

# Time Management: Test of a Process Model

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Although the popular literature on time management claims that engaging in time management behaviors results in increased job performance and satisfaction and fewer job tensions, a theoretical framework and empirical examination are lacking. To address this deficiency, the author proposed and tested a process model of time management. Employees in a variety of jobs completed several scales; supervisors provided performance ratings. Examination of the path coefficients in the model suggested that engaging in some time management behaviors may have beneficial effects on tensions and job satisfaction but not on job performance. Contrary to popular claims, time management training was not found to be effective.

There is a voluminous popular literature that lauds the benefits of time management. Examples of some books and magazine articles on the subject are: "Time Is Money, So Use It Productively" (Taylor & Mackenzie, 1986), "Put Time on Your Side" (Emanuel, 1982), and "How To Get Control of Your Time and Your Life" (Lakein, 1973). Surprisingly little empirical research, however, has examined time management. Perhaps it is because time management is typically viewed as a fad and not held in very high esteem by researchers in the field. Nonetheless, many organizations promote efficient use of company time and spend a great deal of money on having their employees learn these time management behaviors. This emphasis on time management stems from the untested popular belief that poor allocation of time not only increases employee stress, but also impairs performance. In the present research, I tested this belief by examining a process model of the effects of time management training on time management behaviors; perceived control of time; and stress responses, job satisfaction, and job performance.

## Process Model of Time Management

### *Time Management Training Leads to Time Management Behaviors*

According to Lakein's (1973) description of time management, individuals first determine their needs and wants and then rank them in terms of importance. Specific activities include setting goals to achieve the needs or wants and prioritizing the tasks necessary to accomplish them. The tasks of utmost

importance are then matched to the time and resources available by planning, scheduling, and making lists. Lakein also described other time management tips, such as organizing the work space and determining the approach to projects. In developing a measure of time management, Macan, Shahani, Dipboye, and Phillips (1990) found three time management factors consistent with Lakein's description: (a) the setting of goals and priorities, (b) the mechanics of time management (e.g., making lists), and (c) a preference for organization. The first three linkages in the present process model of time management (see Figure 1) propose that time management training should lead to an increased frequency in each of these three time management factors.

The few studies that exist on the effects of time management training have predominantly been investigations of the effects of various types of time management training (e.g., manuals and personal instruction). The findings suggest that training can affect the amount of time spent in various activities previously identified by the subjects as high priority, such as completing projects and reading books (Hall & Hursch, 1982; A. C. King, Winett, & Lovett, 1986). For instance, in the study by Hall and Hursch, four members of a university's faculty and staff who were having trouble completing projects read a time management manual and met weekly with a time management consultant. Results indicated that their self-evaluations of work effectiveness and satisfaction were positively related to their self-reports of time spent on the high-priority activity. From these findings, one might infer that training in time management resulted in an increased use of time management behaviors, which in turn led to more positive outcomes.

These studies, however, have not explicitly examined whether training leads to an increased use of the time management behaviors delineated by time management consultants (e.g., Lakein, 1973; Taylor & Mackenzie, 1986). They are further limited by methodological shortcomings such as restricted samples (Bost, 1984; A. C. King et al., 1986), small sample sizes (Hall & Hursch, 1982), and the absence of control groups (Hall & Hursch, 1982; Hanel, Martin, & Koop, 1982). The first set of linkages in the present process model provides a quasi-experimental test of time management training.

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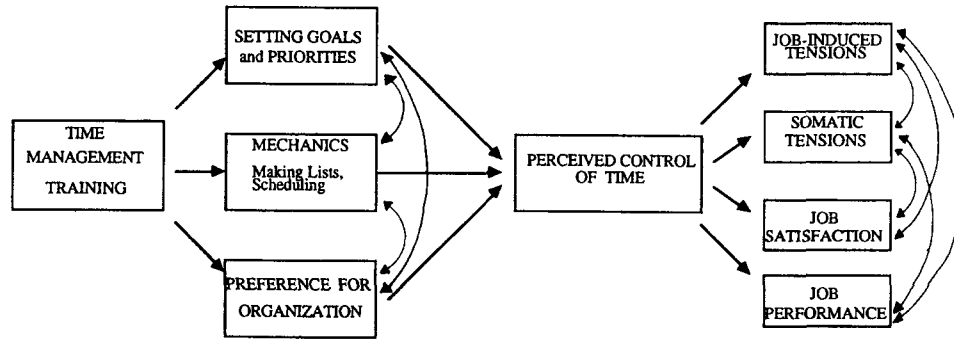


Figure 1. Proposed process model of time management.

### *Time Management Behaviors Lead to the Perception of Control Over Time*

The next set of three linkages in the present model states that engaging more frequently in the three time management factors should lead to a greater perception of control over time. By setting goals, scheduling, and organizing, one gains a sense of mastery over how one allocates one's time; that is, the perception that one has control over one's time. Although the paths are intuitively appealing and espoused by time management consultants, no empirical research has been conducted to support these suppositions directly. A logical deduction from the goal-setting literature, however, is that the setting of goals is related to a person's self-efficacy in being able to exercise influence over his or her behavior (Bandura, 1977; Locke & Latham, 1990). The present study, therefore, was the first empirical examination of the linkages between time management behaviors and a perception of control over time. Also, as denoted by the bidirectional curved lines among the time management behaviors in Figure 1, the three factors are hypothesized to be reciprocally related to each other. It is possible, for example, that an individual who sets goals also uses the mechanics of time management and has a preference for organization.

### *Outcomes Linked to Perceived Control Over Time*

Schuler (1979) asserted that "time management means less stress for individuals, which means more efficient, satisfied, healthy employees, which in turn means more effective organizations" (p. 854). Indeed, in one statement, he captured much of the conventional thinking about time management. In the current model, however, I propose that time management behaviors are not linked directly to these outcomes, but instead operate through a perception of control over time. Only if time management behaviors provide a person with the perception that he or she has control over time will the outcomes be manifested. Thus, it is not the time management behavior per se that affects these outcomes but the perceived control over time that these behaviors afford an individual.

