicating a clear yes-no responding (seldom true-very
often true).
<table>
<thead>
<tr>
<th>Item</th>
<th>Seldom True</th>
<th>Occasionally True</th>
<th>True about as often as not</th>
<th>Frequently True</th>
<th>Very Often True</th>
</tr>
</thead>
<tbody>
<tr>
<td>01- take on too many tasks</td>
<td>18</td>
<td>26</td>
<td>12</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>02- overwhelmed by tasks</td>
<td>43</td>
<td>27</td>
<td>11</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>03- underest time on task</td>
<td>34</td>
<td>30</td>
<td>12</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>04- feel in control of time</td>
<td>14</td>
<td>12</td>
<td>20</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>05- no delegation</td>
<td>27</td>
<td>23</td>
<td>11</td>
<td>23</td>
<td>17</td>
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<tr>
<td>06- unable to say no</td>
<td>20</td>
<td>25</td>
<td>18</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>07- same day response to mail</td>
<td>15</td>
<td>22</td>
<td>18</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td>08- work alot on unimp tasks</td>
<td>48</td>
<td>24</td>
<td>14</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>09- clear, organized workspace</td>
<td>14</td>
<td>12</td>
<td>16</td>
<td>19</td>
<td>39</td>
</tr>
<tr>
<td>10- too much socializing</td>
<td>50</td>
<td>34</td>
<td>10</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>11- involved in detail</td>
<td>59</td>
<td>20</td>
<td>11</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>12- others are disruption</td>
<td>40</td>
<td>26</td>
<td>12</td>
<td>13</td>
<td>8</td>
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<td>13- messy workspace</td>
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<td>5</td>
<td>1</td>
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<td>14- procrastinate</td>
<td>26</td>
<td>29</td>
<td>15</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>15- long-term objs in mind</td>
<td>7</td>
<td>11</td>
<td>20</td>
<td>36</td>
<td>26</td>
</tr>
<tr>
<td>16- review goals</td>
<td>14</td>
<td>21</td>
<td>14</td>
<td>32</td>
<td>20</td>
</tr>
<tr>
<td>17- break down large projects</td>
<td>6</td>
<td>11</td>
<td>18</td>
<td>37</td>
<td>28</td>
</tr>
<tr>
<td>18- set short-term goals</td>
<td>6</td>
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<td>19</td>
<td>35</td>
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</tr>
<tr>
<td>19- set deadlines</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>33</td>
<td>43</td>
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<tr>
<td>20- try to increase efficiency</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>33</td>
<td>49</td>
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<tr>
<td>21- finish top priority first</td>
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<td>5</td>
<td>29</td>
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<tr>
<td>22- review activities daily</td>
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<td>23</td>
<td>18</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td>23- evaluate set schedule</td>
<td>12</td>
<td>23</td>
<td>19</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>24- set priorities</td>
<td>5</td>
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<td>9</td>
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<td>39</td>
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<td>25- carry notebook</td>
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<td>6</td>
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<td>25</td>
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<td>26- schedule activities 1 wk</td>
<td>20</td>
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<td>26</td>
<td>20</td>
</tr>
<tr>
<td>27- keep contact file</td>
<td>17</td>
<td>6</td>
<td>5</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>28- block out time</td>
<td>26</td>
<td>17</td>
<td>18</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>29- write reminders</td>
<td>9</td>
<td>12</td>
<td>11</td>
<td>26</td>
<td>42</td>
</tr>
<tr>
<td>30- list forgotten</td>
<td>47</td>
<td>24</td>
<td>11</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>31- list of things to do</td>
<td>28</td>
<td>22</td>
<td>14</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>32- carry appt book</td>
<td>51</td>
<td>10</td>
<td>4</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>33- keeps daily activity log</td>
<td>53</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>34- scheduling is wasted time</td>
<td>67</td>
<td>15</td>
<td>8</td>
<td>4</td>
<td>6</td>
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<tr>
<td>35- clothes set out</td>
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<td>15</td>
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<td>17</td>
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</table>
Table 5 - continued.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>36- workdays unpredictable</td>
<td>34</td>
<td></td>
<td>16</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>37- sort mail on day rec'd</td>
<td>6</td>
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<td>8</td>
<td>24</td>
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<tr>
<td>38- lose sight of objectives</td>
<td>54</td>
<td>25</td>
<td>11</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>39- use in/out basket</td>
<td>26</td>
<td>9</td>
<td>4</td>
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<td>40- disorganized</td>
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<td>8</td>
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<td>42- acts before thinking</td>
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</tr>
<tr>
<td>43- no interrupt workplace</td>
<td>31</td>
<td>13</td>
<td>13</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>44- fills waiting time</td>
<td>12</td>
<td>9</td>
<td>16</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>45- just starts project, no plan</td>
<td>28</td>
<td>16</td>
<td>16</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>46- put off tasks</td>
<td>60</td>
<td>16</td>
<td>8</td>
<td>11</td>
<td>5</td>
</tr>
</tbody>
</table>

Discussion

The underlying structure of time control was found to be multi-dimensional, consisting of four relatively independent factors. Two of the factors, Factor 2, goal setting and prioritizing, and Factor 3, scheduling and planning, correspond closely to the two-step process of time control described by Lakein (1973). For example, items loading on Factor 2 included: "I set short-term goals for what I want to accomplish in a few days or weeks," and "I finish top priority tasks before going on to less important ones." Examples of items loading on Factor 3 are: "I keep a daily log of my activities," and "I make a list of things to do each day and check off each task as it is accomplished." Consistent with some of Lakein's other time control tips, Factor 4, work organization, captured the idea of organization of one's workspace and general organizational approach to projects.

Factor 1, labeled "perceived control of time," perhaps could be viewed as an outcome of time control activities; it could be viewed as a reason to engage in time control activities, if one does not perceive control of time. If either of these suppositions is true, Factor 1 should be correlated highly with Factors
2 and 3. But, in fact, none of the factors are significantly intercorrelated.
This lack of intercorrelation is not to imply that those who engage in these
time control behaviors do not perceive control of their time. The
independence among factors, however, does suggest that simply engaging in
these behaviors does not always correspond with greater perceptions of
control over one's time. In other words, time control activities may not be
beneficial for everyone.

Results of the factor analysis suggest that some revisions be made to this
measure of time control. It should be noted, however, that in designing this
instrument, Macan et al. (1987) strove for a judicious mix of predictive power
with the least number of items. At the present stage in its development, the
46-item instrument is relatively easy and quick to complete and provides
information concerning one's time control activities and perceptions.
However, three items have been deleted based on their factor loadings and
item content. Additionally, Factor 4 consists of only seven items and had the
lowest inter-item reliability coefficient. Therefore, it is suggested that
additional items be written and tested to replace the deleted items and
strengthen this factor.

Some of the items are negatively worded to circumvent careless
responding and to capture some reactions to time control (e.g., The time I
spend scheduling and organizing my workday is time wasted; I have some of
my most creative ideas when I am disorganized). Research findings argue
that these methods may only confuse respondents and simply add
construct-irrelevant method variance to the instrument (Harvey, Billings, &
Nilan, 1985). However, a factor reflecting the positive or negative wording of
the statements was not found in this study.

Although respondents were assured anonymity and asked to respond to
the items honestly, it was not possible to determine if respondents answered some of the questions in a socially desirable manner. As mentioned previously, participants' responses were, for the most part, distributed evenly across the entire range of the scale. However, responses to a few items were restricted to one end of the scale. For example, one item asked participants: I find myself socializing too much at work. Only 6% of the respondents indicated that this was frequently or very often true (see Table 4). Although employees may believe they socialize too much at work, this is not a fact they want others, especially supervisors or administrators, to be aware of. That is, it is not socially desirable to respond affirmatively to this item. Future testing of the instrument should investigate the effects of any potential socially desirable responding problems.

Finally, it is also important to address the issue of the stability of the instrument across samples of employees. Future research utilizing confirmatory factor analysis should be conducted in order to examine the stability of the instrument's structure. Confirmatory factor analysis techniques provide a more powerful method for assessing a factor structure. Confirmatory factor analysis allows one to test if the factor model, based on past exploratory factor analysis findings and theory, provides a good representation of the observed data or indicates the degree to which other factor models can improve upon this fit of the model.

Point 2 - What accounts for individual differences on time control?

The next question is: What person and environmental factors account for individual differences on this measure? From a person-environment fit perspective, the purpose of this research question is to describe what
qualities of the person and/or the environment relate to the time control factors.

It is important to note that the intent here is not to specify which time control activities or perceptions are determined by the environment only, the individual only, or by some mutual means. Instead, a systems view is taken which suggests that influence proceeds in both directions between the environment and individuals. This process is what Bandura (1978) has labeled "reciprocal determinism." Bandura explains:

It is true that behavior is influenced by the environment, but the environment is partly of a person's own making. By their actions, people play a role in creating the social milieu and other circumstances that arise in their daily transactions (p. 345).

**Person Factors**

Person-environment fit theory suggests that aspects of the person may affect well-being and coping behaviors. However, past research on time control examining the relationship of person characteristics on use of these activities is limited. Therefore, no specific hypotheses are stated. Findings in the stress literature, however, may shed some light on potential relationships. In this study, the following person factors were examined - demographics, Type A/B behavior pattern, and prior time management training - and are elaborated upon below.

**Demographic Characteristics**

The demographic characteristics examined in this study are sex, age, education and race of participants. Strang (1981), who examined demographics in relation to time, found sex differences in perceptions of
time pacing by college students. Men perceived their time investment in various activities (i.e., looking over a menu, writing a personal letter, selecting a birthday card) to be less than did women. Further data indicated that men's pacing speed was related to items concerning maintaining control over time. Women's pacing speed, on the other hand, was related to items regarding the ability to manage time.

Indik, Seashore & Slesinger (1964) examined demographic characteristics in relation to job stress. 8,234 employees of a large, multiplant food products manufacturing and sales firm completed questionnaires. Women (23% in total sample) across all age groups and educational levels reported less job-related strain than men. However, this study was conducted over 20 years ago and this difference may be due to job differences that no longer exist in the workplace between men and women. With respect to educational level, no general trend with job-related strain was found. Indik et al. also found that older people generally reported less job-related strain (age range in total sample: 18 - 65 years). However, Koch, Tung, Gmelch & Swent (1982) found a more complex relationship between age and stress. Stress increased with age for job activities requiring contacts between the organization and external sectors.

Research efforts examining ethnic background and job stress are scarce. Maslach (1982) found a significant difference for incident rates of burnout between blacks and whites in helping professions (the only group in which sufficient data were available). Blacks did not burn out as often as whites and they showed less emotional exhaustion and depersonalization. Maslach (1982) suggests that blacks are better able to deal with others' problems since they may have had to deal with them in their own lives in the form of poverty and discrimination.
Type A/B Behavior Pattern

The Type A behavior pattern refers to a hard-driving, competitive, aggressive, achievement-oriented person who is preoccupied with deadlines and with work. Rosenman & Friedman (1959) further described Type As as being time-urgent, that is, feeling that time is passing too quickly for them to do all they desire. Type As continuously experience impatience and a chronic sense of time urgency. They feel caught in a never-ending struggle to accomplish more and more in the shortest amount of time or against impeding environmental forces (Chesney & Rosenman, 1980; Wright, 1988). "They claim to thrive on the pace they set for themselves and only wish that there were more time to accomplish their job goals" (Cohen, 1978, p.243).

The complement of the Type A behavior pattern is the Type B behavior pattern. Type Bs are characterized as relaxed, easy going individuals with a less harried and competitive existence. However, Type Bs may be equally intelligent and ambitious as Type As but approach life in a more tempered manner.

Research examining the Type A behavior pattern has found that Type As experience time pressures because they underestimate the time required to do tasks (Bortner & Rosenman, 1967; Glass, 1977). In an examination of their perception of time, Burnam, Pennebaker & Glass (1975) instructed Type As and Type Bs to sit quietly and estimate the passage of one minute. Type As underestimated a one minute period while Type Bs overestimated it. This underestimation of time may provide an explanation for why Type As experience a sense of time urgency. While trying to accomplish too much work in a short amount of time, Type As consistently underestimate the time to complete the task. They then may fall behind schedule and feel a struggle
to catch up. Type As also prefer to work alone and to keep more task control than Type Bs (Dembroski & MacDougall, 1978). From these desires stem the intense job involvement and job overload problems characteristic of Type A work settings (e.g., Burke & Weir, 1980; Sales, 1970; Strube & Werner, 1985). Latack (1986) further offers that Type As would be expected to cope with stress in a proactive manner rather than using avoidance strategies. This method of coping is consistent with their aggressive, take-charge behavior style.

Glass (1977) has suggested that a desire to control the environment is at the base of these Type A behaviors. Past research suggests that these sets of behaviors characteristic of Type As—hard-driving, time urgent, competitive—represent coping responses by Type As to a perceived loss of control (e.g., Glass, 1977; Matthews, 1982).

These past studies on Type A/B behavior patterns have primarily used college student samples and have been conducted in laboratory settings. It should also be noted that the preponderance of research on the Type A/B behavior patterns has involved all male samples. Although these past studies do shed light on Type A behaviors that are relevant to work, research with female organizational samples is needed to examine the generalizability of these findings. In addition, no research has examined time control for those exhibiting Type A or Type B behavioral patterns. Although paradoxical but consistent with past research findings, it seems plausible to expect Type As to perceive less overall control of their time but to engage in time control activities, a proactive strategy, as a means to achieve control.

Previous Time Management Training

Although past research on time management has not directly
provided evidence that time management training affects one's time control activities, it is believed that those who have had past exposure to time management training may differ in their use of time control activities and in their perceptions of control of time by scoring higher on the scale than those who have had no prior training.

**Environmental Factors:** Type of Job, Job Tenure, Family Demands

Person-environment fit theory also suggests that parts of the environment may affect well-being and individuals' coping. Many environmental factors in the work domain may be potential stressors, such as interpersonal relationships, job characteristics, job changes, and the physical work environment (e.g., excessive noise, heat). Stress is not determined, however, by the danger alone, but by the person's appraisal of the situation. If a dangerous condition exists, but the person is not aware of it, no stress is experienced. On the other hand, an individual can experience stress if the situation is appraised as stressful even if no dangerously threatening situation exists (McGrath, 1976).

Three environmental factors are examined in the present study. Two features of the organizational position, type of job and job tenure, are included as potential work stressors. Another aspect external to the organization, family demands, is a third factor. As with person factors, little past research has examined the relationship of environmental factors and time control. Relevant stress research is reviewed to provide some insight into possible relationships.
Type of Job

Because some jobs may place more time and workload demands on individuals than other jobs, it is important to examine the relationship between time control and occupation. Eight administrative/supervisory positions are included within the caseworker classification. Therefore, two classes of occupations are represented in this study: clerical and caseworker/administrative. Both the clerical and caseworker/administrative jobs fall into various programs including: child protective services, aged and disabled, and food stamps. However, their basic jobs duties are similar within the positions across programs. All clerical positions are subordinate to the caseworker/administrative positions. The clerical job performs routine secretarial work which involves checking, filing, operating standard office machines and performing reception and telephone duties. Caseworkers are responsible for interviewing clients, verifying case data, evaluating case records in accordance with regulations for eligibility of program benefits and completing various standard forms and reports. This job may also include some administrative and supervisory responsibilities.

