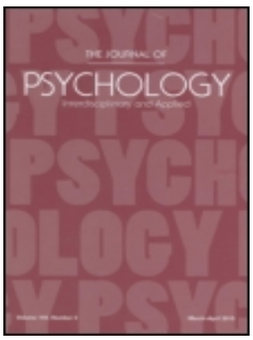

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Time Management Training and Perceived Control of Time at Work

ALEXANDER HÄFNER
ARMIN STOCK
University of Würzburg

ABSTRACT. The purpose of the present study was to examine the effects of time management training, which was based on psychological theory and research, on perceived control of time, perceived stress, and performance at work. The authors randomly assigned 71 employees to a training group ($n = 35$) or a waiting-list control group ($n = 36$). As hypothesized, time management training led to an increase in perceived control of time and a decrease in perceived stress. Time management training had no impact on different performance indicators. In particular, the authors explored the use and the perceived usefulness of the techniques taught. Participants judged the taught techniques as useful, but there were large differences concerning the actual use of the various techniques.

Keywords: perceived control of time, performance, stress, time management training

MANY PEOPLE EXPERIENCE time management problems and suffer from time pressure and an increasingly fast pace of life (Hawkins & Klas, 1997; Major, Klein, & Ehrhart, 2002; McConalogue, 1984; Teuchmann, Totterdell, & Parker, 1996; Weissberg, Berentsen, Cote, Cravey, & Heath, 1982). Orlikowsky and Yates (2002) described temporal issues as becoming more and more important at work because of expanding global competition, increasing speed of telecommunications, and pressure to get one's services and products to market. Expressions like *time famine* (Perlow, 1999) illustrate current concerns of many employees to keep their deadlines and to deal with a growing workload and just-in-time production systems (Garhammer, 2002; Jackson & Martin, 1996).

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Address correspondence to Alexander Häfner, Julius-Maximilians-Universität Würzburg, Institut für Psychologie, Lehrstuhl III, Röntgenring 11, D-97070 Würzburg, Germany; a.haefner@psychologie.uni-wuerzburg.de (e-mail).

In the last 2 decades, time management has received increasing research interest (Claessens, Van Eerde, Rutte, & Roe, 2007). Macan, Shahani, Dipboye, and Phillips (1990) introduced into time management research the variable *perceived control of time*, which is characterized by an employee's perception of having enough time to finish one's work and the ability to meet one's deadlines. To be able to keep schedules and plans in mind, to procrastinate little, and to experience a strong overall feeling that one has one's time in hand are also facets of this construct. Some studies have examined perceived control of time as a predictor of job satisfaction, performance, and various indicators of well-being, such as tension, work strain, sorrow, pleasure, and health. Most results have shown that perceived control of time is a meaningful predictor of job satisfaction and well-being (Adams & Jex, 1999; Claessens, Van Eerde, Rutte, & Roe, 2004; Macan, 1994; Macan et al.; Schwäble, Häfner, Stock, & Hartmann, 2009). With respect to performance, only weak correlations or even zero correlations have been found (Claessens et al., 2004; Macan, 1994; Macan et al.; Schwäble et al.).

Process models of time management define perceived control of time as a mediator between time management behavior on the one hand and indicators of job satisfaction, well-being, and performance on the other hand (Adams & Jex, 1999; Claessens et al., 2004; Macan, 1994). Time management behavior can be characterized as a combination of time assessment, goal setting, planning, and monitoring activities (Claessens et al., 2007). Scientific results confirm most of the mentioned suppositions: Time management behavior is a predictor of perceived control of time, which at least partially mediates the relation between time management behavior and well-being as well as job satisfaction (Adams & Jex; Claessens et al., 2004; Jex & Elacqua, 1999; Macan, 1994). In process models of time management, the impact of perceived control of time on performance is weaker than that on job satisfaction and well-being (Claessens et al., 2004), and even no impact was found (Macan, 1994). The relations between (a) time management behavior as predictor variable and (b) well-being and job satisfaction as outcome variables, mediated through perceived control of time, constitute the core of process models of time management (Claessens et al., 2004; Macan, 1994). Therefore, perceived control of time is an essential variable in time management research. Such models are driven by the rationale that time management behavior incorporates the clarification of goals; the reduction of goal conflicts; the development of appropriate strategies, which transform goals into action; and an effective monitoring of goal progress, which ends with "a sense of mastery over how one allocates one's time" (Macan, 1994, p. 382). More structure and clarity fosters control of time, and furthermore the perception of time-related control increases well-being and job satisfaction (Claessens et al., 2004). It is a well-established result that time management behavior is related to perceived control of time (Jex & Elacqua; Macan, 1994; Nonis & Sager, 2003; Pinneker, Häfner, Stock, & Oberst, 2009) and that perceived control of time is related to well-being at work (Adams & Jex; Claessens et al., 2004; Macan, 1994; Macan et al., 1990; Schwäble et al., 2009).

