



MUIR

Massey University Institutional Repository

Forsyth, D.; Chen, E. (2006). The relationship between different email management strategies and the perceived control of time. (Department of Management and International Business Research Working Paper Series 2006, no. 10). Auckland, NZ: Massey University. Department of Management and International Business.

Massey Author:

Forsyth, Darryl

<http://hdl.handle.net/10179/639>

Department of
Management
and International
Business

2006, no.10

Research Working Paper Series

Darryl Forsyth
EeMun Chen

The relationship between different email
management strategies and the perceived
control of time

Keywords

Time Management
Email Usage
Email Training
Time Stress

Contact Details

Dr Darryl Forsyth
Department of Management &
International Business
Massey University (Auckland)
Private Bag 102 904
Auckland, New Zealand
Ph 64 9 414 0800 ex 9135
Email d.forsyth@massey.ac.nz

Copyright

© 2006 Darryl Forsyth and
EeMun Chen

ISSN 1177-2611



Massey University

ABSTRACT

Time management research, and the psychological construct of perceived control of time, are drawn on to investigate populist claims of the virtues of regularly filing and organising ones electronic mail. Using a process model of time management, it would seem that filing of e-mail may increase ones time control perceptions and thus their job satisfaction and well-being. One hundred and sixty five participants were involved in a questionnaire-based field study. Analyses of variance revealed that for some e-mail users, not having a filing system may result in a high perceived control of time. Furthermore, challenging assumptions regarding optimal e-mail organisation, those that tried to frequently file their incoming messages, but did so somewhat unsuccessfully, had significantly less perceived control of time. These results highlight individual differences in control of time perceptions, and recommendations are made regarding organisational e-mail behaviour and training.

INTRODUCTION

Accessing, reading and filing electronic mail (e-mail) is demanding ever greater amounts of organisational and employee time and attention (Lantz, 1998; Patterson, 2000; Swartz, 2001; Whelan, 2000; Whittaker & Sidner, 1996). Populist literature provides prescriptions regarding how to manage ones e-mail and how to set up and manage folders effectively (e.g., Lamb & Peek, 1995; Langford-Wood & Salter, 1999; Tunstall, 2000; Whalen, 2000). Nevertheless, research has not been conducted to ascertain whether employees are actually utilising these suggested strategies in the prescribed ways. It is suggested that the construct of time management may be a useful concept in which to investigate the relative advantages and disadvantages of these e-mail strategies, and their affect on organisationally relevant outcomes.

E-MAIL USAGE IN ORGANISATIONS

The internet and electronic mail systems have revolutionised the way we communicate and have thus impacted on both social and economic life. E-mail promises quick, convenient, low cost, user-friendly, and increased communication and information. At an organisational level it can aid in selling products and services, business-to-business transactions, responding to customer queries, communication with field staff, distributing information, marketing and advertising, projecting the company image, and internal communication. But at what cost has this been achieved? Recent research and commentary have explored the down sides such as privacy issues (Sharf, 1999), interpretation difficulties (Dolle, 1994; Williams, 1998), individual differences in media choice (Minsky & Marin, 1999), impact of interruptions (Czerwinski, Cutrell & Horvitz, 2000; Patterson, 2000; Speier, Valacich & Vessey, 1999), and its affects on group performance (Straus & McGrath, 1994; Taylor, 2000).

Information overload has oft been alluded to in the e-mail and technology literature (e.g., Ferris Research, 2000; Whelan, 2000; Whittaker & Sidner, 1996). Employees may receive too much information, spend too much time on personal e-mail and receive e-mails that disrupt tasks and concentration (Ferris Research, 2000). More specifically, past research has found that most employees have difficulty handling their e-mail (e.g., Lantz, 1998; Patterson, 2000; Whittaker & Sidner, 1996). This difficulty often stems from the sheer volume of incoming messages and organisation of said messages. From the receiver's point of view, problems may occur at three different points, that is, (1) when the message is received, (2) storage, and (3) retrieval.

When messages are received they are typically given the same status. Information from a distribution list will appear in a similar fashion to one from a manager, which is further complicated if one receives a large number of messages. While some programs allow priority flags to be added to messages these may not be consistently used by all senders.