Past job stress research indicates that the type of occupation an individual holds can be an important determinant of the amount and type of stress experienced (French, Caplan & Harrison, 1982; Smith, Colligan & Hurrell, 1977). The National Institute for Occupational Safety and Health (NIOSH) reported that office managers, administrators, first-line supervisors and secretaries were in occupations with the most stress-related disorders, whereas, personnel employees, craftsman, and university professors represented occupations with the lowest cases of stress-related disorders. Cooper & Marshall (1978) suggest that managerial jobs are stressful because of factors such as time deadlines and performance appraisal activities. In
addition, Kast & Rosenzweig (1974) provide empirical evidence that employees holding boundary-spanning positions experience more stress than those in other positions. Boundary-spanning positions are typically administrative. In a boundary-spanning job, the incumbent's duties include relating the organization to extraorganizational entities, directing the organization in attaining resources, and striving for both organizational and societal goals.

It could be argued that both the clerical and the caseworker/administrative jobs present time and workload demands for the worker. However, it may be expected that clerical incumbents would score higher than caseworkers on the time control items. Simply given the nature of their more unstructured position, caseworkers may experience greater time and workload demands than clerical workers. On the other hand, it is likely that because of such work demands, caseworkers turn to these time control activities to gain best use of their time. Finally, time control activities may not be necessarily limited to particular types of occupations. In fact, Lakein (1973) mentions various organizations who have adopted his time control techniques. These organizations range from computer companies to banks and from local to federal government agencies. In effect, there may be no differences in time control scores between occupations.

Job Tenure

Incumbents who have been on the job awhile may have acquired the necessary skills, resources or knowledge of the organizational procedures to work most efficiently as compared to those new to the position. Past experience in the form of familiarity with the situation or past exposure to the stressor condition has been found to affect the level of subjectively
experienced stress from a given situation, or change reactions to that stress (McGrath, 1976). In their meta-analysis on role ambiguity and role conflict, Jackson & Schuler (1985) conclude that job tenure tends to be correlated negatively with role ambiguity and unrelated to role conflict. One explanation for this relationship is that those who do not receive clear information may just leave the organization. Jackson & Schuler (1985) further offer that the longer employees are in the job, the more information they obtain making their role in the organization more clear and directed. Based on these findings, it seems plausible to expect job tenure to be positively correlated with time control. That is, with experience, time on the job is more likely to be allocated appropriately to achieve maximum productivity.

Number of children - family demands

More and more people are trying to handle both work and family responsibilities simultaneously (Lee, 1985). This expansion of roles is in contrast to the traditional division of labor with the woman being responsible for the home and the man being responsible for work. This societal shift may place additional time demands on employees as they try to balance work and family life.

Therefore, another potential environmental factor, spillover between family and work, is included. Bhagat, McQuaid, Lindholm & Segovis (1985) found that people typically are not able to separate their personal lives from their job lives. Both Crouter (1984) and Pleck, Staines & Lang (1980) report parents experienced conflict between work and family life more often than other workers. Furthermore, evidence suggested that the age of the child influences the amount of conflict. Working parents of preschool children
reported more conflict than did parents of school-age children (Pleck et al., 1980). As a measure of this potential environmental stressor, respondents with children were asked to report the number and ages of their children.

**Method**

The subjects and procedure were identical to those in point #1.

**Measures**

Along with completing the time control scale, subjects also provided demographic information (sex, age, race, education) and length of job tenure in months. Subjects were also asked if they had any children, how many and ages of the children. Finally, subjects were asked whether they had read any books on time management or attended any seminars.

**Type A/B Behavior Pattern.** Form C of the Jenkins Activity Survey (JAS), a widely used paper-and-pencil measure of Type A/B behavior pattern was included in the survey. This scale was developed by Jenkins, Rosenman and Zyzanski (1965) to measure the extent to which a person's behavior fits the Type A behavioral pattern. The Type A behavioral pattern is characterized by excesses of aggression, haste and competition, all of which are manifests of a struggle to overcome environmental barriers. People exhibiting the opposite behavioral pattern, (i.e., relaxed, unhurried, mellow) are characterized by Type B (Rosenman, 1978).

The twenty-one JAS items assessing the Type A/B behavior pattern were included. Unit weighted scoring of the items was used where a 1 was assigned to Type A responses and a 0 to Type B responses (Krantz, Glass & Snyder, 1974). The relevant items were summed resulting in Type A/B behavior scores ranging from 0 to 21. The coefficient alpha (KR-20) was 0.37,
indicating low reliability of the instrument. This measure of Type A/B behavior pattern was developed on an all white, male sample (Rosenman & Friedman, 1959), and may not generalize to this predominantly black, female sample.

Results

Data from sixteen subjects were discarded from the analysis at this point because respondents chose not to provide information for one or more of the following variables: age, race, educational level, sex, number of months in present position, and whether they had participated in a time management training seminar. Six other subjects failed to respond to only one or two of the 46 time control items. Mean item responses were substituted for these non-responses. Therefore, data from 162 subjects are used in the following analyses.

Descriptive Statistics

Descriptive statistics for variables used in addressing this point are presented in Table 6. These include sample size, mean, standard deviation, observed range, and possible range if applicable.
Table 6

Descriptive Statistics For Time Control Factors and Person and Environmental Factors

<table>
<thead>
<tr>
<th>Scale</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Observed Range</th>
<th>Possible Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Control</td>
<td>162</td>
<td>3.73</td>
<td>0.70</td>
<td>1.46-5.00</td>
<td>1-5</td>
</tr>
<tr>
<td>Goal setting/prior</td>
<td>162</td>
<td>3.50</td>
<td>0.60</td>
<td>1.77-4.69</td>
<td>1-5</td>
</tr>
<tr>
<td>Mechanics</td>
<td>162</td>
<td>3.03</td>
<td>0.83</td>
<td>1.20-4.90</td>
<td>1-5</td>
</tr>
<tr>
<td>Work organization</td>
<td>162</td>
<td>4.10</td>
<td>0.70</td>
<td>1.86-5.00</td>
<td>1-5</td>
</tr>
<tr>
<td><strong>Person/Environmental Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>162</td>
<td>34.9 yrs.</td>
<td>7.53</td>
<td>20-61</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>162</td>
<td>4.57</td>
<td>0.96</td>
<td>2-6</td>
<td>1-7</td>
</tr>
<tr>
<td>Sex</td>
<td>162</td>
<td>0.15</td>
<td>0.36</td>
<td>0-1</td>
<td>0-1</td>
</tr>
<tr>
<td>Minority/Non-minority</td>
<td>162</td>
<td>0.37</td>
<td>0.48</td>
<td>0-1</td>
<td>0-1</td>
</tr>
<tr>
<td>Type A/B Behavior</td>
<td>162</td>
<td>10.0</td>
<td>2.44</td>
<td>5-16</td>
<td>0-21</td>
</tr>
<tr>
<td>Past time training</td>
<td>162</td>
<td>0.62</td>
<td>0.49</td>
<td>0-1</td>
<td>0-1</td>
</tr>
<tr>
<td>Type of Job</td>
<td>162</td>
<td>0.77</td>
<td>0.42</td>
<td>0-1</td>
<td>0-1</td>
</tr>
<tr>
<td>Number of children</td>
<td>162</td>
<td>0.32</td>
<td>0.37</td>
<td>0-2.05</td>
<td></td>
</tr>
<tr>
<td>Job Tenure</td>
<td>162</td>
<td>34.23 mos.</td>
<td>32.41</td>
<td>1-192</td>
<td></td>
</tr>
</tbody>
</table>
The coefficient alpha (KR-20) for Type A/B behavior pattern is found in the
diagonal of Table 8. This reliability estimate sets the upper bound for the
correlation of this item with other measures. Therefore, any significant
relationships would be expected to be stronger if this measure of Type A/B
were more reliable. The correlation of Type A/B with the other scales and
variables was corrected for attenuation and showed this to be true (see
Tables 7 and 8). Undoubtedly, additional research in the Type A/B domain
should be conducted to design an instrument that is more reliable when using
a heterogenous pool of subjects.

**Simple correlations of time control with person/environmental factors**

The simple correlations of each of the person and environmental factors
with each of the four time control factors are displayed in Table 7. The Type
A/B behavior pattern and minority/non-minority variables were both
significantly correlated with Factor 1, Factor 2 and Factor 4. Those tending
toward Type B and minorities perceived more control of their time, reported
engaging in more goal/setting and prioritizing and reported taking a more
organized approach to their work and workspace. Other correlations
indicated that clerical workers perceived more control of their time and
reported using more goal setting/prioritizing, whereas,
caseworker/administrative workers indicated they engaged more frequently
in scheduling and planning (Factor 3). In addition, those with more family
demands (number of children) and those with fewer months on the job
reported using more goal setting and prioritizing. The intercorrelations
among the variables are displayed in Table 8.
Table 7

Correlations Between Person and Environmental Factors with Each Time Control Factor

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.01</td>
<td>.03</td>
<td>.04</td>
<td>.02</td>
</tr>
<tr>
<td>Education</td>
<td>-.13</td>
<td>-.10</td>
<td>.34**</td>
<td>-.07</td>
</tr>
<tr>
<td>Sex</td>
<td>.02</td>
<td>.01</td>
<td>-.03</td>
<td>.05</td>
</tr>
<tr>
<td>Minority/Non</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority</td>
<td>-.23**</td>
<td>-.19**</td>
<td>.01</td>
<td>-.15*</td>
</tr>
<tr>
<td>Type A/B Behavior+</td>
<td>-.31** (.55)</td>
<td>-.19* (-.36)</td>
<td>-.07 (-.13)</td>
<td>-.18* (-.36)</td>
</tr>
<tr>
<td>Past Time Training</td>
<td>.11</td>
<td>.07</td>
<td>.09</td>
<td>-.07</td>
</tr>
</tbody>
</table>

Environmental Factors

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Job</td>
<td>-.17*</td>
<td>-.18*</td>
<td>.23**</td>
<td>-.13</td>
</tr>
<tr>
<td>Number of children</td>
<td>.10</td>
<td>.17*</td>
<td>.05</td>
<td>.14</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-.13</td>
<td>-.20**</td>
<td>-.07</td>
<td>-.14</td>
</tr>
</tbody>
</table>

* p ≤ .05
** p ≤ .01

+ correlations in parentheses are corrected for attenuation

Note: Factor 1 - Perceived control of time
Factor 2 - Goal setting / Prioritizing
Factor 3 - Mechanics
Factor 4 - Work organization
### Table 8

**Intercorrelations among person and environmental factors**

<table>
<thead>
<tr>
<th>Scales</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Education</td>
<td>0.11</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sex</td>
<td>0.04</td>
<td>0.12</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Minority/Non-minority</td>
<td>0.15*</td>
<td>0.20**</td>
<td>0.20**</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.26)</td>
<td>(0.07)</td>
<td>(0.31)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Type A/B Behavior</td>
<td>0.08</td>
<td>0.16*</td>
<td>0.04</td>
<td>0.19*</td>
<td>0.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.26)</td>
<td>(0.07)</td>
<td>(0.31)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Previous Time Training</td>
<td>0.13</td>
<td>0.14</td>
<td>0.05</td>
<td>0.02</td>
<td>-0.08</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-0.13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Type of Job</td>
<td>0.17*</td>
<td>0.69**</td>
<td>0.19*</td>
<td>0.23**</td>
<td>0.12</td>
<td>0.09</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Number of children</td>
<td>-0.17*</td>
<td>-0.20**</td>
<td>-0.09</td>
<td>-0.34**</td>
<td>-0.14</td>
<td>-0.03</td>
<td>-0.24**</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Job Tenure</td>
<td>0.29**</td>
<td>-0.05</td>
<td>-0.02</td>
<td>-0.04</td>
<td>-0.08</td>
<td>0.09</td>
<td>-0.03</td>
<td>0.01</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p ≤ .05
** p ≤ .01

+ correlations in parentheses are corrected for attenuation

**NOTE:** Scoring scheme
Age - in years
Education - higher number indicates higher educational attainment
Sex - 0=females, 1=males
Minority/Non-minority - 0=minority, 1=non-minority
Type A/B - Type B tending toward 0, Type A tending toward 21
Previous time training - 0=no, 1=yes
Type of Job - 0=clerical, 1=case worker/administrative
Job Tenure - months in present position
Number of children - higher number indicates more child demands
What accounts for individual differences on time control?
In order to determine what accounts for individual differences on these
time control factors, a multiple regression was computed on each time control
factor with the person and environmental variables as predictors. All nine
variables were entered in one step. Several of the variables were coded for
use in the analysis. For the person factors, sex was coded 0 for females and 1
for males. Ethnicity was categorized as 0 minority (Blacks, Hispanics, Asians),
1 non-minority (Whites). Those who had had previous time management
training were coded as 1 whereas, those with no prior exposure were given a
0. Type A/B scores could range from 0 to 21 with Type Bs tending toward 0
and Type As toward 21. Education was coded with a higher number
indicating a higher educational level. The following coding was used: 1) less
than high school, 2) vocational training, 3) high school degree or GED, 4) some
college, 5) college degree, 6) master degree, and 7) doctoral degree. The age
of respondents in months was also included.
For the environmental factors, clerical workers were assigned a 0 and
caseworker/administrative positions a 1. The length of time in months each
employee had been in their respective position comprised the job tenure
factor. To examine family demands, a measure based on objective
information available, number of children and their ages, was computed.
Respondents with children received a total score based on the number of
children weighted by their ages. The following weighting scheme totaling to
one was used:
<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 or less</td>
<td>0.52</td>
</tr>
<tr>
<td>6 to 10</td>
<td>0.26</td>
</tr>
<tr>
<td>11 to 15</td>
<td>0.13</td>
</tr>
<tr>
<td>16 to 20</td>
<td>0.06</td>
</tr>
<tr>
<td>21 and over</td>
<td>0.03</td>
</tr>
</tbody>
</table>

1.00

Respondents with no children were given a score of 0. Therefore, participants with more children at a young age received a higher score value. Although a crude measure, it is supported by past research findings indicating employed parents with preschool age children experience more conflict between work and family life than parents with older children or persons who have no children (Pleck et al., 1980).

Given the results of the factor analysis, items comprising each factor were determined based on the factor coefficients in Table 3 and summed using unit weighting. Table 9 presents the results of the multiple regressions conducted on each of the four time control factors. Included in Table 9 are the B-weights for each person and environmental factor, and the \( R^2 \) and \( F \) for the overall model.

The overall \( F \) for each analysis was statistically significant. Therefore, the departure of the partial contribution of each variable from zero was tested for significance by means of a standard t-test to determine what variables account for individual differences on each of the time control
factors. The actual B-weights were then examined in order to interpret the
results of the analysis.

Table 9

What accounts for individual differences on time control?