Although these linkages have not been examined in time management studies, the notion of a generalized desire or need for personal control is not new. Numerous psychological studies

report a variety of consequences that can result from varying levels of personal control, including effects on performance (Bazerman, 1982; Greenberger, Strasser, Cummings, & Dunham, 1989; Spector, 1986), job satisfaction (Greenberger et al., 1989; Spector, 1986), and stress (Averill, 1973; Spector, 1986; Thompson, 1981). In addition, Greenberger and Strasser (1991) provided a comprehensive review of the personal control literature and detailed a model of personal control in organizations. In the present study, however, I examined the effects of a more specific notion of personal control, perceived control over time. In his theory of planned behavior, Ajzen (1991) noted that a person's perceptions of behavioral control can be a key predictor of his or her behavior in situations that are not completely under the person's volitional control, such as in an employment setting. That is, when behavioral intentions are held constant, perceptions of behavioral control should account for considerable variance in actual behavior. With a focus on perceived control over time, the final set of four linkages proposes that a perception of control over time leads to fewer job-induced and somatic tensions, greater satisfaction with the job, and better job performance.

Research on organizational stress suggests that work-related stress is a critical influence on employee health and well-being (Ganster, Mayes, Sime, & Tharp, 1982; see also, Cooper & Marshall, 1976; Kasl, 1973). In fact, medical research has documented the physical changes that occur to the body in response to stress. Somatic complaints include heart disease, ulcers, headaches, digestive diseases, and diseases of resistance (Matteson & Ivancevich, 1987). Is a perception of control over time related to stress reactions, that is, job-induced tensions and somatic tensions? Macan et al. (1990) found that students who perceived themselves to have control over their time felt fewer school and somatic tensions than did students who did not perceive themselves to have control over their time. In contrast, A. C. King et al. (1986) found that neither of the two global stress measures in their study showed reliable differential change across conditions assessed immediately after and 3 months after time management training. The specific link between perceived control of time and stress responses, however, was not examined.

If time management is a useful technique for dealing with

stress, negative path coefficients between perceived control over time and the two measures of tension may be expected. Those who perceive that they have control over their time should experience fewer frustrations and tensions in response to their job (job-induced tension) than those who do not perceive themselves as having such control. Furthermore, those who perceive themselves to have control over time should report fewer physiological symptoms of stress (somatic tension). In effect, those who perceive themselves to have control over time should be healthier employees.

Employee job satisfaction is typically a concern for organizations, especially because there is a relationship between it and behavioral measures of absenteeism and turnover (Porter & Steers, 1973). Students in the Macan et al. (1990) study who perceived themselves to have control over their time reported more satisfaction with school than did those who did not perceive themselves as having control over their time. Landy, Rastegary, Thayer, and Colvin (1991) found a significant correlation between overall job satisfaction and only one of seven dimensions of the Time Urgency Scale—Awareness of Time. Because few studies have addressed this specific issue, examination of the linkage between perceived control over time and job satisfaction is warranted. It was expected that those who felt in control of their time would be most satisfied with their job.

Little research has been conducted on the relationship between job performance and time management. A perception of control over time was positively correlated with students' self-reported academic performance (Macan et al., 1990) and with students' grade point averages according to university records (Britton & Tesser, 1991). In the present study, however, I examined supervisors' ratings of job performance. Despite the paucity of research, the claims of time management consultants and writers of time management books appear logical and lead to the tentative hypothesis that perceived control over time is positively related to supervisors' ratings of job performance.

On the basis of past research, I also propose reciprocal correlations among most of the outcome variables in the present model. Specifically, the two stress response measures—job-induced tensions and somatic tensions—were expected to be highly correlated in the present study (House & Rizzo, 1972). In addition, these two measures were hypothesized to be negatively correlated with job satisfaction (Brief, Schuler, & Van Sell, 1981) and job performance (Motowildo, Packard, & Manning, 1986). No significant relationship between job performance and job satisfaction, however, was expected (Iaffaldano & Muchinsky, 1985).

### Assessment of Time Management Behaviors and Perceived Control Over Time

To test the model, valid measures of time management behaviors and perceived control over time were necessary. Several researchers have developed time-related scales. For example, the Time Structure Questionnaire (Bond & Feather, 1988) globally assesses the structure and purpose of time use (e.g., "Do you often feel that your life is aimless, with no definite purpose?"). On the other hand, the Future Perspective Scale (Bird & Jordan, 1987) measures a person's thoughts and feelings

about future events (e.g., "My future will be an extremely busy time"). Recently, Landy et al. (1991) developed the Time Urgency Scale, a component of the Type A behavior pattern. None of these measures was developed to assess time management behaviors specifically. Although the Time Urgency Scale does incorporate some dimensions of time management (e.g., scheduling and list making), other key dimensions of time management (i.e., time saving and tolerance for tardiness) were deleted during the scale's development. The Time Management Behavior Scale (TMB; Macan et al., 1990), a self-report instrument, however, was designed to measure the extent to which people used various time management behaviors in their work situation and perceived themselves to have control over their time. The TMB was used in the present research.

### Focus of the Present Research

Surprisingly little empirical evidence supports the process and claims of time management. In a review of time research, Bluedorn and Denhardt (1988) stressed that time management is "the area in most need of research at the individual unit of analysis" (p. 315). Moreover, because the books, articles, and seminars on time management, along with assertions, prescriptions, and anecdotes, continue to proliferate, it is necessary to examine time management critically. Thus, two studies are presented that address an important and practical issue for both organizational and personal functioning. Study 1 is the first attempt to test a process model of time management. In Study 2, both respondents' reports and responses by their supervisors, coworkers, or relatives or friends were collected to examine the construct validity of the time management measures.

### Study 1

Because the TMB was originally developed using a student sample, the objective of Study 1 was to examine the structure of the TMB in an employed sample and then to assess the linkages among time management training, the time management behaviors, perceived control over time, and the outcomes as outlined by the present process model of time management (see Figure 1).

### Method

*Subjects.* Data were collected from employees at two organizations located in a southwestern urban area: a public social service agency (Organization S) and a department of corrections system (Organization C). A total of 353 usable surveys were completed by respondents in the two organizations. At Organization S, questionnaires were randomly distributed to 257 employees using two methods. One hundred thirty-eight questionnaires were distributed through organizational mail, and a 51% response rate was achieved. One hundred nineteen were distributed during staff meetings by a university representative, and a 94% response rate was reached. Overall, 182 employees returned the survey, yielding 177 usable questionnaires (5 were deleted because of missing data). Six hundred questionnaires were randomly distributed to employees at Organization C through organizational mail, and a total of 176 usable surveys were returned (a 31% response rate). Nine were deleted because of missing data.