Once the messages are read, the receiver then has to decide whether to delete the message or store it for later reference. Not only does this involve time to process, but messages often require more from the reader. They may contain prospective information and require action at a later date. They may need to be available as a reminder of a task to complete, and/or may contain large attachments that may take more time and effort to digest (Baecker, Booth, Jovicic, McGrenere & Moore, 2000; Whittaker & Sidner, 1996).

At the storage and retrieval stage, the main problem is that of setting up and maintaining folders to archive messages. While this may decrease the amount of messages contained in ones inbox, there are many difficulties inherent in filing. Filing is a cognitively difficult task (Jovicic & Baecker, 1999; Lansdale, 1988; Whittaker & Sidner, 1996) in that it requires employees to envisage the future needs of information, where information should be filed, and to give folders names that will aid retrieval. Many employees despair at the amount of time and effort that is needed for what they see as little gain (Barreau & Nardi, 1995; Lansdale, 1988; Malone, 1983). Furthermore, many employees create folders and structures that fail, in that they are never used or the person is uncertain of the information held in each folder (Jones, Bock & Brassard, 1990; Whittaker & Sidner, 1996).

To attain an understanding of how one organises information electronically, comparisons can be made with paper-based information. Malone's (1983) exploratory study examined how employees managed their information and how successful they were in retrieving documents. 'Neat' offices had a structured and categorised filing system while 'messy' offices seemed less organised, with various piles of overlapping papers on the desk which appear unstructured. Malone (1983) found that 'messy' offices were often due to the needs of the employee. Papers were left lying on the desk as reminders, several papers were needed for one task and/or the employee did not want to file the information as they were unsure of where it should be placed or were not confident that they would be able to find it later.

The difficulties experienced in a paper-based office have been transferred to the e-mail environment. Moreover, they have been amplified by fewer visual cues and the restraints of a computer program or package (Payne, 1993). Paper documents allow information to be restructured to allow quicker access to sections of interest, such as,

underlining, photocopying, dog-ears, stick on notes and highlighting (Raymond, Canas, Tompa & Safayeni, 1989), techniques that do not transfer well to an electronic office. Raymond et al. (1989) found that when participants were asked to organise 200 proverbs in order to solve a number of queries, structuring and retrieval was significantly poorer in the online environment compared to a paper-based environment.

Lansdale (1988) proposes that employees actually prefer spreading their information around in piles, which has some important consequences for e-mail management. This may explain why many users have a majority of their messages in their inbox. It reminds them to complete tasks or they are unsure of where to file the information (Balter & Sidner, 2000; Lantz, 1998; Whittaker & Sidner, 1996). The preference for and usefulness of “piles” of information in terms of their temporal and spatial attributes may be lost in transference to the computer desktop.

STRATEGIES FOR MANAGING INCOMING E-MAIL

In the absence of software interventions that sort incoming e-mails (which in any case still require some filtering skills, and/or knowledge of program rules in order to have messages organised in the right manner) the individual has to personally filter their e-mail. Whittaker and Sidner (1996) identified three different strategies that employees use to manage their incoming e-mail, defined by how often e-mail was deleted/cleaned-up and folder usage. These three groups were designated (1) frequent filers, (2) no filers and (3) spring cleaners. ‘Frequent filers’ are characterised by few messages in the inbox, due to frequent attempts to file or delete its contents. Their inboxes also carry predominately new items. In contrast, ‘no filers’ do not use folders and therefore their inboxes are very large and hold a lot of old information. To compact their inbox they perform sporadic clean-ups where large quantities of e-mail are deleted or moved to a separate archive. ‘Spring cleaners’ reside between these two extremes, tending to have large inboxes, clear their inbox intermittently and try, often unsuccessfully, to use folders.

The literature generally finds that different users require different strategies or technological support to control their incoming e-mail (Balter & Sidner, 2000; Hiltz & Turoff, 1985; Takkinen & Shahmehri, 1998). It has been suggested that strategy choice is governed by the volume of incoming messages and the organisational role of the employee (Lansdale, 1988; Whittaker & Sidner, 1996). That is, those who have more flexible, less proceduralised jobs, for example, managers, may be less likely to be frequent filers due to higher volume of mail received, less time available to file and changing information needs.