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B-weights</td>
<td>B-weights</td>
<td>B-weights</td>
<td>B-weights</td>
</tr>
<tr>
<td><strong>Person Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.01</td>
<td>0.01*</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Education</td>
<td>0.01</td>
<td>0.04</td>
<td>0.31**</td>
<td>0.06</td>
</tr>
<tr>
<td>Sex</td>
<td>0.16</td>
<td>0.11</td>
<td>-0.15</td>
<td>0.18</td>
</tr>
<tr>
<td>Minority/Non-</td>
<td>-0.24*</td>
<td>-0.14</td>
<td>-0.02</td>
<td>-0.14</td>
</tr>
<tr>
<td>minority</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type A/B</td>
<td>-0.08**</td>
<td>-0.04*</td>
<td>-0.04</td>
<td>-0.05*</td>
</tr>
<tr>
<td>Prior time mnmt.</td>
<td>0.15</td>
<td>0.09</td>
<td>0.06</td>
<td>-0.12</td>
</tr>
<tr>
<td>training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of job</td>
<td>-0.27</td>
<td>-0.28</td>
<td>0.05</td>
<td>-0.26</td>
</tr>
<tr>
<td>Job tenure</td>
<td>-0.004*</td>
<td>-0.005**</td>
<td>-0.002</td>
<td>-0.004*</td>
</tr>
<tr>
<td>Number of children</td>
<td>-0.003</td>
<td>0.19</td>
<td>0.26</td>
<td>0.18</td>
</tr>
</tbody>
</table>

VARIANCE EXPLAINED:

R²=.19  R²=.17  R²=.15  R²=.11
F=3.93**  F=3.35*  F=3.05**  F=2.11*

NOTE: **Scoring scheme**

- Age - in years
- Education - higher number indicates higher educational attainment
- Sex - 0=females, 1=males
- Minority/Non-minority - 0=minority, 1=non-minority
- Type A/B - Type B tending toward 0, Type A tending toward 21
- Prior time training - 0=no, 1=yes
- Type of Job - 0=clerical, 1=caseworker/administrative
- Job Tenure - months in present position
- Number of children - higher number indicates more child demands
Factor 1, perceived control of time, was regressed on each of the nine person and environmental predictors. It was found that minorities ($t = -2.08$, $p < .05$), those who tended toward the Type B behavior pattern ($t = -3.68$, $p < .01$), and those who had been on the job fewer months ($t = -2.38$, $p < .05$) perceived more control of their time. Similar results were found for Factors 2 and 4. Those who tend toward Type B ($t = -2.20$, $p < .05$), older employees ($t = 2.13$, $p < .05$) and those who had been on the job fewer months ($t = -3.37$, $p < .01$) reported using goal setting/prioritizing (Factor 2) more frequently. Similarly, those tending toward Type B ($t = -2.19$, $p < .05$) and those who had been on the job fewer months ($t = -2.22$, $p < .05$) perceived more work organization in terms of their work space and general approach to work (Factor 4). Finally, for Factor 3, the nuts and bolts of time control, those who are better educated ($t = 3.39$, $p < .01$) engaged more frequently in making lists, scheduling, and planning.

Discussion

What person and environmental factors account for individual differences on this measure of time control? Overall, the Type A/B behavior pattern and job tenure were the two major variables predicting high scores on three of the four time control factors. Other significant predictors included: minority/non-minority, age and educational level. Because time control was found to consist of four factors, it was more appropriate to answer this question in relation to each factor. A systems view is taken in which "reciprocal determinism" of person and environmental factors is acknowledged. Therefore, it is important to examine the simple correlations between the variables for clues to possible alternative explanations.

Examining Factor 1, who perceived control of their time? Minorities,
those tending toward the Type B behavior pattern, and those who had been on the job fewer months reported greater perceptions of control of their time. Why should minorities perceive more control of their time? One possibility is that they are better able to say "no" to requests and thus do not become overwhelmed by their work when compared to non-minority individuals. In this social service system, most of the clients whom employees must interact with are minorities (i.e., Blacks, Hispanics, Vietnamese). Employees, with ethnic backgrounds similar to their clients, may be more experienced in dealing directly with them, even in emotionally charged situations, than are employees not sharing the same ethnicity. Alternatively, minorities may perceive more control of their time because they tend to be in jobs which are traditionally viewed as less demanding cognitively and more structured. The significant correlation between minority/non-minority and type of job ($r = .23$) indicated that minorities tended to hold clerical positions. Furthermore, examining the simple correlations of person and environmental variables with perceived control (see Table 6) revealed that clerical workers tended to perceive significantly more control of their time than caseworkers.

Findings from the general Internal-External (I-E) control literature provide another plausible interpretation for racial difference in perceived control of time. Although early studies using the I-E Control of Reinforcement Scale (Rotter, Seeman & Liverant, 1962) found blacks perceived a more fatalistic, external control viewpoint than whites (Lefcourt & Ladwig, 1965), other studies suggested that social econmic factors played a deciding role in perceptions of overall control (Battle & Rotter, 1963; Franklin, 1963). In an extensive field study regarding group membership and the perception of control, Jessor, Graves, Hanson, & Jessor (1968) found
perceived control to be positively associated with access to opportunities, that is, the degree to which a person is in a position to secure valued ends. From these research findings, Lefcourt (1976) concluded:

While ethnic group membership was also linked, the access to opportunity was more decidedly associated with perceived control. Those who are able, through position and group membership, to attain more readily the valued outcomes that allow a person to feel personal satisfaction are more likely to hold internal control expectancies. (p. 25)

Carrying these findings one step further, it appears that minorities in this work setting may be achieving a more valued outcome when compared to non-minorities: hence, their greater perceptions of control overall. In essence, the perceptions of valued outcomes may be different for minorities and non-minorities.

The racial differences in perceived control of time might also have been due to methodological artifacts. Bachman & O'Malley (1984) raised the possibility that the frequent findings of higher self-esteem scores among Blacks compared to Whites may be attributable, at least in part, to black-white differences in response styles. Blacks were found to be more likely than whites to use the extreme response categories in Likert-type questionnaire items. However, an examination of the participants' responses to the items in this study did not reveal a tendency for minorities to favor the extreme response categories as compared to non-minorities.

Those tending toward the Type B behavior pattern perceived more control of their time. This finding is consistent with the definition of the Type A/B behavior pattern proposed by Rosenman & Friedman (1959).
Type As are defined as having a sense of time urgency, that is, feelings that time is passing too quickly for them to accomplish all they desire. Type Bs fall on the other end of the continuum, taking a more relaxed style as reflected in this finding. In addition, past research suggests that the behaviors of a Type A person represent a set of coping responses to a perceived loss of control (e.g., Glass, 1977; Matthews, 1982). Thus, the never-ending saga. Type As continually strive for control which they never perceive they have attained.

Finally, those who had been in their present position fewer months, perceived more control of their time. One reason may be that in the early stages of the job is when one does not have piles of paperwork to complete and doesn't yet feel overwhelmed with work. It is also possible that those who have been on the job longer have become more knowledgeable in their field. Because of their expertise, they are given not only more projects, but ones which are most difficult and perhaps time-consuming. Therefore, they are inundated with work, and thus do not perceive control of their time. In fact, Lakein (1973) uses an example of a similar situation to illustrate ways in which to delegate work and graciously say "no" to such requests of one's expertise.

Who scored highly on goal setting and prioritizing? Older respondents were found to report engaging more frequently in goal setting and prioritizing activities. Perhaps older people hold more administrative or caseworker positions requiring more goal setting/prioritizing than clerical jobs filled with younger employees. A significant correlation between age and type of job (r = .17) indicates this may be a plausible explanation. It is also likely that the older workers are the survivors -- the ones who managed to handle the job. This explanation suggests that setting goals, deadlines and
priorities, reviewing activities and goals daily, and finishing top priorities first, enables one to persevere in his/her job.

Those in their positions fewer months reported engaging more frequently in setting goals, and prioritizing their tasks. This measure of job tenure indicates how long one has been in a particular position in the organization, which is not necessarily equivalent to his/her tenure in the organization. An employee can move up in job seniority within job level, and thereby, have "less tenure on the job." When starting out in a new position, employees may find it necessary to set goals and priorities so as to obtain a clear direction for their work.

Those tending toward Type B also reported engaging more frequently in setting goals and priorities. Again, this finding is consistent with past research on the Type A/B behavior pattern. Type As are seen as ambitious and competitive, but "caught in a chronic struggle to reach an ever-expanding number of goals in the shortest period of time and/or against opposing environmental forces" (Chesney & Rosenman, 1980). Type As may set goals but fail to prioritize them. On the other hand, it appears as though Type Bs are able to earmark certain projects as priorities and establish goals to complete them in time.

Better educated persons indicated they engaged more frequently in conventional time management behaviors such as making lists, scheduling, and carrying an appointment book (Factor 3). Although no evidence in past research is available to support this notion, this finding may be a function of the educational process. In high school, there is no real need to plan daily activities because they are predetermined at the beginning of the semester. In addition, attendance is mandatory. In college, one has more freedom and control in scheduling the day. One is responsible for attending classes
and completing assignments or papers by the deadline, usually without parental interference. Therefore, techniques such as making lists, planning, and scheduling become important tools. Likewise, as one proceeds up the educational ladder, more control and responsibility for the educational experience rests with the individual making these strategies more vital. Another explanation is that perhaps those with higher educational attainments have read books on time management or participated in more time management seminars. However, the simple correlations do not support these suppositions. Finally, it is possible that better educated persons engaged more frequently in these time control behaviors because they tend to be in jobs that require more scheduling and planning.

Examination of the simple correlation between educational level and type of job revealed a significant correlation ($r = .69$), indicating that better educated employees held caseworker/administrative positions. In support of this explanation, tasks of the caseworker/administrative jobs include: scheduling meetings with clients and staff members, record keeping, and completing documents within deadlines.

Those tending toward Type B and those with fewer months on the job scored highly on the work organization factor (Factor 4). An employee new to the position is in essence "starting with a clean slate". In the beginning weeks or months in this new assignment, the employee can handle the incoming projects and can maintain an organized work area. However, as time goes on, work accumulates. The worker may fall behind and abandon any organized approach to work. In addition, the finding that those tending toward Type B scored highly on work organization is consistent with the definition of the Type A/B behavior pattern. That is, Type Bs are characterized as taking a less harried approach to their work.
In summary, those tending toward Type B and those in their positions fewer months scored higher on three of the four time control factors. Variance due to individual difference in minority/non-minority, age, and education also played a role in who scored highly. Surprisingly, those who had prior time management training did not tend to score significantly higher on any of the time control factors. A factor external to the job, family demands, measured by the number of children, did not play a role in who scored highly. Also, the sample was comprised of predominantly women and thus, no effects of sex were found for this somewhat homogenous sample.

Point 3 - What outcomes does time control predict? What is the relationship between time control and job performance, job satisfaction and worker stress?

Schuler (1979) asserted "Time management means less stress for individuals, which means more efficient, satisfied and healthy employees, which in turn means more effective organizations." Although Schuler’s claim seems plausible and many may believe it to be true, little empirical evidence supports it. As an examination of Schuler’s statement, which represents similar assertions made by time management consultants, four important outcomes, job-induced tension, somatic tension, job performance and job satisfaction were investigated from a correlational perspective.

Are time control activities and perceptions related to one’s stress reactions, that is, job-induced tensions and somatic tensions? Research on organizational stress suggests that "stress at work is a critical factor in the determination of employee health and well-being" (Ganster, Mayes, Simi & Thorp, 1982; see also, Kasl, 1973; Kornhauser, 1965; Cooper & Marshall,
1976). Medical research has documented the physical changes that occur to the body in response to stress. The two systems that control internal activity, the nervous and endocrine systems, facilitate the operation of stress in the body (Allen, 1983; Bishop, 1984; Lau & Hartman, 1983; Meyer, Leventhal & Gutmann, 1985; Pennebaker, 1982). Although the body tries to adapt to these internal response changes, a degree of imperfection results in illness. Somatic complaints or diseases of adaptation, as they are called, include heart disease, ulcers, headaches, digestive diseases, nervous and mental disorders and diseases of resistance in general (Matteson & Ivancevich, 1987).

If time control is "one very useful strategic technique for dealing with stress" (Schuler, 1979, p. 851), negative correlations between time control and the two measures of tension are expected. Those who score highly on the time control instrument should experience fewer frustrations and tensions in response to their job (job-induced tension). It is also expected that individuals will report fewer physiological symptoms of stress (headaches, ulcers, insomnia) the more time control activities they engage in and the stronger their perceptions of control. In effect, those who practice time control should be "more healthy employees".

Are time control activities and perceptions related to one's performance on the job? No research has examined the relationship between time control and job performance. In fact, the stress literature is deficient in research examining the impact of stress on job performance in organizational settings (Matteson & Ivancevich, 1987). Based solely on claims made by time management consultants and writers of time management how-to books, a strong positive relationship between time control activities and job
performance would be expected. This hypothesis stems from the definition and face validity of time control. If one's goals correspond to organizational goals and time has been allocated accordingly, then it is more likely that performance on the job will be enhanced. That is, time will be spent on the highest priority activities at hand and not wasted on less productive pursuits.

Are time control activities and perceptions related to one's satisfaction with his/her job? Brief, Schuler & Van Sell (1981) noted that low job satisfaction is the most well-established psychological consequence of job stress. Those who experience stress as a result of their job are least satisfied with their work. This dissatisfaction with the job typically is a concern for organizations, especially since past research has demonstrated a relationship, although not always strong, between one's job satisfaction and behavioral measures of absenteeism and turnover (Porter & Steers, 1973). Similar to the job satisfaction and stress relationship, it would be expected that those who do not engage in conventional time control activities and do not feel in control of their time would be least satisfied with their job. For example, an individual whose work assignment involves meeting virtually impossible deadlines would be expected to feel unhappy with this job situation.

The effects of time control behaviors were indirectly tested by Macan, et al. (1987) in a correlational study. College students were asked to complete a questionnaire designed to assess time control activities and perceptions. Results indicated that time control was significantly related to self-reported performance measures and affective measures of stress. Students who reported engaging in more conventional time management
behaviors also reported greater perceived performance. The key factor of the time control scale was perceived control of time. Both the performance measure and affective measures of stress were significantly related to this factor. Students who perceived more control of their time also reported greater perceived performance and satisfaction, and less school-related and somatic tensions.

Macan et al.'s (1987) study using a student sample is limited in that performance measures were self-report. Furthermore, research examining these relationships of time control and performance in an employed sample is lacking. It further should be noted that past experiments haven't given us much insight into naturally occuring relationships among these variables. Therefore, the third part of this research takes a correlational approach and examines the relationship of workers' self-reported time control with regard to job performance. In addition, the relationship of time control with worker stress and job satisfaction is investigated.

HYPOTHESES:

Given past research findings and claims made by time management consultants and researchers, four hypotheses are tested.

**Hypothesis 1:** A person who scores highly on time control should be less likely to report tensions brought on by their work and consequently less likely to indicate physical symptoms of stress such as headaches and ulcers.

**Hypothesis 2:** As employees are able to cope with the time demands of their job by using time control activities, it was expected that their performance would increase correspondingly.
**Hypothesis 3:** As one's time is allocated in order to fulfill needs and wants and to the extent that these needs are achieved and valued, one should experience satisfaction with one's work.

**Hypothesis 4:** It is hypothesized that each of the above mentioned relationships between time control and outcome will hold even when controlling for effects due to person and environmental factors such as, age, sex, race, type of job, etc.