Respondents were mainly female (56%), with an average age of 37

years. A little more than half (54%) of the respondents were White, 33% were African-American, 9% were Hispanic, and 4% were other (Asian or Indian). All but 2% of the respondents had received a high school education. The highest educational attainment of the subjects was as follows: 28% high school, 30% some college, 32% college degree, and 8% master's degree. They had been employed in their jobs for an average of 2.8 years and in their organization for an average of 5 years. The respondents were employed in the following types of jobs: caseworker (35%), correctional officer (26%), clerical staff (22%), supervisor (9%), maintenance and operations staff (5%), and health care provider (3%). More than half of the participants reported having read time management books, and 45% had participated in time management seminars or workshops.

**Procedure.** All measures were self-administered; instructions for completion were given on the cover page. To avoid calling attention to time management issues, I included information on the cover page informing respondents that the survey examined opinions about work activities and potential needs for future training programs. All respondents volunteered to complete the questionnaire and were given company time to respond. The importance of honest, accurate responses was stressed, and the confidentiality of responses was assured. Participants were offered a summary of the results for participation.

**Time management training.** Subjects indicated whether they had participated in time management training (0 = no; 1 = yes). Respondents who chose to participate in the organization's seminars received a half day of training that included (a) setting goals, (b) prioritizing, (c) making lists, (d) scheduling and planning, (e) organizing desk and papers, (f) dealing with procrastination, and (g) dealing with interruptions. The time management behaviors were taught using a variety of methods, including lecture, discussion, film, time to make lists and set goals, and role play.

**Time management behaviors.** Thirty-three time management behavior items developed by Macan et al. (1990) from a compilation of time management tips, ideas, and techniques were used to assess subjects' use of time management behaviors. They covered topic areas including setting goals, prioritizing, organizing, and scheduling. The scale items were intended to measure the extent to which time management activities are used, not the individual's evaluation of the effectiveness or appropriateness of such behaviors. Participants responded to each item using a 5-point Likert-type scale from *seldom true* (1) to *very often true* (5). Negatively worded items were reverse scored. Higher mean scores indicated more frequent use of time management as prescribed by the literature (see Macan et al., 1990, for a more detailed description).

**Perceived control over time.** Five items assessing the extent to which individuals believe they can directly affect how their time is spent were taken from Macan et al. (1990). The items were "I feel in control of my time," "I find it difficult to keep to a schedule because others take me away from my work," "I underestimate the time that it would take to accomplish tasks," "I must spend a lot of time on unimportant tasks," and "I find myself procrastinating on tasks that I don't like but that must be done." Responses were made using the same 5-point Likert scale used for time management behaviors. The coefficient alpha for this scale was .68.

**Job-induced and somatic tension.** Given the controversy in the literature concerning the meaning of stress (Jex & Beehr, 1991), two scales were used. The scales were two subscales of the Anxiety Stress Questionnaire (House & Rizzo, 1972): the six-item Job-Induced Tension Scale and the five-item Somatic Tension Scale. The Job-Induced Tension Scale measured subjects' perceptions of pressures and frustrations stemming from their work. The Somatic Tension Scale, on the other hand, examined possible outcomes of stress in terms of physical symptoms, such as insomnia or headaches. The coefficient alphas for the job-

induced and somatic tension scales in this sample were .84 and .72, respectively.

**Job satisfaction.** The three-item General Job Satisfaction scale from the Job Diagnostic Survey (Hackman & Oldham, 1975) was used. This scale indicates how satisfied an employee is with work in general. The coefficient alpha for this scale was .57.

**Job performance ratings.** In Organization S, a performance measure specially designed for this study was distributed to the supervisors of the respondents (response rate = 87%,  $n = 159$ ). In Organization C, records were obtained on respondents' most recent performance ratings made by their immediate supervisor. Using social security numbers reported by employees participating in the survey, I was able to obtain performance data for 146 participants. Five common dimensions across the two organizations were used in the analyses: quality, productivity, cooperation, dependability, and overall performance. Given the inter-item reliability ( $\alpha = .86$ ) of the five items, supervisors' ratings of employees were averaged to form a composite score. Because the ratings came from two separate organizations, performance scores were standardized within each organization. All ratings were made on 5-point Likert-type scales, with higher mean values indicating better job performance.

**Person and situational factors.** Because participation in the time management training was optional, training can be considered to have been a quasi-experimental treatment variable (Cook & Campbell, 1979). In such nonrandomized experimental contexts, preexisting differences between participant and nonparticipant groups can confound treatment effects, making unequivocal interpretations of findings less likely. To allow for the statistical control of such differences, I assessed a number of personal and situational variables. As Cook and Campbell succinctly stated, "This is one way to improve the model and hopefully arrive at less biased estimates of the treatment effect" (p. 171).

**Demographic information.** Although no demographic differences between training and no-training groups were hypothesized, respondents provided information on gender, race, age, and education.

**Type A-B behavior pattern.** The Type A behavior pattern refers to hard-driving, competitive, aggressive persons who are preoccupied with deadlines and work and have a feeling that time is passing too quickly for them to do all they desire (Friedman & Rosenman, 1974). In contrast, persons characterized as displaying the Type B behavior pattern are relaxed and easygoing. Thus, it was expected that Type As would be more likely than Type Bs to attend time management training programs in search of ways to handle their harried life-style.

Type A-B behavior pattern was assessed using Form C of the Jenkins Activity Scale (JAS; Jenkins, Zyzanski, & Rosenman, 1979). Edwards, Baglioni, and Cooper (1990) questioned the psychometric properties of several measures of the Type A-B behavior pattern, including the JAS. On the basis of their findings and recommendations, 10 items on the JAS were recombined using their weighted scoring scheme to compute the JAS-AB global scale. Higher scores on the measure indicate a tendency toward the Type A behavior pattern. The coefficient alpha for the scale in this study was 0.52.

**Job tenure.** Job tenure was the length of time (in months) each employee had been in his or her position. Incumbents who had had their present job a long time were expected to have acquired the necessary skills, resources, and knowledge of organizational procedures to work more effectively than those who had less job tenure.