Other studies have added evidence for the direct impact of time management behavior on well-being (Bond & Feather, 1988; Nonis & Sager, 2003; Peeters & Rutte, 2005). Nonis and Sager, for example, reported significant correlations between (a) goal setting, prioritizing, and the use of time-related mechanics as different aspects of time management behavior and (b) emotional exhaustion of salespeople. Kelly (2003) reported a contrary result, showing that time management behavior was unrelated to worry in a student sample. Some researchers have explored the direct impact of time management behavior on performance and reported positive relationships (Britton & Tesser, 1991; Conte, 1996; Macan et al., 1990; Nonis & Sager). Barling, Kelloway, and Cheung (1996), for example, showed that achievement striving significantly interacted with short-range planning in a sample of car sales personnel to account for 10.1% of the variance of sales performance. Nonis and Sager also found relationships between time management behavior and the performance of salespeople. Overall, results have indicated that there are positive effects of time management behavior on performance.

The described findings and conclusions concerning the relationship between time management behavior, perceived control of time, performance, and well-being have been based on correlational data. It remains unclear whether good time management behavior actually is the cause of perceived control of time, performance, and better well-being. Therefore, it was the aim of the present study to show time management behavior as the cause of perceived control of time, performance, and well-being at work. With respect to the described framework, we hypothesized that an intervention focusing on time management behavior leads to more perceived control of time, better performance, and well-being among employees. This supposition can be clearly derived from the process models of Claessens et al. (2004) and Macan (1994), which have shown that more prioritizing, goal setting, planning, and monitoring of behavior that are induced through time management intervention should lead to more perceived control of time and better well-being at work. Better performance might be another positive outcome (Claessens et al., 2004). Furthermore, Claessens et al. (2004) identified workload as a direct predictor of perceived control of time and well-being. Therefore, we deemed it worthwhile to include workload as a covariate in our study, to control for its effects on perceived control of time and well-being. Our research project was designed to test the described hypotheses with an experimental intervention study. Therefore, our main research question can be stated as follows:

> *Research Question:* Is time management training an effective instrument for increasing perceived control of time and job performance, and does it lead to better well-being at work?

Many self-help books about time management have been written in the last few decades (e.g., Lakein, 1989; Luecke, 2005; Mackenzie, 1997; McCay, 1959),

and time management training programs are widely applied in the working context, with the aim to gain more control over time. But surprisingly, little research has been conducted in this field (Claessens et al., 2007). So far, only few intervention studies have examined the effects of time management training courses on well-being and performance. There are several methodological and theoretical limitations to previous studies that have made them difficult to draw clear conclusions from. These studies have involved only a few participants (Hall & Hursch, 1982; Maher, 1982), had no control group (Slaven & Totterdell, 1993), or had quasiexperimental designs instead of experimental designs (Macan, 1996; Van Eerde, 2003; Woolfolk & Woolfolk, 1986). Furthermore, some studies have concentrated on indicators of performance only but not on both performance and well-being (Orpen, 1994; Slaven & Totterdell; Woolfolk & Woolfolk). Some have used questionnaires as sole measurement instruments (Macan, 1996; Van Eerde) or participants as the only source of measurement, instead of including peers or superiors as alternative sources, to rate performance, for example (Orpen; Van Eerde). The evaluated time management training programs have been based on common sense, practitioner's experiences, and popular self-help literature and have not been grounded in psychological theory and research (Macan, 1996; Orpen; Slaven & Totterdell; Van Eerde; Woolfolk & Woolfolk). The results of the mentioned studies have been mixed: Some studies have presented evidence that time management training leads to better performance (Orpen; Van Eerde), while others have not (Macan, 1996; Slaven & Totterdell). The same is true for well-being: The study of Van Eerde indicated that time management training leads to better well-being, while the results in the study of Macan (1996) were mixed. In summary, clear conclusions cannot be drawn, and various improvements concerning the theoretical foundation of the training as well as the study design are necessary. Considering time pressure and increasing job demand as serious issues at work (Garhammer, 2002; Teuchmann et al., 1999), and in light of the many time management training programs being carried out in the occupational setting, it is important to learn more about the effectiveness of time management training with respect to perceived control of time, well-being, and performance.