**Method**

The subjects and procedures are identical to those in point #1. In addition to completing the time control scale, Type A/B behavior pattern scale, and providing demographic information as described in points #1 and #2, respondents completed three other measures.

**Measures**

**Job-Induced and Somatic Tension.** Two components of the anxiety stress questionnaire developed by House and Rizzo (1972) were included. The job-induced tension scale is composed of six items and the somatic tension scale is made up of five items. These scales were designed "to measure the existence of tensions and pressures growing out of work requirements, including the possible outcomes in terms of physical symptoms" (p. 481). Higher scores on both scales indicated an experience of greater tension.

**Job Satisfaction.** The three item General Job Satisfaction scale which is part of the Job Diagnostic Survey (Hackman & Oldham, 1975) was used to measure job satisfaction. This scale indicates how satisfied and happy an employee is with his or her work. Higher scores indicated more satisfaction.
Job Performance

Supervisory ratings. Supervisors rated employees on eight items developed to measure the quality and timeliness of employee’s work as well as the supervisor’s view of the employee’s overall disposition toward the job and coworkers. Ratings were made on a 5-point Likert-type scale ranging from (1) seldom true to (5) very often true. Supervisors also made two global ratings of performance: (1) the employee’s overall performance and (2) the employee’s performance as compared to others performing the same or similar type of work. Higher mean scores indicated better job performance.

Based on a factor analysis of these ten performance ratings, two factors emerged. The first factor, consisting of 7 items, represents timeliness and quality of work. The remaining three items comprised the second factor, disposition toward the job and coworkers. Two performance subscales were computed based on these two factors. However, given that the overall performance of the individual on the job was the main concern of the study and the high inter-item reliability (coefficient alpha=0.91) of the ten items, supervisors’ ratings of employees on these ten items were averaged to form one composite score. This composite of overall job performance is used in the analyses.

Finally, supervisors estimated the number of sick leave days taken by the employee and the number of days the employee is late in a typical month (see Appendix B for rating form). Because the return rate of forms by supervisors was 80%, data are available for 146 of the subjects.
Results

Descriptive statistics

Descriptive statistics for these outcome variables are presented in Table 10. These include sample size, mean, standard deviation, the observed range, and possible range. Coefficient alphas for each scale are reported in the diagonal of Table 12.

Table 10

<table>
<thead>
<tr>
<th>Scale</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Observed Range</th>
<th>Possible Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job-Induced Tension</td>
<td>162</td>
<td>2.51</td>
<td>1.09</td>
<td>1-5</td>
<td>1-5</td>
</tr>
<tr>
<td>Somatic Tension</td>
<td>162</td>
<td>2.07</td>
<td>0.92</td>
<td>1-5</td>
<td>1-5</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>162</td>
<td>3.23</td>
<td>1.01</td>
<td>1-5</td>
<td>1-5</td>
</tr>
<tr>
<td>Overall Supervisor-Rated Performance</td>
<td>146</td>
<td>4.28</td>
<td>0.68</td>
<td>2-5</td>
<td>1-5</td>
</tr>
<tr>
<td>Timeliness</td>
<td>146</td>
<td>4.24</td>
<td>0.75</td>
<td>1.4-5</td>
<td>1-5</td>
</tr>
<tr>
<td>Disposition</td>
<td>146</td>
<td>4.34</td>
<td>0.83</td>
<td>1.3-5</td>
<td>1-5</td>
</tr>
</tbody>
</table>

Simple Correlations Between Time Control and Outcomes

The correlations between the four factors and each outcome were computed. The correlations can be found in Table 11. The intercorrelations among the scales were also computed and are displayed in Table 12.

Scores on Factor 1 (perceived control of time) were significantly
correlated with three of the four outcomes and in the expected direction. Those who perceived more control of their time also reported less job-induced and somatic tensions, and were more satisfied with their job. Only 2 of the 4 correlations between Factor 2 (goal setting/prioritizing) and the outcome measures were significant. Those who indicated that they engaged more frequently in setting goals and prioritizing their activities, also reported less job-induced tension and were more satisfied with their job overall.

Surprisingly, none of the outcomes were significantly correlated with Factor 3 (mechanics of time control). Factor 4 (work organization), which was only comprised of 7 items, significantly correlated with the two measures of strain, job-induced tension and somatic tension, in the expected direction. Those taking a more organized approach to their work and workspace reported less job-induced tension and less somatic tension. Contrary to hypothesis 3, the relationship between job performance and each of the four factors was not significant.
Table 11

Simple correlations between the four time control factors and each outcome measure

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job-induced tension</td>
<td>-.56**</td>
<td>-.18*</td>
<td>-.05</td>
<td>-.24**</td>
</tr>
<tr>
<td>Somatic Tension</td>
<td>-.43**</td>
<td>-.09</td>
<td>-.10</td>
<td>-.18*</td>
</tr>
<tr>
<td>Job Performance</td>
<td>.16</td>
<td>.09</td>
<td>.01</td>
<td>.09</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>.30**</td>
<td>.16*</td>
<td>.10</td>
<td>.07</td>
</tr>
</tbody>
</table>

* p ≤ .05
** p ≤ .01

Note: Factor 1- Perceived control of time
Factor 2- Goal setting / Prioritizing
Factor 3- Mechanics
Factor 4- Work organization
Table 12

Intercorrelations among Outcome Variables and
Correlations of Outcomes
with Person and Environmental Factors

<table>
<thead>
<tr>
<th>Scales/Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Job-Induced</td>
<td>0.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somatic Tension</td>
<td>0.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Supervisor-rated</td>
<td>-0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>0.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Job Satisfaction</td>
<td>-0.33*</td>
<td>0.12</td>
<td></td>
<td>0.63</td>
</tr>
<tr>
<td>5. Age</td>
<td>0.02</td>
<td>-0.16*</td>
<td>-0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>6. Education</td>
<td>0.19*</td>
<td>-0.03</td>
<td>-0.09</td>
<td>-0.04</td>
</tr>
<tr>
<td>7. Sex</td>
<td>0.04</td>
<td>-0.06</td>
<td>-0.19*</td>
<td>0.01</td>
</tr>
<tr>
<td>8. Minority/Non-Minor</td>
<td>0.20*</td>
<td>0.02</td>
<td>0.08</td>
<td>-0.02</td>
</tr>
<tr>
<td>9. Type A/B behavior</td>
<td>0.29**</td>
<td>0.39**</td>
<td>-0.21*</td>
<td>-0.14</td>
</tr>
<tr>
<td>(0.53)</td>
<td>(0.78)</td>
<td>(-0.36)</td>
<td>(-0.29)</td>
<td></td>
</tr>
<tr>
<td>10. Prior Time Training</td>
<td>-0.12</td>
<td>-0.09</td>
<td>0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>11. Type of Job</td>
<td>0.27**</td>
<td>-0.01</td>
<td>-0.09</td>
<td>0.01</td>
</tr>
<tr>
<td>12. Job Tenure</td>
<td>0.12</td>
<td>0.11</td>
<td>-0.13</td>
<td>-0.03</td>
</tr>
<tr>
<td>13. Number of Children</td>
<td>-0.15*</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.16*</td>
</tr>
</tbody>
</table>

* p ≤ .05
** p ≤ .01

+ correlations in parentheses are corrected for attenuation
What outcomes does time control predict?

Hierarchical multiple regressions with sets as the unit of analysis (Cohen & Cohen, 1983) were conducted to determine if each of time control factors added any incremental variance to the prediction of the outcomes above that accounted for by the person and environmental factors. Five separate analyses were conducted for each outcome measure. First, the six person factors and the three environmental factors were entered as one set. The second set consisted of only one variable. Each of the four time control factors was entered separately in the second step and the increment in variance accounted for by the factor was tested for significance using the general $F$ test for incremental variance (model 1 error) (Cohen & Cohen, 1983).

A summary of the results for job-induced tension are presented in Table 13. The person and environmental factors accounted for 20% of the variance in predicting job-induced tension. Only the addition of Factor 1, perceived control of time, produced a significant increment (17%) in variance accounted for in the prediction of job-induced tension when controlling for any effects due to differences in person and environmental factors. Thus, whether employees perceived control over their time accounted for 17% of the variance in job-induced tension, after partialing out the effect of differences in respondents' person and environmental factors. The actual B-weights resulting from the four hierarchical multiple regressions on the person/environmental variables and Factors 1, 2, 3, and 4 are displayed in Tables 13-A, 13-B, 13-C, and 13-D respectively (see Appendix C).
Table 13

Summary Results of Hierarchical Multiple Regression

Outcome Measure: Job-Induced Tension

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Total R²</th>
<th>E Overall Model</th>
<th>Incremental R²</th>
<th>Incremental E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person and Environmental Factors</td>
<td>.20</td>
<td>4.25**</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>df=(9,152)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 1</td>
<td>.38</td>
<td>9.20**</td>
<td>.18</td>
<td>43.09</td>
</tr>
<tr>
<td></td>
<td>df=(10,151)</td>
<td></td>
<td></td>
<td>df=(1,151)</td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 2</td>
<td>.20</td>
<td>3.81**</td>
<td>.00</td>
<td>n.s.</td>
</tr>
<tr>
<td></td>
<td>df=(10,151)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 4</td>
<td>.22</td>
<td>4.22**</td>
<td>.02</td>
<td>n.s.</td>
</tr>
<tr>
<td></td>
<td>df=(10,151)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The prediction of somatic tension and job satisfaction produced similar results. As shown in Table 14, after entering the person and environmental factors in set one, 24% of the variance was accounted for in predicting somatic tension. Entering Factor 1 as the second set resulted in a significant increment (11%) in the variance. Whether employees perceived control over
their time accounted for 11% of the variance in somatic tensions, after controlling for any differences due to person and environmental factors. Tables 14-A, 14-B, 14-C, and 14-D present the B-weights from the hierarchical multiple regressions on the person/environmental variables and Factors 1, 2, 3, and 4 respectively (see Appendix C).

Table 14

Summary Results of Hierarchical Multiple Regression

<table>
<thead>
<tr>
<th>Outcome Measure: Somatic Tension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
</tr>
<tr>
<td>Set 1</td>
</tr>
<tr>
<td>Person and Environmental Factors</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>df=(9,152)</td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
</tr>
<tr>
<td>Set 2 - Factor 1</td>
</tr>
<tr>
<td>df=(10,151)</td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
</tr>
<tr>
<td>Set 2 - Factor 2</td>
</tr>
<tr>
<td>df=(10,151)</td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
</tr>
<tr>
<td>Set 2 - Factor 3</td>
</tr>
<tr>
<td>df=(10,151)</td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
</tr>
<tr>
<td>Set 2 - Factor 4</td>
</tr>
<tr>
<td>df=(10,151)</td>
</tr>
</tbody>
</table>
In predicting job satisfaction, the person and environmental factors accounted for 8% of the variance (Table 15). Again, only the addition of Factor 1, produced a significant increment (6%) in the variance accounted for in predicting job satisfaction. When holding constant any differences due to person and environmental factors, whether employees perceived control of their time accounted for 6% additional variance in the prediction of satisfaction on the job. Tables 15-A, 15-B, 15-C, and 15-D present the B-weights from the hierarchical multiple regressions on the person/environmental variables and Factors 1, 2, 3, and 4 respectively (Appendix C).

<p>| Table 15 |
|-----------------|------------------|------------------|------------------|
| Summary Results of Hierarchical Multiple Regression |
| <strong>Outcome Measure: Job Satisfaction</strong> |</p>
<table>
<thead>
<tr>
<th>Total R²</th>
<th>F Overall Model</th>
<th>Incremental R²</th>
<th>Incremental F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person and Environmental Factors</td>
<td>.08</td>
<td>1.46</td>
<td>---</td>
</tr>
<tr>
<td>df=(9,152)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 1</td>
<td>.15</td>
<td>2.59**</td>
<td>.07</td>
</tr>
<tr>
<td>df=(10,151)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 2</td>
<td>.09</td>
<td>1.49</td>
<td>.01</td>
</tr>
<tr>
<td>df=(10,151)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 3</td>
<td>.09</td>
<td>1.42</td>
<td>.01</td>
</tr>
<tr>
<td>df=(10,151)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 4</td>
<td>.08</td>
<td>1.30</td>
<td>.00</td>
</tr>
<tr>
<td>df=(10,151)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The summary results of the hierarchical multiple regressions for the prediction of overall supervisor-rated job performance are shown in Table 16. The person and environmental factors were entered in set one and accounted for 14% of the variance. Addition of each of the factors separately in the second step did not result in a significant increment in the variance accounted for in the prediction of job performance. The actual B-weights resulting from the four hierarchical multiple regressions on the person/environmental variables and Factors 1, 2, 3, and 4 are displayed in Tables 16-A, 16-B, 16-C, and 16-D respectively (see Appendix C). This same pattern of results was found for the two performance subscales as well.
### Table 16
Summary Results of Hierarchical Multiple Regression

**Outcome Measure: Supervisor-Rated Performance**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Total R²</th>
<th>F Overall Model</th>
<th>Incremental R²</th>
<th>Incremental F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person and Environmental Factors</td>
<td>.14</td>
<td>2.45*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>df=(9,136)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 1</td>
<td>.15</td>
<td>2.35*</td>
<td>.01</td>
<td>n.s.</td>
</tr>
<tr>
<td>df=(10,135)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 2</td>
<td>.14</td>
<td>2.21*</td>
<td>.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>df=(10,135)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 2 - Factor 4</td>
<td>.15</td>
<td>2.31*</td>
<td>.01</td>
<td>n.s.</td>
</tr>
<tr>
<td>df=(10,135)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Discussion**

Many workers may experience stress as a result of their job. One proposed strategy hypothesized to aid in coping with this resulting stress is time control. The major findings did not support the hypotheses that engaging more frequently in conventional time control activities (i.e., goal setting, scheduling, planning, organizing) is related to performance measures,
somatic tension, job-induced tension and job satisfaction after controlling for any differences due to person and environmental factors. Instead, Factor 1, perceived control of time, was found to be the major correlate. When partialing out any effects due to differences in person and environmental factors, only those who perceived control of their time also indicated that they experienced fewer tensions with regard to their job, fewer physical reactions to stress, and were overall more satisfied with their work situation. Although non-significant, the simple correlation between job performance and perceived control of time was in the hypothesized positive direction. As workers reported that they perceived more control of their time, supervisors tended to report greater evaluations of their performance.

These findings suggest that perceived control of time was the most salient predictor of the time control scale. This finding on perceived control of time is supported by the general control literature. Based on several case studies, Karasek and his colleagues (Karasek, 1979; Karasek et al., 1981) found that high levels of control buffered the negative effects of high demand jobs. Employees who perceived comparatively high levels of control at work performed better, were more satisfied, committed, and motivated, experienced fewer physical and emotional symptoms of stress, less role ambiguity and conflict, and were absent less (Karasek, 1979; Karasek, Baker, Marxer, Ahlbom & Theorell, 1981). Although Karasek's proposition is based on case study observations, his hypothesis is supported by other control research. The basic overall findings on research with noxious stimuli indicate that the extent to which an individual believes he or she can directly affect the environment has considerable impact on perceptions of the environment and reactions to it. For example, subjects who believed they had control over painful shock perceived it as less painful (Glass, Singer,
Leonard, Krantz, Cohen & Cummings, 1973) and had fewer physiological reactions to it (Geer, Davidson & Gatchel, 1970).