**Type of job.** Six categories of jobs were defined: (a) maintenance and operations staff, (b) correctional officer, (c) clerical staff, (d) caseworker, (e) health care provider, and (f) supervisor and manager. This listing orders the jobs from high to low job structure as defined by Dimensions 31 and 33 of the Position Analysis Questionnaire (McCormick, Mecham, & Jeanneret, 1977). It was expected that workers in less structured jobs, without a predetermined order of tasks to complete,

would have more opportunity, and feel more need, to use time management behaviors than would workers in more structured jobs.

**Family demands.** Experiencing more demands on one's time from family may spill over into one's work and create conflict (cf. Burke & Greenglass, 1987). Individuals with heavy family demands may be more likely to attend time management seminars in search of ways to deal with these time demands. Family demand was computed using number of children, weighted by age of child. Participants with more children at a young age received the highest score. Respondents with no children were given a score of 0. The following weighting scheme totaling to 1 was used: having children age 5 years or younger was weighted 0.52; having children ages 6–10 years, 0.26; having children ages 11–15 years, 0.13; having children ages 16–20 years, 0.06; and having children ages 21 years and older, 0.03. Although a crude measure, it is supported by past research findings that indicate that employed parents with preschool-age children experience more conflict between work and family life than do persons with older children or no children (Pleck, Staines, & Lang, 1980).

### Results

**Factor analysis of time management behavior scale.** Participants' responses to the 33 time management behavior items were subjected to a common factor analysis with squared multiple correlations in the diagonals. The factors were rotated using a Harris–Kaiser orthoblique rotation (Gorsuch, 1983). After examination of the scree plot and eigenvalues, three interpretable factors were retained that accounted for 81% of the common variance. Coefficients of congruence comparing the factor structures of the student sample in Macan et al.'s (1990) study with the present employee sample for the 33 items indicated factorial similarity across the three factors. All factors met the acceptable lower bound of .80 for congruence coefficients (Barrett, 1986). Definition of the factors and examples of items that significantly predicted each factor are presented in the Appendix. Factor loadings and eigenvalues for the three factors are presented in Table 1. The factors were labeled as follows: Goal Setting/Prioritizing (coefficient of congruence = .94), Mechanics of Time Management (e.g., scheduling and planning; coefficient of congruence = .87), and Preference for Organization (coefficient of congruence = .83).

The three factors comprised 10, 11, and 8 items, respectively. I deleted 4 items after examining both factor loadings (threshold value = 0.29) and item content (Gorsuch, 1983; Stevens, 1986). Items associated with each factor were summed using unit weighting to obtain subject scores on each of the three factors.

**Descriptive statistics.** Means, standard deviations, and intercorrelations for the variables are presented in Table 2. Because subjects could choose to attend time management training, it was important to covary out any preexisting group differences between the training and no-training groups due to the eight person and situational factors noted earlier (Cook & Campbell, 1979). Each variable in the model (see Figure 1) was regressed on the set of person and situational factors, resulting in residual scores for each subject on each model variable. The correlations reported among the model variables (variables 1–9 in Table 2), therefore, are those obtained after the variance due to the person and situational factors had been removed.

**Causal modeling.** The hypothesized model of time management was tested using LISREL 7 (Jöreskog & Sörbom, 1989).

Table 1  
Factor Loadings and Eigenvalues for the  
Time Management Behaviors Scale

Item	Factor		
	1	2	3
Evaluates daily schedule	<b>.70</b>	.23	.19
Reviews activities	<b>.65</b>	.23	.10
Sets deadlines	<b>.63</b>	.15	–.01
Increases task efficiency	<b>.57</b>	.16	.15
Sets priorities	<b>.57</b>	.28	.29
Breaks down tasks	<b>.53</b>	.19	.13
Sets short-term goals	<b>.53</b>	.22	.11
Reviews goals	<b>.50</b>	.21	.04
Completes priority tasks	<b>.42</b>	–.01	.23
Keeps long-term goals	<b>.44</b>	.15	.15
Handles letters & memos <sup>a</sup>	.30	.10	.26
Carries appointment book	.10	<b>.57</b>	–.03
Makes list of things to do	.30	<b>.54</b>	.10
Writes reminder notes	.17	<b>.51</b>	.14
Uses waiting time	.16	<b>.47</b>	–.04
Practices recordkeeping	.20	<b>.48</b>	.19
Carries notebook	.18	<b>.46</b>	.07
Avoids interruptions	.14	<b>.43</b>	–.06
Schedules events weekly	.32	<b>.41</b>	.15
Keeps daily log	.25	<b>.37</b>	–.02
Schedules time daily	.20	<b>.31</b>	.15
Organizes paperwork	.17	<b>.29</b>	.08
Sets clothes out nightly <sup>a</sup>	.20	.25	.06
Is disorganized	.02	.09	<b>.53</b>
Is disorganized	.12	–.07	<b>.52</b>
Has messy work space	.06	–.05	<b>.47</b>
Organizes tasks by preference	.13	–.01	<b>.46</b>
Forgets lists made	.17	.19	<b>.48</b>
Believes days to be too unpredictable	.09	.18	<b>.41</b>
Schedules wasted time	.13	.13	<b>.41</b>
Leaves clean work space	.28	–.02	<b>.40</b>
Sorts mail daily <sup>a</sup>	.25	.31	.32
Doesn't organize tasks <sup>a</sup>	–.03	.04	.20
Eigenvalue	4.87	1.78	1.42

Note.  $N = 353$ . The highest factor loadings are shown in boldface. Factor 1 = Setting Goals and Priorities; Factor 2 = Mechanics of Scheduling & Planning; Factor 3 = Preference for Organization.

<sup>a</sup> Was not included in computing the scores on the factors.

Input for the program consisted of a  $9 \times 9$  covariance matrix of the model variables from which the effects of the person and situational variables had been removed, as just described. Because each measure was treated as a single indicator of its construct, this procedure was in essence a path analysis.