Alternatively, Balter and Sidner (2000) posit that movement from no filer, spring cleaner to frequent filer is a function of natural development from an e-mail novice to an e-mail 'expert'.

While frequent filing is regarded as e-mail best practice, it is not commonly adopted by individuals (Lantz, 1998; Rudy, 1996; Whittaker & Sidner, 1996). Juggling of ones work and non-stop communication demands has been associated with stress, impulsivity and poor concentration (Hallowell & Ratey, 1994). In the investigation of internet use, abuse and addiction most respondents reported problems with managing time (Brenner, 1997). If information overload is at the cause of this, it seems that effective time management behaviours and skills coupled with controlling technology, and information filtering, may help alleviate symptoms.

TIME MANAGEMENT

Time is arguably our most valuable resource in that it is directly related to all forms of human activity (Navon, 1978). Unlike many other resources it cannot be stored for later use (Sharp, 1981); therefore the central issue becomes how we can use it most effectively. Strategies and techniques that purport to enhance the effective use of time are normally discussed under the heading of time management (Drucker, 1966). In early industrial and organisational psychology research time and motion studies introduced the use of time and rest breaks to increase performance and productivity. This notion is also reflected in the old adage – “time is money”.

Given the belief that time is both scarce and valuable, organisations, and individuals alike, face three problems: (1) to reduce uncertainty via schedules, (2) to reduce conflict between temporal activities, through synchronicity and co-ordination and (3) how to best allocate time (Hassard, 1991; Moore, 1963). Popular management books and articles have espoused the virtues of effective time management in relation to increased performance and decreased stress (Hindle, 1998; Parsons, 1996). They emphasise identifying needs and wants, prioritising, and changing the way one completes tasks. Few empirical studies have investigated the link between time management and outcomes such as job performance and job satisfaction.

In response to the paucity of measures and studies of the efficacy of time management, Macan, Shahani, Dipboye and Phillips (1990) developed the Time Management Behaviour Scale (TMB). Contrary to conventional conceptualisations of time management as a uni-dimensional construct, this scale has identified four factors to time management – (1)

setting goals and priorities, (2) preference for organisation, (3) mechanics of time management, that is, scheduling and planning, which all lead to (4) perceived control of time. Factor analyses support this notion that time management is indeed multifaceted (Adams & Jex, 1997; Macan et al., 1990; Mudrack, 1997).

To further test the conclusions of populist time management proponents, Macan (1994) proposed a process model of time management which hypothesised that perceived control of time leads to organisationally relevant outcomes, such as, job satisfaction and job performance (see Figure 1). Macan (1994) suggests that it is not necessarily time management behaviours that are linked to job relevant outcomes. Instead, they provide a vehicle for ones perception of control over time, which ultimately affects outcomes. A number of studies support this model. Time management skills and perceived control of time have been associated with academic performance (Lahmers & Zulauf, 2000; Macan, Shahani, Dipboye & Phillips, 1990), stress, health, and work and life satisfaction (Macan et al., 1990; Adams & Jex, 1990; Lang, Gilpin & Gilpin, 1990; Jex & Elacqua, 1999).

Insert Figure 1 about here

THE PRESENT RESEARCH

By employing Macan's (1994) process model of time management, it would seem that there would be an association between perceived control of time and e-mail management, whether one is a "frequent filer" or a "no filer". Additionally, this perceived control of time would be mediated by other variables in the model, such as preference for organisation and mechanics of time management. Furthermore, while effective e-mail strategies may increase ones perceived control over time, Macan's model also predicts that this would also be associated with positive outcome variables, such as decreased occupational stress and increased job satisfaction and performance.

On the basis of the literature, it was hypothesised that frequent filers would be most likely to have a preference for organisation, be versed in time management mechanics, set goals and priorities and thus have a higher perceived control of time, compared to all other e-mail strategies. Acknowledging the propositions of the process model, it may also hold that frequent filers would also exhibit positive job outcomes, that is, have the highest job

satisfaction and performance and lowest somatic or job-induced tensions, compared to both no filers and spring cleaners.