Much of the research on perceived control by employees has been conducted in two areas, job design (as autonomy) and participative decision-making. Spector (1986) in a meta-analysis of job design and participative decision-making studies relating perceived control to employee outcome variables confirmed Karasek's findings. High levels of perceived control were associated with high levels of job satisfaction, commitment, involvement, supervisor ratings of job performance and motivation, and low levels of physical symptoms, emotional distress, role stress, absenteeism, intent to turnover, and turnover. Further research needs to examine this notion of perceived control of time and its relationship with this broader idea of perceived control.

A closer examination of Factor 2 (goal setting/prioritizing) and Factor 3 (scheduling, planning, organizing) indicated that they best represented what is commonly considered to be specific time management behaviors. When examining the significant relationships with the outcomes for these two factors, the results do not support the conventional notions of time management. Those employees who engaged more frequently in goal setting and prioritizing were found to report less job-induced tension and were more satisfied with their job. However, when controlling for effects due to person and environmental factors, these relationships did not hold. No significant relationships were found for Factor 3. Those who practice time management behaviors such as making lists and scheduling activities, were not better performers, were not more satisfied with their job situation, and did not feel fewer somatic or job-induced tensions.

Even though not directly relevant to the hypotheses stated, examination
of the other variables measured revealed significant correlations and consistency with past research findings. The present study's findings provide directions for future research in this area. Examination of Table 11 points to the fact that the tension measures are significantly related to each other, and satisfaction, similar to the findings of Kahn, Wolfe, Quinn, Snoek & Rosenthal (1964). For instance, the satisfaction measure was significantly related to job-induced tension and somatic tension in a negative direction. Employees noted less satisfaction with their work, the more tension they felt both psychologically and physically. Furthermore, job-induced tension and job satisfaction were related to performance ratings. Better performers expressed fewer tensions with regard to their job and were more satisfied in their job situation.

It should be noted that this study was correlational and thus, precludes any causal statements. Another limitation is that most measures were self-report. More objective measures such as physiological reactions to stress should be incorporated. Although a more objective measure, supervisors' ratings of performance were restricted to the higher end of the scale. It appears as though poor performers are no longer with the organization. Other measures of performance, such as peer ratings, observational ratings by trained third parties, as well as error rates and absenteeism records should be examined in future research. However, it is important to remember that a person's perception of the situation is a necessary component in determining a stressful situation (Lazarus, 1971). Perceptions should not be dismissed, just coupled with more stringent behavioral measures. Finally, the generalizability of these time control findings may be limited by the type of organization or job. However, two types of jobs were represented, clerical and caseworker. In addition, these
results are similar to those found with a student sample (Macan et al., 1987). Nonetheless, more research needs to be conducted in different organizational settings representing other types of jobs.

Despite these limiting factors, the findings do encourage further examination of time control and point to additional areas to be explored. Future research can proceed by examining the effects of a time management training program on job performance and worker stress in an experimental pre- and delayed post-design with control group. This procedure would more directly address the effectiveness of time control in terms of productivity as well as a potential stress coping technique.

Evaluation of time management training

In addition to focusing solely on "high priority" outcome behaviors as a measure of time control when examining the effects of training by means of a manual or personal instruction, past research on time management has typically made this assessment either immediately or shortly following a time management training intervention. In addressing this latter criticism, Morgan (1984) stated that one explanation for a lack of significant findings in her study was that an adequate amount of time had not elapsed for habit formation of time management skills. However, no assessment of the subjects' time management behaviors was made anytime after training in her study to test this interpretation.

The timing of the posttest for the evaluation of an instructional program is not easily specified. A posttest at the conclusion of the training program provides a measure of the changes that have occurred during instruction, but it does not give any indication of later transfer performance. As with many other newly taught behaviors, time is needed before one can change and put
time management training into practice. Not only does it usually take a
while for one to acquire and implement new behaviors, it also takes time to
see any resulting changes. Although King, et al. (1986) did find a significant
effect of time management instruction on subjects' knowledge of training
content, time spent in subjects' designated enjoyable "high priority" activity
and subjects' self-efficacy, no effect was found for the two measures of
changes in perceived stress.

Very few research efforts have been directed at evaluating purported
strategies for handling stress, or, for that matter, training programs in
general. This void has been recognized and concerns voiced by many
researchers (Goldstein, 1986; Newman & Beehr, 1979; Hendrix, Ovalle,
Troxler, 1985; Ganster, Mayes, Simi & Thorp, 1982; Matteson & Ivancevich,
1987). Therefore, an analysis of workers' self-reported time control
activities four- to five-months after the training intervention was made in
order to examine: (1) whether after training, participants perceived more
control of their time and engaged more frequently in time control activities
than participants not receiving training, and (2) the potential effectiveness of
time management training on supervisor-rated performance, job satisfaction
and as a perceived coping mechanism for stress.

Only an exploratory test can be conducted because of the low return rate
of the questionnaire by the training group after the second administration.
This low response calls into question the findings of the evaluation of the
training program. Follow-up attempts were made to solicit responses. All
non-respondents were sent a reminder encouraging them to complete the
survey along with an additional copy of the questionnaire. Telephone calls
to these persons proved to be ineffective in increasing the response rate.
Consequently, results should be viewed with these restricting circumstances
in mind.

The following hypotheses are offered based on claims made by time management consultants and researchers in the field:

**Hypothesis 5:** It is hypothesized that, after training, participants of the time management training will perceive more control of their time than those who have not participated in the training.

**Hypothesis 6:** It is hypothesized that, after training, participants of the time management training will report engaging more frequently in time control activities than those who have not participated in the training.

**Hypothesis 7:** It is hypothesized that, after training, participants of the time management training will report significant decreases in job-induced tension and somatic tension than those who have not participated in the training.

**Hypothesis 8:** It is hypothesized that, after training, participants of the time management training will receive significantly higher performance ratings from supervisors than those who have not participated in the training.

**Hypothesis 9:** It is hypothesized that, after training, participants of the time management training will report significant increases in job satisfaction than those who have not participated in the training.

**Method**

**Overview**

In an evaluation of time management training, a nonequivalent control group design with pre- and post-test measures was used. A sample of
employees of a large social service agency who had completed an in-house time and stress management training session was compared with those who indicated they had never attended a time management training seminar. Measures of reactions to stress (strain), job satisfaction and supervisors' ratings of performance were gathered for these people at two points in time so an examination of a relationship between changes in job stressors, job performance and job satisfaction with time control could be made.

**Subjects**

Forty subjects participated in a 2-day, 15-hour time and stress management training seminar between administrations of the questionnaire. Twenty-five had never participated in this training before, whereas thirteen were repeat participants. In this organization, participants can either request time and stress management training or be advised to attend by their supervisor. Three seminars were conducted over a five month period (July to November, 1987). Completed pre-measure questionnaires were available for only 38 training participants.

Thirty-nine respondents comprised a non-equivalent control group of employees not having participated in time management training. It was not discernable from company records which employees had or had not participated in a time management seminar. Also, it was not possible to know if employees had attended a seminar on time management outside the organization. Therefore, respondents were asked to indicate whether they had ever participated in a time management training seminar. Out of 111 respondents, thirty-nine indicated that they had not participated in time and stress management training and did not attend the training during the study period. (Three subjects did not respond to this question.)
Four- to five-months after completing the first questionnaire, respondents were asked to complete the survey a second time. A total of 44 participants returned the questionnaire at time two. The return rate was smaller this time. Possible contributing factors to this low return may have included: turnover, vacations and method of distribution. At the second administration, only 20 of the 40 training participants returned the survey and 2 resigned from the organization.

Procedure
First Administration - Time 1

The procedure for gathering survey information at time 1 was described in point #1, a preceding section.

Second Administration - Time 2

Approximately four- to five-months following the first completion of the Work Activity Questionnaire, all subjects were asked to complete the form a second time. Subjects were mailed questionnaires with a cover letter soliciting their participation and noting a deadline for return of the survey. Addressed stamped envelopes were included for return to Rice University.

Approximately two weeks later, because of anonymity concerns, all subjects were sent a reminder encouraging them to complete the questionnaire even though the deadline had passed. Persons who had already returned a completed questionnaire were instructed to discard the reminder and were thanked for their participation.

At both time 1 and time 2 supervisors rated their employees’ job
performance on separate questionnaires. The response rate for the supervisors was 80% at time 1 and 88% at time 2. Consequently, performance measures are available for only 38 of the 44 respondents.

Description of Time Management Training

The seminar was titled Time and Stress Management. One half day of the 2-day session was devoted to the teaching of time management techniques. The rest of the session covered stress topics which included: countering negative self-talk, problem-solving, and relaxation exercises. The same in-house training instructor conducted the seminars during the study period. The basic time management techniques taught were taken from Lakein (1973). The main topic areas taught included: categorization and prioritization, procrastination, desk and paper organization and dealing with interruptions. The time management behaviors were taught using lecture, discussion, a film, time to make lists and set goals, and role playing. Based on the various topics covered and methods used, this time management training could be categorized as very thorough and intensive. In addition, the seminar is very popular among employees and many attend it more than once.

Measures

All measures gathered at both Time 1 and Time 2 were identical to those collected and described in preceding sections -- points #1, #2, and #3. These included: the time control scale, job-induced tension, somatic tension, job satisfaction, demographic information, and supervisor-rated performance.
Results

Data from 44 subjects were used in these analyses. Although 40 participants completed the time and stress management seminar during the study period, only 20 returned completed questionnaires at both pre- and post-training. In addition, only 24 of the 39 control group subjects returned the questionnaires after both administrations.

Therefore, it was important to examine each reduced sample for potential biasing effects in their time control activities and perceptions. Is the sample of training group respondents that participated in the second wave of the study biased in any way from the total trained sample with respect to their time control behaviors and perceptions? Given the reduced response rate of the participants not receiving training at this time, it was also important to ask: Is this sample of participants biased in any way from the total sample of non-trained respondents with respect to their time control behaviors and perceptions? It might be expected that those with better time control skills or perceptions would find the time to participate in the second survey and thus, a disproportionate number of the high scoring participants would be represented in the second groups.

Participants who returned the questionnaire both times were compared with those who only returned the survey after the first administration on each of the four initial time control factor scores to examine if there was a biased subsample of respondents. Multiple t-tests were conducted within the two groups -- trained vs. not trained. For the not trained control group, using two-tailed t-tests at alpha=.05, the repeated measures group showed no difference from the one-time respondents in 4 of the 4 comparisons, indicating an unbiased sample with respect to time control activities and perceptions. The means, standard deviations and t-tests are presented in
Table 17. For the training participants, a significant difference ($t = -2.77, \ p < .01$) was found between the one-time and two-time respondents in whether participants engaged in scheduling and planning activities only (Factor 3). The means, standard deviations and t-tests are presented in Table 17. Training participants returning the questionnaire both times reported engaging more frequently in the mechanical activities of time control (i.e., making lists, jotting reminder notes) than those training participants who only completed the questionnaire one time. Consequently, the training participants who returned questionnaires both times should be considered a biased sample of all training participants with respect to their time control activities of scheduling and planning. Therefore, the results of the evaluation of the time management training should be viewed noting this difference.
Table 17

Comparison of One-Time Respondents with Repeat Respondents for Training and Non-Training Groups

<table>
<thead>
<tr>
<th>Control Group - Non Training</th>
<th>Response T1 Only</th>
<th>Response T1 and T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Factor 1</td>
<td>15</td>
<td>3.72</td>
</tr>
<tr>
<td>Factor 2</td>
<td>15</td>
<td>3.57</td>
</tr>
<tr>
<td>Factor 3</td>
<td>15</td>
<td>2.91</td>
</tr>
<tr>
<td>Factor 4</td>
<td>15</td>
<td>4.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training Group</th>
<th>Response T1 Only</th>
<th>Response T1 and T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Factor 1</td>
<td>18</td>
<td>3.54</td>
</tr>
<tr>
<td>Factor 2</td>
<td>18</td>
<td>3.08</td>
</tr>
<tr>
<td>Factor 3</td>
<td>18</td>
<td>2.60</td>
</tr>
<tr>
<td>Factor 4</td>
<td>18</td>
<td>4.12</td>
</tr>
</tbody>
</table>

* p < .01

Evaluation of Training Program

To examine if training participants' perceptions of their control of time after training changed in the same pattern as the control group, a 2 X 2 repeated measures ANOVA was performed with group membership (training vs. no training) as a between-subjects factor and time of questionnaire administration (time 1 vs. time 2) as a within-subjects factor. Two effects
were found to be significant: the main effect for time of administration, and the interaction of group membership and time of questionnaire administration. The significant main effect ($F(1,42) = 7.04$, $p = .01$) indicated that all respondents experienced a greater perception of control of their time ($M = 3.84$) after four- or five-months than they had initially ($M = 3.56$). However, the significant interaction ($F(1,42) = 5.90$, $p < .05$) reveals that this time difference may be largely due to the experimental group scores. An examination of Figure 1 shows that initially, the experimental group perceived significantly less control of their time ($M = 3.27$) than the control group ($M = 3.81$). Although the control group remained consistent across time, the experimental group perceived significantly more control of time after training ($M = 3.85$) than they had before training ($M = 3.27$). This provides support for hypothesis 5.

![Figure 1. Mean ratings of perceived control of time by Training vs. No Training groups before training and four to five months later.](image-url)
To examine hypothesis 6, three 2 x 2 repeated measures ANOVAs were conducted with Factor 2, Factor 3, and Factor 4 as dependent variables. No significant main effects or interactions were found for goal setting and prioritizing (Factor 2) and scheduling and planning (Factor 3). Training participants did not report engaging significantly more frequently in these time control activities after training as they had previously, compared to the control group. However, a significant interaction for Factor 4 (work organization) was found ($F(1,42) = 6.80, p = .01$) and is diagramed in Figure 2. At Time 1, the control group scored higher on work organization ($M = 4.37$) as compared to the experimental group ($M = 3.88$). However, at Time 2, the control group scored significantly lower ($M = 4.12$) than they had initially ($M = 4.37$) when compared to the training participants.

Figure 2. Mean ratings of work organization by Training vs. No Training groups before training and four to five months later.
The potential effects of time management training on the following outcomes were examined: job-induced tension, somatic tension, job performance, and job satisfaction.

Two 2 X 2 repeated measures ANOVAs were performed with job-induced tension and somatic tension as dependent variables. A significant main effect for time of administration was found for both (job-induced tension: $F(1,42) = 7.76, p < .01$; somatic tension: $F(1,42) = 8.60, p < .01$). Respondents reported significantly less job-induced tension ($M = 2.36$) and somatic tension ($M = 1.92$) four or five months later than they had reported earlier ($M = 2.69$) and ($M = 2.23$). A significant interaction was also found for somatic tension ($F(1,42) = 4.28, p < .05$). In partial support of the hypothesis, training participants reported significantly less somatic tension after training ($M = 2.09$) than before training ($M = 2.37$) in comparison to the control group (see Figure 3). No significant interaction was found for job-induced tension.
Figure 3. Mean ratings of somatic tension by Training vs. No Training groups before training and four to five months later.