Given the controversy over goodness-of-fit indexes in the literature, a variety of goodness-of-fit indexes were computed to evaluate the overall fit of the path model (Bollen, 1989). Because a chi-square statistic can be affected by sample size, the following goodness-of-fit indexes are reported: root-mean-square residual (rmsr), goodness-of-fit index, adjusted goodness-of-fit index, normed fit index (NFI), nonnormed fit index (NNFI), and comparative fit index (CFI). In this study, the NFI, NNFI, and CFI compared the fit of the time management process model to the fit of a baseline null model in which covariation among variables was constrained to equal zero. Table 3 shows the goodness-of-fit indexes. The chi-square was not significant, the rmsr

Table 2  
Means, Standard Deviations, and Intercorrelations Among Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Model variables <sup>a</sup>								
1. Time management training	0.45	0.50	—	.13*	.11	.09	.06	-.08
2. Goal setting & prioritizing	3.71	0.73		—	.42**	.23**	.32**	-.05
3. Mechanics	2.88	0.79			—	.18**	.14*	-.03
4. Preference for organization	4.14	0.65				—	.47**	-.31**
5. Perceived control over time	3.86	0.84					—	-.43**
6. Job-induced tensions	2.37	1.06						—
7. Somatic tensions	2.03	0.87						
8. Job satisfaction	3.34	0.98						
9. Job performance <sup>b</sup>	4.33	0.60						
Person and situational variables								
10. Sex	0.56	0.50						
11. Race	0.54	0.50						
12. Age	36.50	9.83						
13. Education	4.16	0.98						
14. Type A-B behavior pattern	2.65	0.34						
15. Job tenure	33.50	41.24						
16. Type of job	2.20	1.35						
17. Weighted no. of children	0.33	0.39						

Note. Variables were scored as follows: time management training—0 = no, 1 = yes; sex—0 = male, 1 = female; race—0 = minority, 1 = nonminority; Type A-B behavior pattern—higher number indicated tendency toward Type A (range = 1.6–3.6); job tenure—months in present job category.

<sup>a</sup> Correlations reported among the model variables are those obtained after the variance due to person and situational variables had been removed.

<sup>b</sup> The standardized job performance scores were transformed to make ratings comparable to 5-point scale values.

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

was less than .05, and the other indexes were all higher than .94, indicating a quite acceptable fit (Bentler & Bonett, 1980; Pedhazur & Schmelkin, 1991).

The maximum likelihood parameter estimates of the hypothesized model are presented in Figure 2. Most of the hypothesized links were supported. As indicated by the small but significant path coefficient between training and goal setting/prioritizing, training in time management was related to how frequently participants reported setting goals and priorities. Although not much smaller in magnitude, the parameter estimates between training and mechanics of time management and between training and preference for organization were nonsignificant. Overall, participation in time management training was only minimally related to subsequent use of time management behaviors. Two of the three hypothesized paths between employees' time management behaviors and perceived control over time, however, were statistically significant and of moderate size—those involving goal setting and prioritizing and preference for organization. Engaging more frequently in the mechanics of time management was unrelated to the perception of control over time.

As hypothesized, perceived control over time was related to positive outcomes. Three of the four parameter estimates between perceived control over time and the outcome measures were significant and in the expected direction. Employees who perceived themselves as having control over their time reported fewer job-induced and somatic tensions and greater job satisfaction than did employees who did not perceive themselves as having much control over their time. Contrary to expectations, however, the perception of control over time was not significantly related to job performance.

Because the hypothesized model in Figure 2 specifies that all significant effects of attending time management training or engaging in time management behaviors on the outcome variables are indirect, operating through the perception-of-control-over-time variable, it was informative to see whether the direct effects of these variables on the outcomes were indeed nonsignificant paths. Therefore, a just-identified model that calculated all possible direct effects was estimated. In addition to the significant paths noted in Figure 2, it was also found that employees who had a preference for organization reported less job-induced tensions than did those who did not have a preference for organization (path coefficient =  $-.16$ ,  $p < .01$ ). I did not add this path to the model, however, because researchers have cautioned against revising models on purely post hoc, empirical grounds (Cliff, 1983; McPherson, 1976).

In summary, relatively good support was found for the process model of time management. Although time management training was not found to be very effective in increasing the adoption of certain time management behaviors, individuals who did set goals and priorities and had a preference for organization perceived themselves to have greater control over their time than did persons who did not set goals and have a preference for organization. In turn, a perception of control over time was related to job satisfaction and reduced stress tensions.

## Study 2

The central measures in Study 1 were the employees' self-reports of time management behaviors. The construct validity of this procedure would be more certain if employees' self-reports converged with some other method of assessment. There-

7	8	9	10	11	12	13	14	15	16	17
-.06	.00	.07	.17**	-.14*	.12*	.29**	.00	.10	.25**	-.01
-.06	.19**	-.01	.00	-.10	.11*	.02	.05	.02	-.02	.02
-.09	.10	-.07	.18**	-.10	.04	.30**	.00	.00	.20**	.02
-.20**	.16**	-.03	-.04	-.05	.13*	-.01	.13*	-.06	-.10	.07
-.32**	.29**	.01	-.14*	.10	.09	-.19**	.23**	-.05	-.22**	.05
.61**	-.31**	-.18**	.02	.13*	-.10	.15**	-.29**	.01	.19**	-.08
—	-.29**	-.08	.02	.05	-.13*	-.05	-.32**	.03	.06	-.03
	—	.13	-.06	.04	.06	.00	.19**	.03	-.02	.15**
		—	.11	.03	-.01	-.08	.08	.02	-.07	-.08
			—	-.24**	-.17**	.14*	-.03	-.04	.14*	-.05
				—	.19**	-.10	-.09	-.04	-.04	-.16**
					—	.05	.13*	.21**	-.04	-.23**
						—	-.07	.03	.47**	-.11*
							—	.06	-.13*	.05
								—	.07	-.03
									—	.02
										—

nority; age—in years; education—higher number indicated higher educational attainment; type of job—higher number indicated less structure in position; and weighted number of children—higher number indicated more family demands. All other ratings were made on 5-point scales.

fore, a multitrait-multirater approach similar to that taken by Landy et al. (1991) for their Time Urgency Scale was used (Schmitt & Stultz, 1986; Stanley, 1961). Perceptions from supervisors, coworkers, or relatives and friends about respondents' time management activities were compared with respondents' self-ratings across the three behavior dimensions.