Consequently, our work had various aims: the introduction of time management training based on psychological theory and research; the examination of its effectiveness with respect to perceived control of time, well-being and performance; and the use of an experimental study design. Another aim was the examination of the use and the perceived usefulness of the taught time management techniques in the eyes of the trained participants after training. Therefore, there were several research questions that constituted the focus of our study: Did the participants in the training group try to improve their personal time management after training? Did the training lead to more perceived control of time and to better well-being? Did the participants perceive an improvement in their self-organization? Did the training increase the amount of working hours spent on a self-selected, important task? Did the training lead to better performance ratings

from superiors? The study was conducted with employees of a German company, who were randomly assigned to a training or waiting-list control group.

We sum our hypotheses as follows: Participants of the training group will report more effort and success in changing their time management behavior than the respondents of the control group. Trainees will report an increase in perceived control of time and well-being that is greater than that shown by members of the control group. There will be minor improvements concerning the performance indicators in the training group, but not in the control group.

Furthermore, we explored the use and the perceived usefulness of the taught strategies in the training group after training.

Method

Design

We used an experimental 2 (treatment–control) × 2 (pretest–posttest) design. Changes in the outcome variables between the first time and the second time of measurement can be compared between the training group and the control group. Therefore, the design allows conclusions about whether the changes are caused by the training. Improvements in the training group, which are not found in the control group, can be attributed to the intervention. Consequently, (a) differences between pretests and posttests, and (b) interactions, indicating improvements in the training but not in the control group, are of special interest.

Sample and Procedure

Participants were 71 employees of a German trading company for fixing and assembly materials. The participants were mainly male (about 59%), with a mean age of 31.11 years ($SD = 6.84$ years). Their work experience ranged between 1 and 30 years with a mean of 9.35 years ($SD = 7.20$ years). They had mixed educational backgrounds. The participants were randomly assigned to (a) a time management training group ($n = 35$) and (b) a waiting list control group ($n = 36$), which was trained 5 months later with the same training procedure. The outcome variables were measured online and via daily diaries in the week before the first training took place and in the 6th week after the first group had been trained. The participants of the time management training group were assigned to one of four subgroups, which received their training on different days. All training courses were conducted in the same week by the same trainer. In the week before the pretest, all participants of the study were informed in meetings and by phone about the procedure and the treatment of their data. Participants filled in the study questionnaires during working hours, using the online tool 2ask (Amundis Communications GmbH, Konstanz, Germany). The daily diaries could also be filled in during working time and were used for a 5-day period during the week before the first training and for another 5-day period during the 6th week after the first training. Participation was voluntary, and the confidentiality of responses was assured. Participants were

treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992). The importance of correct and honest responses was stressed. Of the 71 participants, 55 filled in all questionnaires (for a response rate of 77%), 45 participants sent back their daily diaries (for a response rate of 63%), and furthermore, we received performance ratings for 35 participants from their superiors (for a response rate of 49%).

Time Management Training

The value of using psychological theory and research as a framework for the development of interventions to influence time management behavior, perceived control of time, and well-being at work, is apparent. In other words, it is worthwhile to consider which techniques might work to organize one's time effectively in light of scientific findings. Therefore, we selected psychological theories and empirical findings that seemed to be helpful in the development of a time management intervention. Time assessment, planning, and monitoring behaviors are described as aspects of time management behavior and summarized in the following definition of *time management*: "behaviors that aim at achieving an effective use of time while performing certain goal-directed activities" (Claessens et al., 2007, p. 262). Consequently, we gathered theories and empirical findings dealing with such behaviors. In the end, the training consisted of eight major parts: prioritizing and goal setting (e.g., Latham & Locke, 1979, 1991; Locke & Latham, 2002; Smith & Locke, 1990), strategy development (e.g., Diefendorff & Lord, 2003; Earley, Wojnaroski, & Prest, 1987; Taylor, Pham, Rivkin, & Armor, 1998), structuring the work day and using implementation intentions (e.g., Gollwitzer, 1999; Gollwitzer & Brandstätter, 1997; Koch & Kleinmann, 2002), monitoring (e.g., Andrasik & Heimberg, 1982; Locke & Latham; Luthans & Davis, 1979), reward (e.g., Andrasik & Heimberg; Locke & Latham; Luthans & Davis), and behavior analysis with the identification of stimuli, reactions, and consequences for serious time management problems (e.g., Andrasik & Heimberg; Luthans & Davis). A particular focus was placed on the cognitive interpretation of critical time-related demands. In this context, we especially discussed the interpretation of time-related demands, such as unexpected interruptions or unexpected additional tasks, and we introduced cognitive restructuring as a technique to change irrational, unbalanced thoughts, perceptions, and judgments (e.g., De Jong-Meyer, 2009). The mentioned sources functioned as background for the development of the training. These techniques have not been explicitly developed as time management techniques, but they seem to be useful for gaining control over time at work in the sense of the described definition of time management. We assumed that the theories and empirical findings have described aspects of good time management behavior from a psychological perspective (compare Koch & Kleinmann).