Although, e-mail research has employed aspects of cognitive psychology and information overload, no studies have specifically investigated the construct of time management. This study will attempt to bridge the gap between science and practice by incorporating psychological constructs into an examination of information technology usage, and gain valuable insight into an important aspect of the current business environment.

METHOD

Participants

Of the 247 employees that were able to be contacted during the duration of the study, 200 returned completed questionnaires by the stipulated cut-off date (81 per cent response rate). Thirty-five were removed due to incomplete data, resulting in 165 usable responses.

Participants were predominantly women, that is, 139 (84 per cent) were female and 26 (16 per cent) were male, which reflects the gender mix in the organisation. The average tenure was 6.2 years ($SD = 6.31$) and mean age was 43 years ($SD = 10.44$). The organisation employs a large proportion of part-time staff and this was reflected in the work hours of the respondents, with 55 per cent employed full-time and 45 per cent part-time. A representative cross-section of occupational positions participated in the study, with 14 per cent at managerial level.

Materials

The questionnaire contained items relating to age, sex, position title, job tenure, and extent of e-mail training. Items also elicited information regarding number of e-mail messages received and how they are archived. These questions were similar to those used by Whittaker and Sidner (1996) and allowed participants to be categorised into the three e-mail strategy groups. The e-mail strategy information was collected via two sources: (1) by requiring respondents to indicate which strategy group they considered they belonged to given a description of each group, which will be verified against, (2) the information supplied regarding the contents of their e-mail program. In addition, three scales, the Time Management Behaviour Scale, a job satisfaction and a somatic tension scale, were administered.

Time Management Behaviour Scale

A 31-item empirically derived format of Macan et al.'s (1990) Time Management Behaviour Scale (TMB) was administered. This gauges participant use of time management behaviours such as setting goals, prioritising, organising and scheduling, and also their perceived control of time. Participants respond to the items on a 5-point Likert-type scale from *seldom true* (1) to *very often true* (5). Mudrack (1997) reports coefficient alphas for the four sub-scales of the empirically derived format as ranging from .69 to .8. Coefficient alphas for the present study are as follows: (1) goal setting and prioritising ($\alpha = .82$); (2) preference for organisation ($\alpha = .71$); (3) mechanics of time management ($\alpha = .73$); and (4) perceived control of time ($\alpha = .67$).

Job satisfaction

Holland and Gottfredson's (1994) 21-item Job Satisfaction Scale from their Career Attitudes and Strategies Inventory was included. Participants indicate whether items are false, mostly false, mostly true or true about themselves. "This scale measures job satisfaction and stability versus potential for job or career change" (p. 7). The coefficient alphas for this subscale range from .92 to .95 with a retest correlation for an average of 13 days of .8 (Holland & Gottfredson, 1994). In the present study the coefficient alpha of this scale was high ($\alpha = .88$).

Job-induced somatic tensions

The somatisation subscale of the SCL-90 (Derogatis & Cleary, 1977) was used to measure stress-related symptoms. This subscale has 12 items measured on a 5-point scale of distress from *never* (1) to *very often* (5). It asks participants to indicate whether they have experienced a number of outcomes associated with stress and poor mental and physical health over the past six weeks. This scale has been used in a number of studies to assess job-related somatic symptoms (e.g., Lang et al., 1990; Frone, 2000). Frone (2000) reported a coefficient alpha of .9. The coefficient alpha for the present study was .77.

Procedure

All measures were self-administered and instructions for completion were included in a detachable cover page. The participants were able to complete the questionnaire during company time or in their own time. The importance of honest and accurate responses was

stressed. Participants were assured that their identities and individual responses would remain confidential and would not be available to their employing organisation. Participants were also informed that summary group results would be available to them and the organisation at the completion of the study.

After completion, participants sent the completed questionnaire directly to the researchers in a supplied prepaid envelope.