**Method**

*Subjects and procedure.* Three hundred forty-one undergraduate (*n* = 260) and graduate (*n* = 81) students from psychology and business courses at a midwestern urban university voluntarily completed the time management questionnaire. Subjects ranged in age from 19 to 57 years (*M* = 25 years, *SD* = 6.44); 53% were female and 90% were White. Eighty percent of the respondents held jobs.

In addition to completing the survey, subjects were asked to distribute two copies of a revised version of the survey to two persons familiar with their daily routine. They were encouraged to give one survey to a coworker and the other to their supervisor. Those who could not do so were told to ask a friend or family member to complete the survey. Forms completed by two other persons were turned in by 204 subjects; 40 subjects handed in a form completed by only one person. In cases where ratings were made by the same type of person (e.g., two relatives/friends), the ratings were averaged. This resulted in a total of 84 supervisor ratings, 125 coworker ratings, and 132 relative and friend ratings.

*Measures.* The same time management behavior questionnaire used in Study 1 was administered to the respondents. A revised version of the questionnaire was developed for the respondents' coworkers, supervisors, and relatives and friends. In this version, the wording of each item remained the same, with the exception that the initial word was changed to the third person.

**Results**

The correlations between self and other ratings for each of the three time management measures were computed separately for

each type of rater. The three multitrait-multirater intercorrelation matrices—self and supervisor ratings, self and coworker ratings, and self and relative and friend ratings—are provided in Table 4. As in the analysis of variance (ANOVA) approach taken by Landy et al. (1991), the correlations in Table 4 were used to calculate the variance component estimates for each rater pair. This technique provides a way to summarize the correlation matrix and partition the variance into four sources: (a) a ratee component that underlies all judgments of the target person across traits and raters (convergent validity), (b) a Ratee × Trait component that represents the independence among the traits (discriminant validity), (c) a Ratee × Rater component that has been regarded as the halo effect, and (d) random error (Schmitt & Stultz, 1986; Stanley, 1961). Given the lack of clear standards for the variance component estimates, the values were compared with those reported by Landy et al. (1991) for self and spouse ratings using the Time Urgency Scale and with typical estimates across various studies computed by L. M. King, Hunter, and Schmidt (1980). As displayed in Table 5, the ANOVA procedure provided some evidence of both convergent and discriminant validity. The ratee effects ranged from .18 to

Table 3  
*Goodness-of-Fit Summary*

Model	<i>df</i>	$\chi^2$	rmsr	GFI	AGFI	NFI	NNFI	CFI
Null	36	459.38**	.20	.71	.63			
Proposed	18	25.92*	.04	.98	.95	.94	.96	.98

*Note.* rmsr = root-mean-square residual; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; NNFI = nonnormed fit index; CFI = comparative fit index.  
\* *p* = .10. \*\* *p* < .001.

Table 4  
Multitrait–Multirater Matrix for Time Management Behavior Factors

Factor	Self and supervisor (n = 84)						Self and coworker (n = 126)						Self and relative or friend (n = 136)					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Self-ratings																		
1. Goal Setting & Prioritizing	—						—						—					
2. Mechanics of Time Management	.58**	—					.57**	—					.55**	—				
3. Preference for Organization	.40**	.43**	—				.36**	.42**	—				.33**	.36**	—			
Others' ratings																		
4. Goal Setting & Prioritizing	.28**	.18	.27*	—			.39**	.35**	.30**	—			.41**	.33**	.16	—		
5. Mechanics of Time Management	.25*	.45**	.13	.30**	—		.32**	.56**	.30**	.46**	—		.33**	.65**	.27**	.46**	—	
6. Preference for Organization	.02	.21	.36**	.28**	-.03	—	.21*	.27**	.49**	.43**	.16	—	.12	.07	.34**	.29**	.09	—

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

.29, indicating at least as much convergence as that found by Landy et al. (1991) and L. M. King et al. (1980). The best convergence was found between self-ratings and ratings by coworkers, the group most likely to have opportunities to observe the target person engaged in the time management behaviors at work. Discrimination among the traits ranged from .18 to .26 across the three types of raters. The Ratee  $\times$  Rater effect provided an estimate of the variance attributable to halo with reported values of .09 and .15. These estimates of halo are larger than Landy et al.'s and suggest that their use of behaviorally anchored rating scales may have helped to minimize halo.

General Discussion

The proposed process model of time management provided a good fit to the employee sample data. Examination of the path coefficients suggested that although time management behaviors were somewhat effective, time management training had little influence on whether respondents engaged in these behav-

iors. On the surface, these results seem contrary to previous studies that suggest time management training is an effective technique (Hall & Hursch, 1982; Hanel et al., 1982). However, the present research was more methodologically sound than these past studies, because I included both a control group and a large, diverse sample and controlled for any preexisting training group differences. Perhaps the methodological rigor of time management training research is negatively related to the findings. Among the few studies that have been conducted to evaluate time management training, it appears that in the less controlled ones, positive results have been found, and in the more stringent ones, negative results have been found. In evaluating organizational development interventions, Terpstra (1981) found a similar inverse relationship between the study quality and outcomes of organizational development research.

The size of the path coefficients also suggests that time management training may not explain much of the reported variance in the behaviors. Most variation in time management behaviors, therefore, must have existed before training. Perhaps

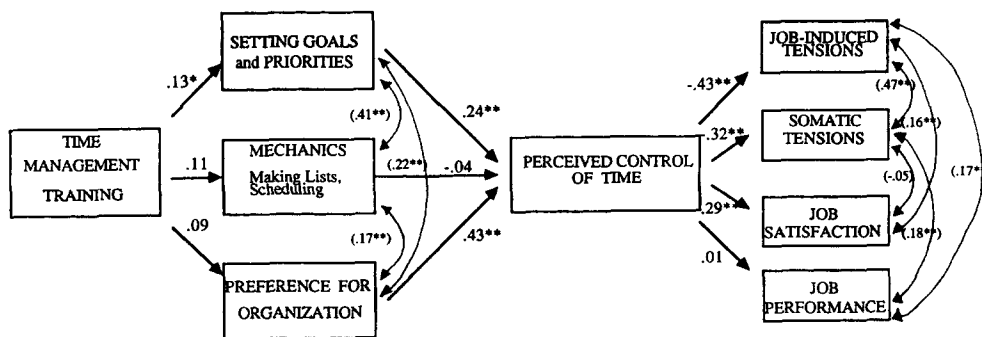


Figure 2. Path coefficients for the proposed process model of time management, using employee sample data. \*  $p < .05$ . \*\*  $p < .01$ .



individuals learn the components of time management in other ways besides a formal time management training program. For example, throughout life, a person may observe others making lists, scheduling, and leaving a clean work space and may choose to adopt these techniques. Future research should explore this possibility.