Furthermore, our training procedure was oriented to the self-regulatory process described in the Rubicon Model (e.g., Heckhausen & Gollwitzer, 1987). The aforementioned eight parts of the training were integrated into the four phases of the Rubicon Model: predecisional, postdecisional, actional, and postactional

phases. These phases function as a framework for the administration of the training. Several time management techniques seem to be useful in the different phases of the Rubicon Model. In the predecisional phase, one has to decide which task one wants to perform, and intentions have to be formed. It is a motivational phase of considering and judging what should be done. That means the time management technique of prioritizing should be helpful in this first phase. In the second so-called *postdecisional phase*, a volitional period, goals have to be defined, and the transformation of goals into actions is prepared. Therefore, goal setting and the development of strategies as ways toward goal achievement are primary time management techniques applied in this phase. Afterwards, in the actional phase, appropriate actions are initiated to achieve the defined goals. It is necessary to initiate the right actions in the right situations, to overcome obstacles, to resist distractions, and to persist until the defined goal is reached. Structuring the work day and especially using implementation intentions might be helpful techniques with respect to this phase. In the postactional phase, the performance is evaluated. Consequently, monitoring and reward play important roles in this last phase as well as does behavior analysis.

At the beginning of the training, the participants were informed about scientific results concerning time discounting to learn more about possible causes of time management problems (e.g., Koch & Kleinmann, 2002). What does time discounting mean? Tasks that are connected to positive outcomes in the long run are judged as less worthy in the present than other tasks with earlier positive outcomes. Consequently, people tend to procrastinate important, but not urgent, tasks, tend to change activities if they experience more attractive alternatives, and tend to increase their effort shortly before deadlines (Koch & Kleinmann; König & Kleinmann, 2005, 2007). The trainees learned that the training had been designed to overcome such obstacles and to gain more control over one's time. Afterwards, we followed the described steps of the self-regulatory process model. We explained major research findings and recommended techniques based on the described psychological theory and research. For example, some scientific results concerning goal setting were described, and the positive effects of challenging and concrete goals on performance were accented.

Participants got small cards with time management guidelines and a training booklet with exercises to transfer the guidelines to their personal work practice. Concrete time management problems experienced by the participants were used as practical cases for trying out the techniques. The training was realized as a 1-day time management training. The training groups varied in size from 6 to 11 participants.

Measures

Time Management

In the 6th week after the participants of the experimental group had been trained, the members of both groups were asked by one item of the online questionnaire whether they had tried to improve their time management behavior

during the previous 4 weeks and by another item whether they had perceived improvements in their time management behavior within the same time period. The scale ranged from 1 (*completely disagree*) to 7 (*completely agree*). Furthermore, the participants of the training group were asked to report in a daily diary during the 6th week after training which of the trained techniques they had used and how they perceived the usefulness of the applied techniques using a range from 1 (l*ow*) to 9 (*high*). Therefore, the data shows which of the trained techniques were actually used, how often they were used during the observed week, and how the participants perceived the usefulness of the applied techniques.

Perceived Control of Time

Perceived control of time was measured with a German version of the scale Perceived Control of Time of the Time Management Behavior Scale (Macan et al., 1990), which consists of five items in the original version. Based on research by Claessens et al. (2004) and our own pilot study, we added five items to the scale (Oberst, 2008). The scale ranged from 1 (*nearly never*) to 5 (*nearly always*). In our pilot study, the alpha coefficient of this scale was acceptable as .79 (Cortina, 1993). In our intervention study, we excluded one of the five new items because of low item-scale correlation and reached an alpha coefficient of .77. The variable of perceived control of time has been used in several studies in the field of time management research, normally measured with the Time Management Behaviour Scale or adaptations of this scale (Claessens et al., 2004; Jex & Elacqua, 1999; Kelly, 2003; Macan, 1994; Nonis & Sager, 2003).

Perceived Stress

We used the German version of the Perceived Stress Questionnaire (Fliege, Rose, Arck, Levenstein, & Klapp, 2001; Levenstein et al., 1993) to measure well-being. This version consisted of 20 items. Empirical evidence supported the reliability and validity of the scale (Fliege et al.). The scale ranged from 1 (*hardly ever*) to 4 (*usually*). We obtained an alpha coefficient of .83 in our study.

Self-Organization

The judgment of self-organization was part of the regular performance rating in the company where the participants worked, and clear behavioral descriptions of what good self-organization means already existed. One example was keeping deadlines, and another was arriving punctually to meetings. These descriptions had been developed in the company via structured interviews with 59 employees and superiors. Using these behavioral descriptions of good self-organization at work, we integrated a scale measuring self-rated organizational skills as a performance indicator. The scale consisted of 6 items with a range from 1 (*completely wrong*) to 7 (*completely true*). We obtained an alpha coefficient of .82 in our study.