RESULTS AND DISCUSSION

Firstly, summary statistics for all variables were calculated (see Table 1.). Analysis of variance and chi-square statistics were then computed to examine the relationships between e-mail strategy and background variables, and e-mail strategy and time management behaviour, job satisfaction and somatic tension.

Insert Table 1 about here

Organisational e-mail behaviour

Most employees (81 per cent) entered their e-mail program at least daily. Fifty-two per cent read messages continually or several times a day. Thirty per cent spent less than 15 minutes a day e-mailing; 85 per cent e-mailing for one hour or less. A small percentage (5 per cent) spent two hours or more a day using e-mail.

Sixty-three per cent of participants tried to organise the contents of their inbox either weekly or daily (see Figure 2.). Most seemed to delete items that were unimportant, irrelevant or when tasks were completed regularly but many purged their mail box less frequently. The physical existence of all these files may lead to a perception of overload and/or create stress knowing that they must be managed in some way in the future (Lantz, 1998).

Insert Figure 2 about here

Seventy-eight per cent of employees kept messages in their inbox as reminders of tasks yet to be completed, supporting the notion that e-mail use has transcended its

communication applications by functioning also as a task management and personal archiving tool.

Most participants did not consider that they had problems handling their e-mail (59 per cent), while 35 per cent reported having some problems with managing their inboxes. Those that identified with the questionnaire statement “*I do not have time to handle my e-mail*” were either part-time employees or managers. No one remarked that they could not handle their e-mail.

E-mail has become a vital part of this organisation’s daily communication environment. This study suggests that there may be potential problems from both an individual and organisational point of view. These may include the amount of time spent e-mailing, constant retrieval of messages and unnecessary files using up limited disk space.

Analysis of the three e-mail inbox strategies

Of particular interest in this study is the different strategies individuals adopt to organise their e-mail. The three strategies for managing e-mail are summarised in Table 2. in terms of contents of the inbox and folder usage.

Insert Table 2 about here

Firstly, to validate the self-report question asking participants to identify which e-mail strategy they belonged to, a one-way analysis of variance (ANOVA) of the number of folders by strategy choice was performed. This analysis revealed that three distinct choices existed and there was a significant main effect between the groups, $F(2,162) = 21.83, p < .001$. A post hoc Tukey honest significant difference test for unequal sample sizes found significant differences between user strategy categories. Frequent filers ($M = 19.31$) used significantly more folders than spring cleaners ($M = 10.69$) ($p < .05$), and no filers ($M = .91$) ($p < .001$). Spring cleaners also had significantly more folders than no filers ($p < .01$).

To further test the distinctness of each of the categories, an ANOVA was performed for number of inbox messages. A significant difference was not found, however, this may be mediated by a number of factors such as number of messages received daily (Lansdale, 1988). Other indicators such as inbox as a percentage of total mailbox, daily messages received and total messages yielded significant main effects between the groups. $F_{(\text{number of$

daily messages) (2,162) = 9.17, $p < .001$. $F_{(\text{total messages})}$ (2,162) = 8.79, $p < .001$. $F_{(\text{inbox as a percentage of total mailbox})}$ (2,162) = 21.98, $p < .001$.

This result supports Whittaker and Sidner's (1996) user strategy choice categories of no filer, spring cleaner and frequent filer. Furthermore, these results suggest that individuals are able to identify themselves as belonging to one of these three categories.

Recommended strategy

The present study suggests that message volume, individual differences and job specifications influence what strategy employees use and also which strategy is most effective. Post hoc comparisons of the means of the present study found that frequent filers had significantly greater numbers of daily messages ($M = 17.09$) compared with no filers ($M = 6.14$) ($p < .001$), while spring cleaners also had significantly greater incoming mail ($M = 14.69$) than no filers ($p < .05$).

Moreover, an ANOVA comparing number of folders amongst part-time employees and full-time employees found a significant difference between the means $F(1,163) = 12.78$, $p < .001$, $M_{(\text{part-time})} = 3.90$, $M_{(\text{full-time})} = 13.27$. Comparing folder usage between managers and non-managers revealed that managers have significantly more folders ($M = 22.82$) compared to everyone else ($M = 6.78$), $F(1,163) = 18.75$, $p < .001$. A chi-square statistic was computed for whether e-mail strategy is related to what position an employee holds. Analysis did not reveal a significant relationship between strategy and whether one is a manager or not.