It was hypothesized (hypothesis #8) that time management training would significantly improve one's job performance. However, a 2 X 2 repeated measures ANOVA revealed only a significant main effect of group membership. The control group received significantly higher ratings of overall job performance (x = 4.38) than the training group (x = 3.83). This same pattern of results was found for the two performance subscales, timeliness of work, and disposition toward the job and coworkers. In fact, individually examining three items on the performance measure that concern time control, items #2, #3 and #7 (see Appendix B), revealed similar findings. It seems that non-trained participants were better performers overall and thus, saw no need to participate in the training seminar. No effect due to training was found. Finally, no significant main effects or
interaction were found for job satisfaction. The mean ratings on the time control factors and outcomes for the training and control groups by time of administration are found in Table 18.

Table 18
Mean Ratings on Time Control Factors and Outcomes for Training Group and Control Group by Time of Administration

<table>
<thead>
<tr>
<th>Time Control Factors</th>
<th>Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td>Perceived Control of Time</td>
<td>3.27</td>
<td>3.85</td>
</tr>
<tr>
<td>Goal Setting/ Prioritizing</td>
<td>3.40</td>
<td>3.49</td>
</tr>
<tr>
<td>Scheduling/ Planning</td>
<td>3.28</td>
<td>3.34</td>
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<td>Work Organization</td>
<td>3.89</td>
<td>4.10</td>
</tr>
</tbody>
</table>

Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Training Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job-induced tension</td>
<td>2.78</td>
<td>2.39</td>
</tr>
<tr>
<td>Somatic tension</td>
<td>2.37</td>
<td>1.84</td>
</tr>
<tr>
<td>Overall Supervisor-rated Performance</td>
<td>3.83</td>
<td>3.83</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>3.38</td>
<td>3.43</td>
</tr>
</tbody>
</table>
Discussion

At first glance, the hypotheses are not supported. Training participants did not outscore the non-equivalent control group on the time control factors or the outcomes as predicted. These results are somewhat consistent with past findings. Morgan (1984) did not find that time management training had an effect on academic performance immediately following the training seminar. Similarly, King et al. (1986) found no effect of training on self-reported measures of stress. However, a closer examination of the pattern of responses of the two groups from the first administration to the second revealed some interesting results.

Overall, training participants perceived more control of their time after training than before as compared to the control group. As depicted in Figure 1, the non-trained group's perceptions of control of time were consistent across the two administrations of the questionnaire. However, trained participants' perceptions of control of time dramatically increased four months after training, just approaching the level maintained by the control group. The significant main effect of time of administration for perceived control of time is clearly due to the increase in perceptions by the training group.

Why might training participants perceive more control of time after training? Perhaps training allows them to compare themselves with others, changing how they perceive their work situation. They might realize that "they may not have it that bad." Maslach (1982) found that people tend to attribute burnout to some personal factor. They see it as reflecting some basic personality malfunction -- "Something is wrong with me." Furthermore, she found they are more likely to attribute burnout to themselves, if they believe their situation is unique and not shared by others.
in similar situations - the notion of "pluralistic ignorance". Therefore, the training seminar may provide an arena for personal comparison. The feelings and actions of others can serve as a yardstick against which one can measure his/her feelings. In effect, this comparative knowledge can help to correct the bias toward self-blame and put things into perspective. Maslach (1982) states "emotional comparison is essential when one is uncertain about what he/she is feeling but knows that the arousal is negative."

A self-fulfilling prophecy is another plausible explanation. "I went through training, I must feel better and in more control of my time." In addition, the training may make people just feel better about themselves. In fact, King et al. (1986) found that trained subjects reported a greater amount of self-efficacy for time/stress management related behaviors than did the non-trained participants. Finally, in an assessment center context, Schmitt, Ford, & Stultz (1986) found that center participation alone can change or reinforce self-perceptions of ability. Future research should examine these potential interpretations.

These results also suggest that the control group did not participate in training because they did not feel they needed to attend. Their perceptions indicated that they felt in control of their time. Neither group reported engaging more frequently in time control activities across time. No significant effects due to Factor 2 or Factor 3 were found. However, Factor 3 showed an interesting pattern of results. Consistently, training group participants reported engaging more frequently in scheduling and planning than did the control group. Taken together with the findings on perceived control of time, perhaps training participants engaged in these time control activities in order to compensate for this perception of comparatively less control of time. Non-trained participants reported they did not use these
conventional time management behaviors as often. Perhaps because they felt in control of their time, they did not feel the need to engage in the time control activities. It may also be the case that they manage time in other ways, such as through cognitive processes or schema internalization.

The findings on job performance reinforce this idea. Not only did control group participants perceive greater control of their time, they also were better performers overall. This finding further suggests that the control group individuals did not participate in the training because they did not think they needed it. Training participants who returned the questionnaire both times were found to engage more frequently in these time control behaviors. The results, then, may be limited to this biased sample of training participants. Future research should address why some individuals participate in time management seminars while others choose not to attend them. In addition, more controlled research with random assignment of participants into training and non-training groups should be conducted to allow a more stringent evaluation of time control training.

Another possible explanation for these findings stems with the nature of the training seminar. This was a time and stress management seminar. Therefore, it is possible that some aspect that training participants learned and adopted from the stress part resulted in this increased perception of control of time. Participants were not only instructed in the time management techniques but were also taught relaxation techniques, positive self-talk, problem-solving, professional distancing, and assertiveness tips, for example. More research in which participants receive time management training only should be conducted to examine these potential confounding effects.

The stress component of the seminar is also one possible explanation for
the significant effects found with the reaction to stress measures. Because participants learned relaxation and tension-relieving exercises, they experienced fewer somatic tensions. Practicing more assertiveness and problem-solving may result in less frustration in the job.

Another contributing factor to these findings of reduced tensions are history effects, particularly since scores for both groups changed from time 1 to time 2. Tensions were high when the study began in late June and July. There were rumors of layoff and pay delays as well as pay cuts. Feelings of job insecurity and uncertainty were high. The state passed the budget in September, and although the financial budget was tight, no drastic changes occurred. Therefore, between December and March, when participants completed the questionnaire a second time, it is possible the organizational situation was seen as less desperate. Consequently, people were less stressed with their job situation. Although not significant, the trend for job satisfaction supports this contention. Job satisfaction increased for both groups from time 1 to time 2. This points to the fact that the organizational climate at the time of the study should be noted in future research because it may play an instrumental role in a person's stress reactions.

Interestingly, the reduced tensions did not have a direct effect on the training participants' performance. Based on research with noxious stimuli, researchers hypothesize that job stress may lead to performance decrements (Matteson & Ivancevich, 1987). However, performance ratings were typically high, dominating the top end of the scale. In addition, given that the control group would be expected to perform better on the job than the training group, even when controlling for pre-training measures, suggests that other types of training are more appropriate for this sample of respondents. More job specific and content-based training may be in line.
Finally, although factor 4, work organization, revealed a significant interaction between training vs. no training and time of administration, the findings are not completely understandable. Training participants scored significantly lower (M=3.89) than the control group (M=4.37) on work organization initially. However, at time 2, the control group scored significantly lower (M=4.12) than they had at time 1 (M=4.37). Consequently, at time 2 the two groups did not score significantly different from each other on this factor. This finding may be a reflection of the time control factor. Factor 4 was found to be the weakest factor, consisting of only 7 items. Therefore, these results may be tentative. More research should examine the stability of this factor.

General Conclusions

In this examination of time control, three main issues were addressed. In addition, an analysis of the effects on an organization's in-house time and stress management seminar was made.

The most striking finding of this research was that time control was not found to be a unitary construct as expected. Instead, time control was found to consist of four relatively independent factors. Most interesting is that Factor 2, goal setting/prioritizing and Factor 3, the mechanics of time control, were not significantly correlated with Factor 1, perceived control of time, as the popular literature on time management would suggest.

Overall, those tending toward Type B and those on the job fewer months scored highly on three of the four factors. Individual differences due to race, age and education also played a role in accounting for variance in predicting a time control factor. However, very little variance was accounted for overall in predicting the four time control factors. This is most notable given
that items such as type of job and past time management training were included. One would expect that particular occupations or differences due to individuals being trained in time management would contribute to explaining the variance in time control factor scores. In addition, the finding that employees who had been on the job fewer months scored more highly on the time control factors suggests that a more detailed analysis of changes in the job and person should be examined. Perhaps changes in job duties or changes in person's job expectations occur over time and contribute to decrements in work organization or lower perceptions of control of time.

The race of the respondents and their cultural dispositions toward time should also be incorporated and explored in future research given the findings that minorities (Blacks, Hispanics, Asians) perceived more control of their time than non-minorities (Whites).

In general, the results do not support the conventional notions of time management. Surprisingly, the relationship found between job performance and each time control factor was non-significant. Moreover, Factor 3, the mechanics of time control, was not related to any of the outcomes. Perceived control of time was found to be the key predictor lending support to findings in the general control literature. Those who perceived more control of their time were found to report fewer job-induced tensions and somatic tensions and feel more satisfied with their job situation.

It is proposed that perceived control of time is a dispositional factor. Support for this dispositional idea comes from research attempting to integrate past studies and enfold the structure of personality. Five robust factors of personality have been found (Digman & Inouye, 1986). One factor labeled "Will to Achieve" (originally labeled "Conscientiousness" - Norman, 1963), represents scales indicative of planning, persistence, carefulness and
purposeful striving toward goals. To examine the potential dispositional nature of time control, multi-trait/multi-method analyses should be conducted. The convergent validity and discriminant validity of the instrument with other personality measures should be examined such as, self-esteem and locus of control.

Finally, an evaluation of a time control training seminar was made. Acknowledging the limitations of the data, the claims made by time management consultants that time management training would lead to better job performance and fewer tensions were not supported by the evidence. The findings revealed that time and stress management training does not result in increases in ratings of job performance. This suggests that if the organization’s goal is to increase performance, efforts may be better extended in other directions. Perhaps more job-specific training, such as "How to complete forms" or "How to interview clients" may be more appropriate.

There was an apparent benefit, training participant’s perceptions of control of time increased, reaching the level held by the control group. This is noteworthy given that earlier correlational findings indicated that this perception of control of time was related to measures of experienced stress and job satisfaction. However, closer examination of all the results suggested that this finding may not have to do with the time management training perse; other possible interpretations, such as self-fulfilling prophecy and social comparison seem more plausible explanations.

As far as the organization is concerned, other potential methods to increase employees' actual control of their time could be explored. These may include encouraging employee participation in decisions directly affecting their work or giving workers more autonomy in their job. Spector
(1986) in his meta-analysis has found that giving employees more job autonomy and more participation in decision-making increased job satisfaction and decreased job stress. In line with person/environment fit theory, a lack of perceived control of time may be related to low task ability or cognitive ability. This would suggest that better selection procedures be initiated that allow for a better fit between worker and job.

Differences between the training group and control group were found. The individuals comprising the control group were consistently rated as performing better on the job and perceived more control of their time initially as compared to the training group. One reason control group participants may not have participated in the training was because they did not find a need to attend. To directly evaluate time management training, future research should be conducted with random assignment of workers to either a control group or a training seminar on time management only.

There are other limitations to this study besides those previously addressed. First, this sample of respondents was employed in a social service agency representing only two different types of jobs, clerical and caseworker/administrative. Type of job was an environmental factor controlled for in the analyses. Given the present results and those by Macan et al. (1987) which found similar results in a student sample, no differences in results would be expected to be found in a more diverse occupational sample. However, more research needs to be conducted in other types of organizations employing numerous types of jobs to further test this finding.

Another limitation is that the measures of time control were self-report. Other methods of assessing time control should be explored. Behavioral observation with trained third party raters or peer ratings may
uncover additional relationships. However, the present research does indicate that this observational research should be conducted in conjunction with self-report measures. Research has found one's perceptions of the situation to be an important determinant of job stress and coping strategies (Lazarus, 1971).

The present findings offer numerous directions for future research pursuits and have sparked many interesting questions. Are these results generalizable to other samples or simply specific to social service agencies? What role does the type of job play in determining who scores highly on these measures of time control? Why do minorities perceive more control of their time? Why do those with higher educational levels engage more frequently in the mechanics of time control? What other person and environmental factors may influence one's control of time?

Although questions remain, the general results indicate that time control is a much more complex concept than originally believed, consisting of four factors. In addition, the claims laid by the popular literature on time management were not supported. Time Control was not found to significantly increase job performance ratings and decrease job stress.
References


Applied Psychology, 70(1), 188-201.
Holmes, T. H. & Rahe, R. H. (1967). The social readjustment rating scale.
House, R. J. & Rizzo, J. R. (1972). Role conflict and ambiguity as critical
variables in a model of organizational behavior. Organizational Behavior
and Human Performance, 7, 467-505.
Indik, B., Seashore, S. E., & Slesinger, J. (1964). Demographic correlates of
psychological strain. Journal of Abnormal and Social Psychology, 69(1),
26-38.
Perspective, IL:Scott, Foresman.
type A behavior and physical well-being. Academy of Management
critique of research on role ambiguity and role conflict in work settings.
Organizational Behavior and Human Decision Processing, 36, 16-78.
Survey for Health Prediction, NC: C. David Jenkins.
Organizational stress: Studies in role conflict and ambiguity. NY: John
Wiley.
Karasek, R. A., Jr. (1979). Job demands, job decision latitude, and mental
strain: Implications for job redesign. Administrative Science Quarterly,
24, 285-308.
decision latitude, job demands, and cardiovascular disease: A prospective
Kasl, S. V. (1973). Mental health and the work environment. *Journal of
Occupational Medicine, 15,* 509-518.
in at-risk populations: The effects of time-management instruction and
social support in women from dual-earner families. *Behavior Therapy,
17,* 57-66.
administrators: Factorial dimensions and differential effects. *Journal of
Applied Psychology, 67(4),* 491-499.
Wiley.
and the coronary-prone behavior pattern. *Journal of Experimental Social
Psychology, 10,* 284-300.
Lakein, A. (1973) *How to get control of your time and your life.* NY: The
New American Library.


Psychology Annual 5: Applications in Organizational Settings. CA:Sage.
McKeon, W. J. (1981). How to determine off-site meeting costs. Training and

Meyer, D., Leventhal, H. & Gutmann, M. (1985). Common-sense models of
illness: The example of hypertension. Health Psychology, 4, 115-135.

Morgan, J. E. (October, 1984). Effects of time management peer counseling on
grade point and retention of academic probation freshman. Dissertation
Abstract International, 46(4), 933-A.


handling job stress: A review of research and opinion. Personnel
Psychology, 32, 1-43.

Norman, W. T. (1963). Toward an adequate taxonomy of personality

Gunderson & R. H. Rahe (Eds.), Life stress and illness. IL: Charles C.
Thomas, 134-163.

Pelletier, K. R. & Peper, E. (1977). The chutzpah factor in altered states of
consciousness. Journal of Humanistic Psychology, 17, 63-73.

NY: Springer-Verlag.

Pleck, J. H., Staines, G.L. & Lang, L. (March, 1980). Conflicts between work

Porter, L. W. & Steers, R. M. (1973). Organizational, work, and personal
factors in employee turnover and absenteeism. Psychological Bulletin, 80,
151-176.


Perceptual and Motor Skills, 52, 174.