Superior's Performance Ratings

As described in the previous paragraph, behavioral descriptions of good self-organization had been developed in the company and were used as part of performance ratings. The scale consisted of 6 items with a range from 1 (*completely wrong*) to 7 (*completely true*). In our study, a coefficient alpha of .84 resulted for this scale. In addition, we included three items to measure overall job performance. The superiors rated the performance of their team members in comparison to other colleagues by using a scale from 1 (*worse*) to 5 (*better*) and judged the quality and overall outcome of their team members' work by using a scale from 1 (*completely wrong*) to 5 (*completely true*). We obtained an alpha coefficient of .69 for this performance rating in our study.

Time Spent on an Important Task

In the week before training, all participants selected an important task that they wanted to spend more time on. They noted in their diaries the amount of hours spent per day on this task during the week before and during the 6th week after the experimental group was trained.

Perceived Workload

Perceived workload was measured with the scale Pace and Amount of Work (Van Veldhoven, De Jonge, Broersen, Kompier, & Meijman, 2002). We received a German translation of the scale from its author (M. Van Veldhoven, personal communication, February 28, 2008). Of the 11 items, 1 was excluded from the scale because of weak item-scale correlation in our study. The scale ranged from 1 (*never*) to 4 (*always*). We obtained an alpha coefficient of .84 in our study.

Results

Time Management

In the 6th week after the experimental group had been trained, participants in both groups rated on the one hand their effort to improve their time management behavior and on the other hand perceived improvements of their time management behavior. In a MANOVA with group membership as the between-participants factor, we obtained a significant group effect, $F(2, 52) = 12.65$, $p < .001$, $\eta^2 = .33$. The employees in the training group ($M = 4.96$, $SD = 1.17$) reported more effort to improve their time management than did the participants in the control group ($M = 3.30$, $SD = 1.24$), $F(1, 53) = 25.78$, $p < .001$, $\eta^2 = .33$. The same effect resulted for improvements of time management, where participants in the training group ($M = 4.48$, $SD = 1.12$) reported more improvement than did the members of the control group ($M = 3.23$, $SD = 1.07$), $F(1, 53) = 17.66$, $p < .001$, $\eta^2 = .25$. Both effects can be classified as very strong.

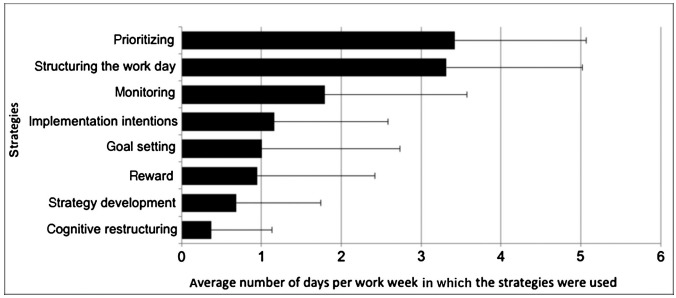

FIGURE 1. Frequency of the use of the taught strategies in the training group in the 6th week after training ($n = 25$). The bars represent the mean number of the use of the taught strategies; horizontal lines depict standard deviations of the means.

The reports in the diaries of the training group give evidence of whether the taught techniques were used and how the participants perceived the usefulness of the different techniques after training. The data shows on the one hand how many participants used the techniques and on the other hand the average number of days on which the strategies were used (see Figure 1). Nearly all trained participants used prioritizing (94.7%) and structuring the workday (89.5%) at least once during the 6th week after training. Both prioritizing ($M = 3.42$, $SD = 1.64$) and structuring the workday ($M = 3.32$, $SD = 1.70$) were also used more often than the other time management techniques. Of the trained participants, 63.2% monitored their way to goal achievement at least once during the week. Goal setting ($M = 1.00$, $SD = 1.73$) and strategy development ($M = 0.68$, $SD = 1.06$) were only used by 36.8%, and cognitive restructuring ($M = 0.37$, $SD = 0.58$) was used by 26.3%. Furthermore, we analyzed the usefulness ratings of the different time management techniques from those trained participants who actually had used them. All techniques were judged as helpful, with the highest scores being for structuring the workday ($M = 7.00$, $SD = 1.97$) and prioritizing ($M = 6.94$, $SD = 1.54$), and with the lowest scores being for reward ($M = 5.87$, $SD = 1.77$) and cognitive restructuring ($M = 5.83$, $SD = 1.72$).