These results suggest that employees with greater volumes of mail may need to be frequent filers otherwise their e-mails become too unwieldy and ineffective. Conversely, no filers were more likely to have lesser daily messages. This implies that those with few e-mails to manage may not find it necessary to set up and maintain multiple folders.

Observing the mean number of years individuals had used e-mail by the different strategies ($M_{(\text{no filer})} = 3.44$, $M_{(\text{spring cleaner})} = 3.87$, $M_{(\text{frequent filer})} = 4.17$) found the number of years to be in the predicted direction; however, a one-way ANOVA found no significant difference between e-mail strategy and how long individuals had used e-mail either for personal or work use. While this suggests that strategy is not moderated by experience, the number of years one has used e-mail may not be a good indicator of competency.

Frequent filing is described in texts on how to handle e-mail as the definitive answer to organising ones mail box. This study suggests that frequent filing may not be the most efficient and effective management system for all users. Instead, whether one chooses, and

whether they should choose, to file or not may be a function of the position they hold, the number of messages received and the hours they work.

Analysis of variance of time management behaviour and job outcomes

While the above results have produced some interesting distinctions between those that may be identified as no filers, spring cleaners and frequent filers, of greater importance is what consequences this has on the individual. Particularly, the levels of perceived control of time associated with each strategy choice, and whether this corresponds with job outcomes, such as job satisfaction and somatic tensions.

One-way ANOVAs were performed to compare the means for the three strategy groups on all factors of the Time Management Behaviour Scale, and somatic tension and job satisfaction scales. Mean scores and standard deviations by e-mail strategy are presented in Table 3.

Insert Table 3 about here

An ANOVA comparing e-mail category with overall TMB score, as an indication of time management ability as a whole, revealed a significant main effect, $F(2,162) = 6.84, p < .001$. Post hoc tests showed that frequent filers ($M = 109.29$) were more likely to engage in time management behaviours than either spring cleaners ($M = 99.54$) ($p < .01$) or no filers ($M = 102.35$) ($p < .05$). No significant difference was found between no filers and spring cleaners.

It was predicted that participants who are frequent filers will tend to obtain higher scores in the setting goals and priorities, preference for organisation and mechanics factors, and thus have a higher perceived control of time. These differences between groups on time management ability remained when an ANOVA was performed for the setting goals and priorities factor of the TMB, $F(2,162) = 4.78, p < .005$. Post hoc tests found a significant difference between frequent filers and spring cleaners ($M_{(\text{frequent filer})} = 3.41, M_{(\text{spring cleaner})} = 3.06, p < .05$), and also for the mean scores for goal setting between frequent filers and no filers ($M_{(\text{no filer})} = 3.04$) ($p < .01$). Again, there was no significant difference between no filers and spring cleaners.

One-way ANOVA showed a significant difference between all strategies on the preference for organisation factor, $F(2,162) = 4.78, p < .01$. Post hoc tests indicated that

individuals identified as frequent filers had a statistically significant higher preference for organisation ($M = 4.01$) compared with spring cleaners ($M = 3.61$) ($p < .05$).

While frequent filers had higher scores for the mechanics factor than both spring cleaners and no filers, results were not statistically significant. The mechanics factor of the TMB scale focuses on tools individuals may use to manage their time, such as making lists and keeping notebooks and diaries. Time management training or reading materials related to time management may be possible mediators of these scores, which may have resulted in the observed lack of difference between strategies.

Of primary interest was whether levels of perceived control of time differed between strategy. An ANOVA again illustrated a significant difference between all groups, $F(2,162) = 5.04$, $p < .01$. Additional post hoc analysis found that frequent filers reported a higher perceived control of time ($M = 4.04$) particularly over spring cleaners ($M = 3.62$) ($p < .01$). While frequent filers and no filers ($M = 3.91$) shared relatively high perceived control of time, spring cleaners had notably less.