APPENDIX A

WORK ACTIVITY QUESTIONNAIRE
WORK ACTIVITY QUESTIONNAIRE

To what extent do each of the statements on the following pages accurately describe your activities and experiences in your work? Indicate how accurately each statement describes you by choosing one of the alternatives on the scale below and writing the corresponding letter on the blank line next to each item. Mark all your responses directly on the form. Please try to respond to all the items.

A
SELDOM
TRUE

B
OCCASIONALLY
TRUE

C
TRUE ABOUT
AS OFTEN AS NOT

D
FREQUENTLY
TRUE

E
VERY OFTEN
TRUE

EXAMPLE:       A   I have very little work to do in the morning.

If this statement were true all the time or almost all the time, you would answer with alternative "E" on the scale above. You would indicate your answer by writing the letter "E" on line next to the statement. On the other hand, if this statement was never or almost never true of your work, then you would answer with alternative "A" on the scale above. You would indicate your answer by writing the letter "A" on the line next to the statement as shown in the example.

NOTE: ALL RESPONSES WILL BE KEPT COMPLETELY CONFIDENTIAL.
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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</thead>
<tbody>
<tr>
<td>Seldom</td>
<td>Occasionally</td>
<td>True</td>
<td>As Often As Not</td>
<td>Frequently</td>
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</tbody>
</table>

I find myself taking on too many tasks/responsibilities at one time.

I find myself overwhelmed by trivial and unimportant tasks.

I underestimate the time that it will take to accomplish tasks.

I feel in control of my time.

I take responsibility for tasks that I could give to others.

I am unable to say no when others ask me to take on additional responsibilities.

Clear, planned goals and objectives exist for my work.

I respond to letters and memoranda on the same day I receive them.

I must spend a lot of time on unimportant tasks.

I work under a great deal of tension.

At the end of the workday I leave a clear, well-organized workspace.

I find myself socializing too much at work.

I find myself so involved in small details that I lose sight of the overall objectives.

I am often bothered by acid indigestion or heartburn.

I find it difficult to keep to a schedule because others take me away from my work.

I can find the things I need for my work more easily when my workspace is messy and disorganized than when it is neat and organized.

It often seems like I have too much work for one person to do.

I find myself procrastinating on tasks that I don't like but that must be done.

When I decide on what I will try to accomplish in the short term, I keep in mind my long-term objectives.

I get a lot of help with routine tasks in the home from those who share my home with me.

I review my goals to determine if they need revising.

I break complex, difficult projects down into smaller manageable tasks.

I set short-term goals for what I want to accomplish in a few days or weeks.

At work I am not able to be myself.

I set deadlines for myself when I set out to accomplish a task.

I look for ways to increase the efficiency with which I perform my work activities.

At work I receive incompatible requests from two or more people.

I finish top priority tasks before going on to less important ones.

I review my daily activities to see where I am wasting time.

The demands of my job make it difficult to be relaxed all the time at home.

During a workday I evaluate how well I am following the schedule I have set down for myself.

I set priorities to determine the order in which I will perform tasks each day.

I carry a notebook to jot down notes and ideas.

I know what my responsibilities are.
I schedule activities at least a week in advance.

When I find that I am frequently contacting someone, I record that person's name, address, and phone number in a special file.

Sometimes I feel if I did different work, my health would probably improve.

I block out time in my daily schedule for regularly scheduled events.

I write notes to remind myself of what I need to do.

I get irritated or annoyed over the way things are going.

When I make a things-to-do list at the beginning of the day, it is forgotten or set aside by the end of the day.

I make a list of things to do each day and check off each task as it is accomplished.

I carry an appointment book with me.

Generally speaking, I am very satisfied with this job.

Because my work is demanding, at times I am irritable at home.

The time I spend scheduling and organizing my workday is time wasted.

I sometimes get in a panic about the problems of running a home.

Before going to bed I decide on the clothes I will wear the next day.

My workdays are too unpredictable for me to plan and manage my time to any great extent.

I sort my mail on the day it is received rather than letting it accumulate.

I would like to have more power and influence over other people at work.

I find myself losing sight of the ultimate objective when working on the various aspects of a long-term project.

I use an in-basket and out-basket for organizing paperwork.

On the job I have so much work to do that it takes away from my personal interests.

I have some of my most creative ideas when I am disorganized.

I rarely think of quitting this job.

I find myself acting before thinking through the consequences of my actions.

I find places to work that will allow me to avoid interruptions and distractions.

If I know I will have to spend time waiting, I bring along something I can work on.

I find that the best way to solve problems is simply to start working on them without thinking too much about them in the beginning.

I find that I can do a better job if I put off tasks that I don't feel like doing than if I try to get them done in the order of their importance.

I feel certain about how much authority I have.

I know that I have divided my time properly.

I know exactly what is expected of me.

Explanation is clear of what has to be done.

The work I do tends to directly affect my health.

I have felt fidgety or nervous as a result of my work.

Problems associated with my work have kept me awake at night.
I often “take my work home with me” in the sense that I think about it when doing other things.
I sometimes feel weak all over.
I have had trouble getting to sleep or staying asleep.
I may now have an ulcer but I am not sure of it.
I am given enough time to do what is expected of me.
The standards of performance expected of me are too high.
I feel that I just don’t have time to take an occasional break.
When I am somewhat disorganized I am better able to adjust to unexpected events.
I am generally satisfied with the kind of work I do in this job.
On the whole I have enough free time to do the things I want to do at home.
Generally speaking, I am very satisfied with my home situation.
I frequently think I would like to change my home situation.
At work I have to do things that should be done differently.
On the job I work under incompatible policies and guidelines.
My job offers too little opportunity to acquire new knowledge and skills.
At work I receive an assignment without adequate resources to complete it properly.
Where I work I am not able to act the same regardless of whom I’m dealing with.
My work schedule often conflicts with my home life.
After work, I come home too tired to do some of the things I’d like to do.
Those with whom I share my home often dislike how I am preoccupied with my work while I am home.
I keep a daily log of my activities.
My work takes up time that I’d like to spend with others close to me.
My job makes it difficult to be the kind of spouse, parent or roommate I’d like to be.

At this time, choose the one response listed under each question that best describes you and circle the appropriate letter.

Taking all things together, I would say that things these days are
A NOT AT ALL      B          C            D            E
ALL HAPPY        MORE OFTEN     HAPPY THAN NOT  HAPPY

In terms of the ways I’m spending my life these days, I find that I am generally
A NOT AT ALL      B          C            D            E
ALL SATISFIED    MORE OFTEN     SATISFIED THAN NOT  SATISFIED

I am very much involved personally with my work.
A STRONGLY      B          C            D            E
DISAGREE        NEITHER AGREE  AGREE            STRONGLY      AGREE
I live, eat, and breathe my job.

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<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STRONGLY DISAGREE</td>
<td>DISAGREE</td>
<td>NEITHER AGREE</td>
<td>NOR DISAGREE</td>
<td>AGREE</td>
</tr>
</tbody>
</table>

The most important things which happen to me involve my job.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<tr>
<td></td>
<td>STRONGLY DISAGREE</td>
<td>DISAGREE</td>
<td>NEITHER AGREE</td>
<td>NOR DISAGREE</td>
<td>AGREE</td>
</tr>
</tbody>
</table>

Do you ever have trouble finding time to get your hair cut or styled?
   a. never
   b. occasionally
   c. almost always

Is your everyday life filled mostly by
   a. problems needing a solution?
   b. challenges needing to be met?
   c. a rather predictable routine of events?
   d. not enough things to keep me interested or busy?

Ordinarily, how rapidly do you eat?
   a. I'm usually the first one finished.
   b. I eat a little faster than average.
   c. I eat at about the same speed as most people.
   d. I eat more slowly than most people.

Has your spouse or a friend ever told you that you eat too fast?
   a. yes, often
   b. yes, once or twice
   c. no, never

When you listen to someone talking, and this person takes too long to come to the point, how often do you feel like hurrying the person along?
   a. frequently
   b. occasionally
   c. almost never

How often do you actually "put words in the person's mouth" in order to speed things up?
   a. frequently
   b. occasionally
   c. almost never

If you tell your spouse or a friend that you will meet somewhere at a definite time, how often do you arrive late?
   a. once in a while
   b. rarely
   c. I am never late

When you have to "wait in line" at a restaurant, a store, or the post office, what do you do?
   a. accept it calmly
   b. feel impatient but not show it
   c. feel so impatient that someone watching can tell I am restless
   d. refuse to wait in line, and find ways to avoid delays
When you were younger, did most people consider you to be
a. definitely hard-driving and competitive
b. probably hard-driving and competitive
c. probably more relaxed and easy going
d. definitely more relaxed and easy going

Nowadays, do you consider yourself to be
a. definitely hard-driving and competitive?
b. probably hard-driving and competitive?
c. probably more relaxed and easy going?
d. definitely more relaxed and easy going?

When you are under pressure or stress, what do you usually do?
a. do something about it immediately.
b. plan carefully before taking any action.

Would your spouse (or closest friend) rate you as
a. definitely hard-driving and competitive?
b. probably hard-driving and competitive?
c. probably more relaxed and easy going?
d. definitely more relaxed and easy going?

Would your spouse (or closest friend) rate your general level of activity as
a. too slow-should be more active?
b. about average-busy much of the time?
c. too active-should slow down?

Would people you know well agree that you have less energy than most people?
a. definitely yes
b. probably yes
c. probably no
d. definitely no

How was your temper when you were younger?
a. fiery and hard to control
b. strong but controllable
c. no problem
d. I almost never got angry

How often are there deadlines in your work?
a. daily or more often
b. weekly
c. monthly or less often
d. never

Do you ever set deadlines or quotas for yourself at work or at home?
a. no
b. yes, but only occasionally
c. yes, once a week or more
At work, do you ever keep two jobs moving forward at the same time by shifting back and forth rapidly from one to the other?
   a. no, never
   b. yes, but only in emergencies
   c. yes, regularly

If you had your choice, which would you rather get?
   a. a small increase in pay without a promotion to a higher level job
   b. a promotion to a higher level job without an increase in pay

In the past three years, have you ever taken less than your allotted number of vacation days?
   a. yes
   b. no
   c. my type of work does not provide regular vacations

How often do you bring your work home with you at night, or study materials related to your job?
   a. rarely or never
   b. once a week or less
   c. more than once a week

When you are in a group, how often do the other people look to you for leadership?
   a. rarely
   b. about as often as they look to others
   c. more often than they look to others

For the following four questions compare yourself with the average worker in your present occupation, and mark the most accurate description.

In amount of effort put forth, I give
   a. much more effort
   b. a little less effort
   c. a little less effort
   d. much less effort

In sense of responsibility, I am
   a. much more responsible
   b. a little more responsible
   c. a little less responsible
   d. much less responsible

In being precise (careful about detail), I am
   a. much more precise
   b. a little more precise
   c. a little less precise
   d. much less precise

I approach life in general
   a. much more seriously
   b. a little more seriously
   c. a little less seriously
   d. much less seriously
For the following question, compare your present work with your work setting of five years ago. If you have not been working for five years, compare your present job with your first job.

I was considered to be at a higher level (in prestige or social position)
   a. at my present job
   b. five years ago
   c. cannot decide

How many different job titles have you held in the last 10 years? (Be sure to count shifts in kinds of work, shifts to new employers, and shifts up and down within a firm.)
   a. 0-1
   b. 2
   c. 3
   d. 4
   e. 5 or more

Would you consider yourself
   a. a morning person
   b. a night person
   c. neither

How would you evaluate your performance on this job?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY</td>
<td>AVERAGE</td>
<td>GOOD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Compared to others performing the same or a similar job, how would you evaluate your performance on this job?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY</td>
<td>AVERAGE</td>
<td>GOOD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOR</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

How do you think your supervisor would rate your performance on this job?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY</td>
<td>AVERAGE</td>
<td>GOOD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How long have you worked for the agency?  

How long have you worked in your present job?  

How much control do you have in scheduling your day?
   a. total
   b. much
   c. some
   d. little
   e. none

Do you take all your allotted vacation days each year?    YES    NO

On the average, how many days would you say you are absent from work each month?   ____ days

On the average, how many days would you say you are late for work each month?   ____ days

What is your age?  


What is your race? __________
What is your sex? MALE  FEMALE

What level of education have you attained? Circle one.
   a. less than high school            b. vocational training
   c. high school degree or GED       d. some college
   e. college degree                  f. masters degree
   g. doctoral degree                 h. other __________ (please specify)

What is your marital status? Married  Single  Divorced
   If married, does your spouse work? YES  NO

Do you have any children? YES  NO
   IF YES, how many? __________
   What are their ages? __________

Overall, my experiences in the training seminars I have participated in were
   A  B  C  D  E
   VERY  NEITHER  UNFAVORABLE  UNFAVORABLE NOR  FAVORABLE  VERY

Have you ever read books on time management or stress management? YES  NO

Have you ever attended stress or time management seminars/workshops? YES  NO
   If YES, how many? __________
   How long ago was the last one you attended? __________

THANK YOU
APPENDIX B

JOB PERFORMANCE RATING FORM
Supervisor Rating Form

DIRECTIONS: Please complete the following statements on the scale below for this employee you supervise. Please write the letter that best describes this employee's performance on the job on the line next to each statement.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELDOM</td>
<td>OCCASIONALLY</td>
<td>TRUE ABOUT AS OFTEN AS NOT</td>
<td>FREQUENTLY TRUE</td>
<td>VERY OFTEN TRUE</td>
</tr>
</tbody>
</table>

___ This employee's work attains the quality I expect.

___ This employee's work meets deadlines.

___ Overall, this employee works very efficiently.

___ This employee’s attitude toward work situations is positive.

___ This employee is late for work at least once a week.

___ This employee gets along well with fellow coworkers.

___ This employee makes productive use of time.

___ This employee accepts feedback about job performance and applies the suggestions in a positive manner.

Please estimate as best you can, how many sick leave days this employee takes in a typical month. ______ days

Please estimate as best you can, how many times this employee is late in a typical month. ______ times

Please circle the letter on the scales below that best describe this employee's job performance.

Overall, how would you evaluate this employee's performance on the job?

A | B | C | D | E
---|---|---|---|---
POOR | POOR | AVERAGE | GOOD | VERY GOOD

Compared to others performing the same or a similar job, how would you evaluate this employee's performance?