Perceived Control of Time, Perceived Stress, and Self-Organization

We compared the two groups in a 2 × 2 MANCOVA with group membership as a between-participants factor and with the time of measurement (pretest and posttest) as a within-participant factor. In addition, we included workload as a covariate because this variable was identified as an important predictor of perceived control of time and perceived stress (Claessens et al., 2004). The analysis is appropriate to finding out whether the trained group changed between the two

measurements in comparison with changes in the untrained group, with control for the covariate workload. We received no significant main effect for time of measurement or group membership, but found a significant interaction, $F(3, 49) = 3.56$, $p = .021$, $\eta^2 = .18$. Further tests revealed significant interactions for perceived control of time, $F(1, 51) = 5.34$, $p = .024$, $\eta^2 = .10$, and perceived stress, $F(1, 51) = 5.59$, $p = .022$, $\eta^2 = .10$, but not for self-organization, $F(1, 51) = 1.35$, $p = .251$. A closer inspection of the interactions indicated that there had been improvements in the training group, but not in the control group. While there were no changes in the control group concerning perceived control of time ($M = 3.27$, $SD = 0.44$, at Time 1; and $M = 3.24$, $SD = 0.58$, at Time 2), $t(29) = .42$, $p = .681$ (two-tailed), and perceived stress ($M = 2.20$, $SD = 0.52$ at Time 1, and $M = 2.21$, $SD = 0.53$ at Time 2), $t(29) = .25$, $p = .806$ (two-tailed), the participants of the training group perceived more control of time ($M = 3.24$, $SD = 0.57$ at Time 1, and $M = 3.39$, $SD = 0.44$ at Time 2), $t(24) = 2.33$, $p = .015$ (one-tailed), $\varepsilon' = .75$, and less stress ($M = 2.15$, $SD = 0.38$, at Time 1, and $M = 2.04$, $SD = 0.37$, at Time 2), $t(24) = 1.72$, $p = .050$ (one-tailed), $\varepsilon' = .48$, after training than they did before. The significant improvements of those two variables are the reason for the interactions. The effect size of the observed change for perceived control of time can be classified as large, and the change for perceived stress can be classified as medium. We found no significant increase in self-organization in either group, but found a small tendency in the experimental group ($M = 5.41$, $SD = 0.77$, at Time 1, and $M = 5.55$, $SD = 0.74$, at Time 2), $t(24) = 1.55$, $p = .067$ (one-tailed), $\varepsilon' = .44$. As expected, the covariate perceived workload was strongly related to perceived control of time, $r(71) = -.43$ (at Time 1), $p = .001$ (one-tailed); perceived stress, $r(71) = .62$ (at Time 1), $p < .001$ (one-tailed); and self-organization, $r(71) = -.25$ (at Time 1), $p = .017$ (one-tailed), at both points of measurement.

Superior's Performance Ratings

We included the superior's overall performance rating as well as the superior's rating of self-organization in a 2 × 2 MANOVA with group membership as a between-participants factor and the time of measurements (pretest and posttest) as a within-participant factor. The results show no significant main effects and no interaction effect, $F(2, 26) = 0.39$, $p = .683$. There were no significant improvements in either group. Nevertheless, we found a minor tendency for the self-organization rating in the experimental group ($M = 5.49$, $SD = 0.79$, at Time 1, and $M = 5.70$, $SD = 0.64$, at Time 2), $t(16) = 1.66$, $p = .059$ (one-tailed), $\varepsilon' = .60$, but not for the overall job performance rating, ($M = 3.92$, $SD = 0.61$, at Time 1, and $M = 3.92$, $SD = 0.66$, at Time 2), $t(15) = .00$, $p = .500$ (one-tailed).

Time Spent on an Important Task

We calculated the average hours spent per day on the self-selected important task in the week before and in the 6th week after training and analyzed the data using a 2 × 2 ANOVA with group membership as a between-participants factor

and the time of measurement (pretest and posttest) as a within-participant factor. A significant time effect resulted, $F(1, 43) = 5.06$, $p = .030$, $\eta^2 = .11$, but no significant group or interaction effect resulted, $F(1, 43) = 0.85$, $p = .363$. Participants of both groups increased the amount of working hours spent on the self-selected important tasks. Therefore, no changes attributable to the intervention can be reported.

Discussion

The reports after training show that the participants of our training on the one hand tried to improve their time management behavior to a greater extent and on the other hand perceived stronger improvements in their time management behavior than did the participants of the control group. Therefore, the training caused improvements of time management behavior in the eyes of the trained participants. An alternative to examining differences between the training and control groups concerning time management behavior would have been to include superior's or colleague's judgments of time management behavior. But it might be quite difficult for others to adequately monitor covert time management behaviors of their team members such as goal setting or prioritizing. The reported self-perceptions give some evidence for better time management behavior in the training group compared to the control group. The employees in the training group indicated that they had used all taught time management techniques at least to some extent, with prioritizing, structuring the work day, and monitoring task performance as the most popular ones. It has to be mentioned that we do not know whether the same strategies were used in the control group. We only informed the participants of the training group about the different techniques and therefore could only ask them about the use and usefulness of the taught strategies.