Time management behaviors—goal setting and prioritizing and having a preference for organization—appear to have beneficial effects if they give persons the perception that they have control over their time. Inconsistent with expectations, however, respondents in the present study who practiced time management behaviors such as making lists and scheduling activities did not necessarily perceive greater control over their time. A possible explanation for future research to explore is the type of information individuals receive from engaging in these behaviors. It may be that making lists, for example, provides people with objective feedback concerning their progress on projects or duties. When a person does not complete the projects listed, the perception of having little control over how time is spent may result. Thus, simply making lists more frequently may not be beneficial for everyone. Future research could also explore the relation between the perception of time control held by monochronic people who make lists and that held by polychronic persons who make lists. Bluedorn, Kaufman, and Lane (1992) suggested that polychronic persons (people who engage in more than one activity at a time) are more flexible in their approach to list making than are monochronic persons (people who focus on one task at a time).

Examination of the model further indicated that respondents who perceived themselves to have control over their time also reported fewer job-induced and somatic tensions and greater job satisfaction than did respondents who did not perceive themselves as having such control. Contrary to popular time management claims, however, the link between perceived control over time and job performance was not significant. Even though performance was assessed using supervisors' ratings, a relatively objective measure of performance compared with the self-evaluations of performance used in past studies (Hall & Hirsch, 1982; Macan et al., 1990), little variance in job performance was explained. According to Ajzen's (1991) theory of planned behavior, if behavioral intentions are held constant, be-

havioral control may account for variance in actual behavior. In the present field study, controlling for participants' intentions was not possible. Thus, differences in behavioral intentions may provide one reason for the nonsignificant path between job performance and perceived control over time. Future research in lab settings that afford control of intentions could examine this possible explanation.

Although the nonsignificant coefficient between job performance and perceived control over time may represent the true state of affairs, it is also possible that this finding was a result of specific aspects of the research sample. For example, perhaps only certain types of people or only persons in particular types of jobs perform better when engaging in time management behaviors. In this study, I controlled for some possible effects of individual differences and various jobs by including the personal variables (e.g., age, sex, and Type A-B behavior pattern) and six different jobs that varied in amount of structure. A direction for future research, however, may be to determine whether other dispositional or personality factors, such as self-esteem, influence the perception of control over time. In addition, future research should explore whether individuals in other types of occupations or in certain types of organizations, as suggested by the work of Schriber and Gutek (1987), perform better when they perceive control over time than when they do not. For the present sample of jobs, no moderating effects of job type on time management behaviors, perceived control over time, or outcomes were found. As is typical, the job performance ratings were restricted to the higher end of the scale, potentially limiting the findings.

Although questions and issues remain, the proposed process model of time management provides the theoretical framework for further examinations of time management. Additional tests of the process model of time management in other companies implementing time management training are necessary, and particular attention should be paid to the soundness of the research design. The present findings are limited to the particular training programs conducted, but the coverage of time management issues seemed comprehensive and typical of these types of seminars. Thus, in the area of time management, where claims have seldom been empirically tested, the findings of the present research call into question the practical value of time manage-

Table 5  
*Comparative Summary of Variance Component Estimates for Supervisors, Coworkers, and Relatives or Friends in the Present Study and From Previous Studies*

Source	Estimate				
	Supervisors	Coworkers	Relatives or friends	Landy et al. <sup>a</sup>	L. M. King et al. <sup>b</sup>
Ratee	.18	.29	.21	.19	.23
Ratee × Traits	.18	.19	.26	.29	.08
Ratee × Raters	.15	.09	.14	.05	.31
Error	.49	.43	.39	.52	.38

*Note.* *F* tests for the main effect of ratee and two interactions (Ratee × Traits and Ratee × Raters) for supervisors, coworkers, and relatives or friends were all significant ( $p < .01$ ).

<sup>a</sup> From Landy, Rastegary, Thayer, & Colvin, 1991. <sup>b</sup> From L. M. King, Hunter, & Schmidt, 1980.

ment training and the effectiveness of some time management behaviors.