A | B | C | D | E
---|---|---|---|---
POOR | POOR | AVERAGE | GOOD | VERY GOOD

*** ALL INFORMATION WILL BE KEPT COMPLETELY CONFIDENTIAL *** FOR RESEARCH PURPOSES ONLY!
APPENDIX C
RESULTS OF HIERARCHICAL MULTIPLE REGRESSIONS OF OUTCOMES
ON THE PERSON/ENVIRONMENTAL VARIABLES
AND EACH OF THE FOUR FACTORS
Table 13-A  
**Outcome: Job-Induced Tension**  
Multiple Regression Results on Person/Environment Factors and Perceived Control of Time in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R^2</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.20</td>
<td>4.25** (df=9,152)</td>
</tr>
</tbody>
</table>

**Step 1**

**Person Factors**
- Age: -.01
- Educational level: -.002
- Sex: .04
- Minority/Non-Minority: .03
- Type A/B Pattern: .05
- Prior time training: -.17

**Environmental Factors**
- Type of Job: .46
- Number of Children: -.16
- Job Tenure: .003

**Step 2 - Set 1 + Set 2**

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R^2</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.38</td>
<td>9.20** (df=10,151)</td>
</tr>
</tbody>
</table>

Factor 1 - Perceived Control of Time: -.72**

Increment in \( R^2 \): \( R^2_{inc} = 0.18 \)

General F test for an increment: \( F_{inc}(1,151)=43.09^{**} \)

* \( p < .05 \)
** \( p < .01 \)
Table 13-B

**Outcome: Job-Induced Tension**

Multiple Regression Results on Person/Environment Factors and Goal Setting/Prioritizing in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.20</td>
<td>4.25** (df=9,152)</td>
</tr>
</tbody>
</table>

**Step 1**

Set 1

- **Person Factors**
  - Age: -.01
  - Educational level: -.01
  - Sex: -.07
  - Minority/Non-Minority: .20
  - Type A/B Pattern: .11**
  - Prior time training: -.28

- **Environmental Factors**
  - Type of Job: .65*
  - Number of Children: -.16
  - Job Tenure: .01*

**Step 2 - Set 1 + Set 2**

Set 2

Factor 1 - Goal Setting/
Prioritizing: -.03

Increment in $R^2$: $R^2_{inc} = 0.00$

General F test for an increment: $F_{inc}(1,151) = < 1.0$

* $p < .05$
** $p < .01$
Table 13-C
Outcome: Job-Induced Tension

Multiple Regression Results on Person/Environment Factors
and Scheduling/Planning in the Overall Model

<table>
<thead>
<tr>
<th>Step 1</th>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set 1</td>
<td></td>
<td>.20</td>
<td>4.25** (df=9,152)</td>
</tr>
<tr>
<td>Person Factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority/Non-Minority</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type A/B Pattern</td>
<td>.11**</td>
<td></td>
<td></td>
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<tr>
<td>Prior time training</td>
<td>-.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Job</td>
<td>.66*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Children</td>
<td>-.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Tenure</td>
<td>.01*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 2 - Set 1 + Set 2

<table>
<thead>
<tr>
<th>Factor 1 - Scheduling/Planning</th>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set 2</td>
<td></td>
<td>.20</td>
<td>3.88** (df=10,151)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Increment in $R^2$: $R^2_{inc} = 0.00$

General $F$ test for an increment: $F_{inc}(1,151) = < 1.0$

* $p < .05$
** $p < .01$
Table 13-D

Outcome: Job-Induced Tension
Multiple Regression Results on Person/Environment Factors
and Work Organization in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.20</td>
<td>4.25** (df=9,152)</td>
</tr>
</tbody>
</table>

Step 1
Set 1
Person Factors
- Age: -.01
- Educational level: .001
- Sex: -.04
- Minority/Non-Minority: .17
- Type A/B Pattern: .10**
- Prior time training: -.31

Environmental Factors
- Type of Job: .60*
- Number of Children: .12
- Job Tenure: .01*

Step 2 - Set 1 + Set 2
Set 2
Factor 1 - Work
- Organization: -.22

Increment in $R^2$: $R^2_{inc}=0.02$

General F test for an increment: $F_{inc}(1,151)=3.30$

* $p < .05$
** $p < .01$
Table 14-A
Outcome: Somatic Tension
Multiple Regression Results on Person/Environment Factors
and Perceived Control of Time in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set 1</td>
<td>.24</td>
<td>5.43** (df=9,152)</td>
</tr>
</tbody>
</table>

**Person Factors**
- Age: -.03**
- Educational level: -.09
- Sex: -.07
- Minority/Non-Minority: -.14
- Type A/B Pattern: .13**
- Prior time training: .01

**Environmental Factors**
- Type of Job: .03
- Number of Children: -.04
- Job Tenure: .004*

Step 2 - Set 1 + Set 2
Set 2: .33
F = 7.49** (df=10,151)

Increment in R²: $R^2_{inc} = 0.09$

General F test for an increment: $F_{inc}(1,151)=19.94^{**}$

* p < .05
** p < .01
Table 14-B

**Outcome: Somatic Tension**

Multiple Regression Results on Person/Environment Factors and Goal Setting/Prioritizing in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.243</td>
<td>5.43** (df=9,152)</td>
</tr>
</tbody>
</table>

**Step 1**

Set 1

<table>
<thead>
<tr>
<th>Person Factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.03**</td>
</tr>
<tr>
<td>Educational level</td>
<td>-.10</td>
</tr>
<tr>
<td>Sex</td>
<td>-.15</td>
</tr>
<tr>
<td>Minority/Non-Minority</td>
<td>.03</td>
</tr>
<tr>
<td>Type A/B Pattern</td>
<td>.17**</td>
</tr>
<tr>
<td>Prior time training</td>
<td>.07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Job</td>
<td>.17</td>
</tr>
<tr>
<td>Number of Children</td>
<td>-.06</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>.006*</td>
</tr>
</tbody>
</table>

**Step 2 - Set 1 + Set 2**

Set 2

<table>
<thead>
<tr>
<th>Factor 1 - Goal Setting/ Prioritizing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-.08</td>
</tr>
</tbody>
</table>

Increment in $R^2$: $R^2_{inc}=0.00$

General F test for an increment: $F_{inc}(1,151)=<1.0$

* $p<.05$

** $p<.01$
Table 14-C

Outcome: Somatic Tension
Multiple Regression Results on Person/Environment Factors
and Scheduling/Planning in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 1</td>
<td>.24</td>
<td>5.43** (df=9,152)</td>
</tr>
</tbody>
</table>

Person Factors
- Age: -.03**
- Educational level: -.08
- Sex: -.14
- Minority/Non-Minority: -.04
- Type A/B Pattern: .16**
- Prior time training: -.06

Environmental Factors
- Type of Job: .14
- Number of Children: -.03
- Job Tenure: .01**

Step 2 - Set 1 + Set 2
Set 2: .24

Factor 1 - Scheduling/
Planning: -.04

Increment in R²: $R^2_{inc} = 0.00$

General F test for an increment: $F_{inc}(1,151) = < 1.0$

* $p < .05$
** $p < .01$
Table 14-D

Outcome: Somatic Tension

Multiple Regression Results on Person/Environment Factors and Work Organization in the Overall Model

<table>
<thead>
<tr>
<th>Step 1</th>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Set 1</strong></td>
<td></td>
<td>.24</td>
<td>5.43** (df=9,152)</td>
</tr>
<tr>
<td><strong>Person Factors</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.03**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
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<tr>
<td>Type A/B Pattern</td>
<td>.16**</td>
<td></td>
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</tr>
<tr>
<td>Prior time training</td>
<td>-.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Type of Job</td>
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</tr>
<tr>
<td>Number of Children</td>
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<td></td>
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</tr>
<tr>
<td>Job Tenure</td>
<td>.01**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 2 - Set 1 + Set 2**

| **Set 2**             | .25 | 5.02**(df=10,151) |
| Factor 1 - Perceived  |     |                 |
| Control of Time       | -.11|                 |

Increment in $R^2$: $R^2_{inc}=0.01$

General $F$ test for an increment: $F_{inc}(1,151)=<1.0$

* $p < .05$
** $p < .01$
Table 15-A
Outcome: Job Satisfaction
Multiple Regression Results on Person/Environment Factors
and Perceived Control of Time in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.08</td>
<td>1.46 (df=9,152)</td>
</tr>
</tbody>
</table>

**Person Factors**

- Age: .02
- Educational level: -.08
- Sex: -.03
- Minority/Non-Minority: .18
- Type A/B Pattern: -.03
- Prior time training: -.05

**Environmental Factors**

- Type of Job: .31
- Number of Children: .53*
- Job Tenure: -.001

Step 2 - Set 1 + Set 2

Set 2

Factor 1 - Perceived Control of Time: .41**

Increment in $R^2$: $R^2_{inc} = 0.08$

General $F$ test for an increment: $F_{inc}(1,151)=11.87^{**}$

* $p < .05$

** $p < .01$
<table>
<thead>
<tr>
<th></th>
<th>B weights</th>
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<th>$F$</th>
</tr>
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<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 1</td>
<td></td>
<td>.08</td>
<td>1.46 (df=9,152)</td>
</tr>
<tr>
<td><strong>Person Factors</strong></td>
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</tr>
<tr>
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<td>Minority/Non-Minority</td>
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<tr>
<td>Type A/B Pattern</td>
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<tr>
<td>Prior time training</td>
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<td><strong>Environmental Factors</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Type of Job</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Number of Children</td>
<td>.49*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td></td>
<td>.09</td>
<td>1.49 (df=10,151)</td>
</tr>
<tr>
<td>Factor 1 - Goal Setting/ Prioritizing</td>
<td>.19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Increment in $R^2$: $R^2_{inc} = 0.01$

General $F$ test for an increment: $F_{inc}(1,151) = \text{n.s.}$

* $p < .05$
** $p < .01$
Table 15-C

Outcome: Job Satisfaction
Multiple Regression Results on Person/Environment Factors
and Scheduling/Planning in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.08</td>
<td>1.46 (df=9,152)</td>
</tr>
</tbody>
</table>

**Step 1**

- **Set 1**
  - Age: .02*
  - Educational level: -.10
  - Sex: .05
  - Minority/Non-Minority: .08
  - Type A/B Pattern: -.06
  - Prior time training: .01

**Person Factors**

- Type of Job: .19
- Number of Children: .50*
- Job Tenure: -.002

**Environmental Factors**

**Step 2 - Set 1 + Set 2**

- Factor 1 - Scheduling/Planning: .11

Increment in $R^2$: $R^2_{\text{inc}} = 0.01$

General $F$ test for an increment: $F_{\text{inc}}(1,151)$ = n.s.

* $p < .05$
** $p < .01$
Table 15-D
Outcome: Job Satisfaction
Multiple Regression Results on Person/Environment Factors
and Work Organization in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.08</td>
<td>1.46 (df=9,152)</td>
</tr>
</tbody>
</table>

Step 1
Set 1
Person Factors
Age      .02*
Educational level - .07
Sex      .03
Minority/Non-Minority .08
Type A/B Pattern -.06
Prior time training .02
Environmental Factors
Type of Job .20
Number of Children .53*
Job Tenure -.003

Step 2 - Set 1 + Set 2
Set 2
Factor 1 - Work
Organization .02

Increment in R²  \( \Delta R^2 = 0.00 \)

General F test for an increment: \( F_{\text{inc}}(1,151) = \text{n.s.} \)

* p < .05
** p < .01
Table 16-A

Outcome: Job Performance

Multiple Regression Results on Person/Environment Factors and Perceived Control of Time in the Overall Model

<table>
<thead>
<tr>
<th></th>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Person Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.01</td>
<td>0.14</td>
<td>2.45* (df=9,152)</td>
</tr>
<tr>
<td>Educational level</td>
<td>-0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-0.40*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority/Non-Minority</td>
<td>0.31*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type A/B Pattern</td>
<td>-0.06*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior time training</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Job</td>
<td>-0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Children</td>
<td>-0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-0.003</td>
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<td></td>
</tr>
</tbody>
</table>

**Step 2 - Set 1 + Set 2**

<table>
<thead>
<tr>
<th></th>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Factor 1 - Perceived Control of Time</td>
<td></td>
<td>0.15</td>
<td>2.35* (df=10,151)</td>
</tr>
</tbody>
</table>

Increment in R²: \( R^2_{inc} = 0.01 \)

General F test for an increment: \( F_{inc}(1,151) = < 1.0 \)

* \( p < .05 \)
** \( p < .01 \)
Table 16-B

Outcome: Job Performance

Multiple Regression Results on Person/Environment Factors and Goal Setting/Prioritizing in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.14</td>
<td>2.45* (df=9,152)</td>
</tr>
</tbody>
</table>

Step 1

**Person Factors**

Set 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.01</td>
</tr>
<tr>
<td>Educational level</td>
<td>-.03</td>
</tr>
<tr>
<td>Sex</td>
<td>-.39</td>
</tr>
<tr>
<td>Minority/Non-Minority</td>
<td>.29*</td>
</tr>
<tr>
<td>Type A/B Pattern</td>
<td>-.07**</td>
</tr>
<tr>
<td>Prior time training</td>
<td>.04</td>
</tr>
</tbody>
</table>

**Environmental Factors**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Job</td>
<td>-.07</td>
</tr>
<tr>
<td>Number of Children</td>
<td>-.04</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-.003</td>
</tr>
</tbody>
</table>

Step 2 - Set 1 + Set 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 - Goal Setting/ Prioritizing</td>
<td>.05</td>
</tr>
</tbody>
</table>

Increment in $R^2$: $R^2_{inc} = 0.01$

General F test for an increment: $F_{inc}(1,151) = < 1.0$

* $p < .05$
** $p < .01$
Table 16-C
Outcome: Job Performance
Multiple Regression Results on Person/Environment Factors
and Scheduling/Planning in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.14</td>
<td>2.45 (df=9,152)</td>
</tr>
</tbody>
</table>

**Step 1**

<table>
<thead>
<tr>
<th>Person Factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.01</td>
</tr>
<tr>
<td>Educational level</td>
<td>-.02</td>
</tr>
<tr>
<td>Sex</td>
<td>-.40*</td>
</tr>
<tr>
<td>Minority/Non-Minority</td>
<td>.27*</td>
</tr>
<tr>
<td>Type A/B Pattern</td>
<td>-.07**</td>
</tr>
<tr>
<td>Prior time training</td>
<td>.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Job</td>
<td>-.09</td>
</tr>
<tr>
<td>Number of Children</td>
<td>-.03</td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-.003</td>
</tr>
</tbody>
</table>

**Step 2 - Set 1 + Set 2**

<table>
<thead>
<tr>
<th>Factor 1 - Scheduling/Planning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-.04</td>
</tr>
</tbody>
</table>

Increment in $R^2$: $R^2_{inc} = 0.00$

General F test for an increment: $F_{inc}(1,151) = < 1.0$

* $p < .05$

** $p < .01$
### Table 16-D

**Outcome: Job Performance**

Multiple Regression Results on Person/Environment Factors and Work Organization in the Overall Model

<table>
<thead>
<tr>
<th>B weights</th>
<th>Total $R^2$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2.45* (df=9,152)</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set 1</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td><strong>Person Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.40*</td>
<td></td>
</tr>
<tr>
<td>Minority/Non-Minority</td>
<td>.29*</td>
<td></td>
</tr>
<tr>
<td>Type A/B Pattern</td>
<td>-.07**</td>
<td></td>
</tr>
<tr>
<td>Prior time training</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
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<td></td>
</tr>
<tr>
<td>Type of Job</td>
<td>-.07</td>
<td></td>
</tr>
<tr>
<td>Number of Children</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>Job Tenure</td>
<td>-.003</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2 - Set 1 + Set 2</strong></td>
<td>.15</td>
<td>2.31* (df=10,151)</td>
</tr>
<tr>
<td>Factor 1 - Work Organization</td>
<td>.09</td>
<td></td>
</tr>
</tbody>
</table>

Increment in $R^2$: $R^2_{inc} = 0.01$

General $F$ test for an increment: $F_{inc}(1,151) = < 1.0$

* $p < .05$
** $p < .01$