The reported effort, improvements, and use of time management techniques go along with more perceived control of time and better well-being, but not performance. Neither (a) self-organization and the time spent on a self-selected important task nor (b) externally rated time-related and overall job performance were influenced by the training. Nevertheless, we found weak nonsignificant improvements in self-rated and externally rated self-organization in the experimental group, but not in the control group.

Our study gives evidence for the described process models of time management with an experimental intervention design (Claessens et al., 2004; Macan, 1994): Time management behavior, induced through time management training, seems to be a meaningful predictor of perceived control of time and well-being. Time management techniques such as prioritizing, structuring the workday, and monitoring increase one's feeling of control, and that increase might lead to less stress. We did not measure perceived control of time and perceived stress at separate points of measurement after training to explore perceived control of time as a potential mediator. Therefore, we cannot prove this assumption of process

models of time management. Furthermore, the data support results presented by Van Eerde (2003) and Macan (1996) that time management training increases well-being at work. With a quasiexperimental design, Van Eerde showed a decrease in worrying after time management training in the training group, but not in the control group. In another quasiexperimental intervention study, Macan (1996) found positive effects of time management training on perceived control of time and somatic tension, but not on job-induced tension. Our results extend the scarce findings concerning the effects of time management trainings on well-being at work. In summary, one can recommend such time management trainings to practitioners in the field who are looking for interventions that will increase perceived control of time and well-being. Concerning the question of what to teach in time management training, a combination of different psychological interventions, which were actually used by the trained participants after training, seem to be effective: More than 60% used prioritizing, structuring the work day, and monitoring. Because time-related problems are a serious demand on many employees, time management training, which induces better planning behavior, seems to be an adequate intervention to foster perceived control of time and decrease perceived stress. Even a short intervention of one day can have positive effects on well-being. Possibly the psychological foundation of the strategies and the use of small cards with time management guidelines to support transfer might contribute to the effectiveness of the training.

With respect to performance, Orpen (1994) presented data indicating that time management training leads to an improvement in self-ratings of time management effectiveness as well as in superior's ratings of daily activity diaries. The participants in his study described their major activities in the diaries, reported whether the activities had been planned, and rated the priority of these activities. Furthermore, they reported the amount of time that they spent on important tasks without interruption. Three managers rated the effectiveness of time use presented in the daily diaries. In the present study, we also used a diary to indicate how much time was spent on a self-selected important task and analyzed this objective time measurement as well as self-ratings of time-related performance, but we did not find clear evidence for changes in such performance indicators. Likewise, Slaven and Totterdell (1993) did not find clear evidence for changes in such performance indicators: They found no changes in time spent on planned, unplanned, high-priority, or low-priority tasks measured with diaries. Nevertheless, Slaven and Totterdell reported a change in self-rated time management skills. Van Eerde (2003) reported a decrease in self-rated procrastination and an increase in self-rated ability to manage time. Woolfolk and Woolfolk (1986) presented empirical evidence for the effectiveness of time management training with respect to some objective performance indicators, such as the performance of tasks in time, whereas the quality of work was unaffected. In addition, Macan (1994) found no effects of training on employees' job performance ratings from superiors. In summary, the studies indicate that self-ratings of time management skills are positively influenced by

time management trainings. Results of more objective performance indicators, such as the described diary reports, are mixed. The present study underlines former findings that show no influence of time management training on performance indicators. One reason might be a longer time lag between time management training and its effects on performance. In our study, we used a time lag of 6 weeks between the two points of measurement. Possibly, time management training has positive effects on perceived control of time and well-being in the short run and a positive impact on performance after a longer period of time. Changes of performance might also need more time to be detected by supervisors. Possibly, these ratings are more stable compared to the subjective ratings of perceived control of time and perceived stress. Furthermore, supervisor's performance ratings were rather positive in both groups. Such a ceiling effect makes it difficult to detect improvements and differences between participants. Some studies also have shown significant relationships between time management behavior, perceived control of time, and personality traits, especially Conscientiousness and Neuroticism (Bond & Feather, 1988; Feig, 1995; Pulford & Sohal, 2006), indicating a dispositional aspect of time management (Claessens et al., 2007), which might be another reason for the limited effectiveness of time management training programs.