### References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin*, 80, 286–303.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191–215.
- Barrett, P. (1986). Factor comparison: An examination of three methods. *Personality and Individual Differences*, 7, 327–340.
- Bazerman, M. H. (1982). Impact of personal control on performance: Is added control always beneficial? *Journal of Applied Psychology*, 67, 472–479.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88, 588–606.
- Bird, B. J., & Jordan, R. S. (1987, August). *A study to develop measures of time orientation and future time perspective*. Paper presented at the meeting of the Academy of Management, New Orleans, LA.
- Bluedorn, A. C., & Denhardt, R. B. (1988). Time and organizations. *Journal of Management*, 14, 299–320.
- Bluedorn, A. C., Kaufman, C. F., & Lane, P. M. (1992). How many things do you like to do at once? An introduction to monochronic and polychronic time. *Academy of Management Executive*, 6, 17–26.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Bond, M. J., & Feather, N. T. (1988). Some correlates and purpose in the use of time. *Journal of Personality and Social Psychology*, 55, 321–329.
- Bost, J. M. (1984). Retaining students on academic probation: Effects of time management peer counseling on students' grades. *Journal of Learning Skills*, 3, 38–43.
- Brief, A. P., Schuler, R. S., & Van Sell, M. (1981). *Managing job stress*. Boston: Little, Brown.
- Britton, B. K., & Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology*, 83, 405–410.
- Burke, R. J., & Greenglass, E. R. (1987). Work and family. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 273–320). New York: Wiley.
- Cliff, N. (1983). Some cautions regarding the application of causal modeling methods. *Multivariate Behavioral Research*, 18, 115–126.
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Boston: Houghton Mifflin.
- Cooper, C. L., & Marshall, J. (1976). Occupational sources of stress: A review of the literature relating to coronary heart disease and mental ill health. *Journal of Occupational Psychology*, 49, 11–28.
- Edwards, J. R., Baglioni, A. J., Jr., & Cooper, C. L. (1990). Examining the relationships among self-report measures of the Type A behavior pattern: The effects of dimensionality, measurement error, and difference in underlying constructs. *Journal of Applied Psychology*, 75, 440–454.
- Emanuel, H. M. (1982). Put time on your side. *Management World*, 11, 30–31.
- Friedman, M., & Rosenman, R. H. (1974). *Type A behavior and your heart*. New York: Knopf.
- Ganster, D. C., Mayes, B. T., Sime, W. E., & Tharp, G. D. (1982). Managing organizational stress: A field experiment. *Journal of Organizational Behavior Management*, 67, 533–542.
- Gorsuch, R. L. (1983). *Factor analysis*. Hillsdale, NJ: Erlbaum.
- Greenberger, D. B., & Strasser, S. (1991). The role of situational and dispositional factors in the enhancement of personal control in organizations. *Research in Organizational Behavior*, 13, 111–145.
- Greenberger, D. B., Strasser, S., Cummings, L. L., & Dunham, R. B. (1989). The impact of personal control on performance and satisfaction. *Organizational Behavior and Human Decision Processes*, 43, 29–51.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of Applied Psychology*, 60, 159–170.
- Hall, B. L., & Hursch, D. E. (1982). An evaluation of the effects of a time management training program on work efficiency. *Journal of Organizational Behavior Management*, 3, 73–96.
- Hanel, F. J., Martin, G., & Koop, S. (1982). Field testing of a self-instructional time management manual with managerial staff in an institutional setting. *Journal of Organizational Behavior Management*, 4, 81–96.
- 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.
- Iaffaldano, M. T., & Muchinsky, P. M. (1985). Job satisfaction and job performance: A meta-analysis. *Psychological Bulletin*, 97, 251–273.
- Jenkins, C. D., Zyzanski, S. J., & Rosenman, R. H. (1979). *The Jenkins Activity Survey Manual*. New York: Psychological Corporation.
- Jex, S. M., & Beehr, T. A. (1991). Emerging theoretical and methodological issues in the study of work-related stress. In G. R. Ferris & K. M. Rowland (Eds.), *Research in personnel and human resource management* (Vol. 9, pp. 311–366). Greenwich, CT: JAI Press.
- Jöreskog, K. G., & Sörbom, D. (1989). *LISREL 7 analysis of linear structural relations by the method of maximum likelihood*. Mooresville, IN: Scientific Software.
- Kasl, S. V. (1973). Mental health and the work environment. *Journal of Occupational Medicine*, 15, 509–518.
- King, A. C., Winett, R. A., & Lovett, S. B. (1986). Enhancing coping behaviors in at-risk populations: The effects of time-management instruction and social support in women from dual-earner families. *Behavior Therapy*, 17, 57–66.
- King, L. M., Hunter, J. E., & Schmidt, F. L. (1980). Halo in a multidimensional forced-choice performance evaluation scale. *Journal of Applied Psychology*, 65, 507–516.
- Lakein, A. (1973). *How to get control of your time and your life*. New York: New American Library.
- Landy, F. J., Rastegary, H., Thayer, J., & Colvin, C. (1991). Time urgency: The construct and its measurement. *Journal of Applied Psychology*, 76, 644–657.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Macan, T. M., Shahani, C., Dipboye, R. L., & Phillips, A. P. (1990). College students' time management: Correlations with academic performance and stress. *Journal of Educational Psychology*, 82, 760–768.
- Matteson, M. T., & Ivancevich, J. M. (1987). *Controlling work stress: Effective human resource and management strategies*. San Francisco: Jossey-Bass.
- McCormick, E. J., Mecham, R. C., & Jeanneret, P. R. (1977). Technical manual for the *Position Analysis Questionnaire* (System 2). West Lafayette, IN: Purdue University Bookstore.
- McPherson, J. M. (1976). Theory trimming. *Social Science Research*, 5, 95–105.
- Motowildo, S. J., Packard, J. S., & Manning, M. R. (1986). Occupational stress: Its causes and consequences for job performance. *Journal of Applied Psychology*, 71, 618–629.
- Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. Hillsdale, NJ: Erlbaum.

- Pleck, J. H., Staines, G. L., & Lang, L. (1980, March). Conflicts between work and family life. *Monthly Labor Review*, pp. 30-32.
- Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. *Psychological Bulletin*, 80, 151-176.
- Schmitt, N., & Stultz, D. M. (1986). Methodology review: Analysis of multitrait-multimethod matrices. *Applied Psychological Measurement*, 10, 1-22.
- Schriber, J. B., & Gutek, B. A. (1987). Some time dimensions of work: Measurement of an underlying aspect of organization culture. *Journal of Applied Psychology*, 72, 642-650.
- Schuler, R. S. (1979). Managing stress means managing time. *Personnel Journal*, 58, 851-854.
- Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations*, 39, 1005-1016.
- Stanley, J. C. (1961). Analysis of unreplicated three-way classifications, with applications to rater bias and trait independence. *Psychometrika*, 26, 205-219.
- Stevens, J. (1986). *Applied multivariate statistics for the social sciences*. Hillsdale, NJ: Erlbaum.
- Taylor, J., & Mackenzie, R. A. (1986). Time is money, so use it productively. *ABA Banking Journal*, 78, 130-133.
- Terpstra, D. E. (1981). Relationship between methodological rigor and reported outcomes in organization development evaluation research. *Journal of Applied Psychology*, 66, 541-543.
- Thompson, S. C. (1981). Will it hurt less if I can control it? A complex answer to a simple question. *Psychological Bulletin*, 90, 89-101.

## Appendix

### Definition of Factors and Examples of Items Loading on Each Factor

#### Factor 1: Goal Setting and Prioritizing

*Definition:* The setting of goals concerning what the person wants or needs to accomplish and the prioritizing of tasks necessary to achieve these goals.

*Examples of items:* "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."

#### Factor 2: Mechanics of Time Management

*Definition:* The behaviors typically associated with managing time, such as making lists, scheduling, and planning.

*Examples of items:* "I schedule activities at least a week in advance"

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

#### Factor 3: Preference for Organization

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

*Examples of items:* "At the end of the workday I leave a clear, well-organized work space" and "I can find the things I need for my work more easily when my work space is messy and disorganized than when it is neat and organized" (reverse scored).

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