Our participants were not informed about our research hypotheses, but it is quite obvious that time management training programs are designed to improve well-being and performance. Our trainer also knew that we assumed positive effects of time management training on well-being and performance. We suppose that our trainer was not able to influence the results in such a differentiated way that an impact resulted for some depended variables and not for others. Nevertheless, the missing of a double-blind design is a limitation in our study, although it seems quite difficult to keep trainers and participants uniformed about what time management training is supposed to affect.

Directions for Future Research

In particular, we tried to overcome some of the methodological and theoretical limitations of former studies like the use of quasiexperimental designs and the lack of a clear theoretical and empirical foundation of the taught techniques. We have mentioned several theories and empirical findings that can function as solid ground to build on time management training. In future studies, stronger effects may be achieved, especially concerning performance, with sequential longer lasting interventions and the integration of techniques to improve transfer in the weeks after training. Online coaching, personal assistance after training, reminder mails or follow-up workshops might be helpful tools. Frayne and Latham (1987), for example, reported a positive effect of sequential self-management training, with eight weekly 1-hr group sessions and eight 30-min one-on-one sessions, on job attendance. Furthermore, the long-term effects of time management training on well-being and performance could be examined over several months, as Latham and Frayne (1989) found long-lasting effects over a period of 9 months for a

self-management training on self-efficacy and job attendance. In addition, the effectiveness of time management trainings with respect to well-being and performance should be examined in experimental study designs with active training groups. One advantage of such a design is the possibility to attribute differences between the groups to the special training. The lack of such an active control group is a limitation in the present study and leaves room for the alternative explanation that any training may have caused the effects and not the specific content of our training. With the integration of other training groups, the effects of separate parts of a training program could be explored (Woolfolk & Woolfolk, 1986). For example, the use of implementation intentions as time management intervention could be part of the training for one group, but not for the other one, to look for differentiated effects of this technique on the outcome variables. A more sophisticated design of this type might lead to a better understanding of which aspects of time management are most relevant for improvements in the outcome variables. Furthermore, the effectiveness of different time management trainings can be compared to show which combination of time management techniques is the most effective one. It might be useful to include in future studies other outcome measures such as biological indicators of stress and more objective performance measures such as sales performance to explore the effects of time management training in greater depth. With more intervention studies in this field, a meta-analysis to combine different effectiveness data will be appropriate and will give an overview of the effectiveness of time management training with respect to well-being and performance.

The results of the present study indicate no effects of time management training on performance. Perhaps, performance has to be looked at from a different perspective in the time management context. Time discounting has been described as a major reason for time management problems (Koch & Kleinmann, 2002; König & Kleinmann, 2005, 2007). It is an interesting question whether time management training is a helpful instrument to protect employees from the negative effects of time discounting. Do participants in time management training programs start earlier to get important tasks done? Do they overcome attractive alternatives and resist interruptions better than others? Do they work on important tasks step by step rather than accelerating shortly before deadlines? The use of diaries might be helpful to answer these questions. Probably, effects of time management training on more sophisticated performance indicators such as these could be detected. Diminishing the described effects of time discounting might have additional positive effects on more general performance indicators, but probably with a longer time lag.

We also asked participants which techniques they used and how much profit they saw in the different strategies. Prioritizing and structuring the workday were used more often than the other techniques and were judged as the most useful. The trained participants who used the taught techniques perceived them as useful time management strategies at work. Goal setting and strategy development were only used by about one third of the trained participants, and implementation intentions

and reward were only used by about half of the trained participants, representing a result that raises this question: What can be done to increase the use of such time management techniques? One approach might be to stress those strategies more in the training, to practice the use of those techniques more rigorously, or to find other ways to foster their usage. One way might be to implement, several weeks after the training, short meetings in which the trainees are reminded of the learned techniques and given the opportunity to discuss obstacles hindering the implementation of the taught strategies.

Conclusion

Every year a lot of money is spent on training in private companies. Nevertheless, evaluation studies are scarce, especially with respect to time management training programs (Claessens et al., 2007). As time pressure, interruptions, faster changes at work and increasing job demands are being described as major problems for many employees (e.g., Garhammer, 2002; Teuchmann et al., 1999), the question of what can be done to deal with these challenges must be addressed. Time management training based on psychological theory and research might be one way to increase perceived control of time and well-being.

What can be taught in time management training courses to increase feelings of control and decrease perceived stress? Which psychological theories and empirical findings can be used as sources for time management training? These questions can guide practitioners and scientists as well. By the present work, we attempt to present some answers to these questions.

AUTHOR NOTES

Alexander Häfner is a PhD candidate at the University of Würzburg. His current research interests are effectiveness of time management training programs and stress prevention. **Armin Stock** is a doctor and professor of psychology and is head of the Adolf-Würth-Center for the History of Psychology at the University of Würzburg. His main research interests are history of psychology, different fields in organizational psychology, and cognitive psychology.

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