Examination of scores on Macan's (1998) TMB scale by e-mail strategy finds some associations in the predicted direction, with some seemingly incompatible with the literature. Analyses conducted were generally consistent in finding that spring cleaners were more likely to exhibit less time management behaviours or abilities and consequently had lower perceived control of time scores. Additionally, no filers displayed relatively similar TMB scores to frequent filers. Before any conclusions were drawn, further analysis was conducted investigating whether the relationships observed were replicated when ANOVAs with job satisfaction and somatic tension as dependent variables were completed.

Job satisfaction data revealed that most employees were satisfied. Interpretation of the raw scores found that 7 per cent may be described as dissatisfied, while 50 per cent were generally satisfied and the remainder (43 per cent) were satisfied with their career and job and probably not thinking of changing their situation.

A significant relationship was found between e-mail strategy and job satisfaction, $F(2,162) = 5.74$, $p < .01$. Post hoc tests revealed that spring cleaners ($M = 70.47$) had significantly higher scores for job satisfaction than no filers ($M = 64.28$) ($p < .01$); however, spring cleaners' job satisfaction was not significantly higher than frequent filers ($M = 66.94$).

Macan's (1994) model predicts that time management ability is one precursor to job satisfaction, a channel through which an individual gains control over their time. Perhaps frequent filing, while it gives individuals a greater perceived control of time, requires significantly more maintenance and information load to the point that it interferes with

outcome variables such as job satisfaction and job performance. Therefore, some suggested time management behaviours may actually lead to undesirable effects. Similarly, Adams and Jex (1999) and Macan (1994) suggest that use of time management mechanics, such as making lists and schedules, may lead to some people perceiving they have less control of time. This is due to the feedback they get from mechanics, such as, finding they missed an appointment they had written in their diary. This leads to a perception of having little or no control of time.

Analyses of scores for somatic tension by e-mail category did not yield any significant results. This may be due to restricted range as possible scores on the somatic tension scale range from 12 to 60 while these employees had a minimum score of 12 and a maximum score of 39. The somatisation subscale exhibited robust psychometric properties, which indicates that another measure may not have yielded more discriminating scores. It is more likely that the results generated in the present study were due to the nature of the sample.

Generally, this employee group could be considered to be healthy and satisfied, which may have influenced the unanticipated results regarding strategy choice and job satisfaction, and the non-significant somatic tensions results. The literature finds consistent associations between time pressure or control of time, and somatic tension and job satisfaction (e.g., Adams & Jex, 1999; Lang et al., 1990; Macan, 1994; Macan et al., 1990). Of course, the way an individual handles their e-mail is only a small antecedent of job satisfaction and an individual's job satisfaction is influenced by a multitude of factors that are beyond the parameters of this study.

Analyses of TMB scores, TMB factor scores, and outcome variables, by e-mail strategy disclose the most disparate and unanticipated relationship between frequent filers and spring cleaners. Perhaps spring cleaners would ultimately like to organise and manage their e-mail like frequent filers. Spring cleaners, however, generally have a lower preference for organisation, may not set goals and prioritise tasks and a lower perceived control of time than all other groups. As they are not significantly different in terms of time management mechanics, which is not an intuitively innate construct, this may suggest that spring cleaners have the ability to apply skills learnt during training.

While this study did not find a significant difference between groups on level of somatic tension, spring cleaners may potentially be in danger of increased somatic tension. The process model proposes that lower perceived control of time is associated with increased somatic tension (Macan, 1994). Spring cleaners, with lower levels of perceived control of

time may be at risk of this negative outcome, furthermore, tensions may arise due to a conflict between their current strategy and the way they would like to manage their e-mail. Utilising a chi-square test, a significant relationship between strategy and whether the individual had problems handling their e-mail was identified, $\chi^2(4, N = 165) = 11.05, p < .05$. Spring cleaners were more likely to report having problems handling their e-mail. Figure 3. depicts whether employees stated they had e-mail management problems or not by e-mail strategy.

Insert Figure 3 about here

The relationships between strategy, time management behaviours and job outcomes suggest that no filers and frequent filers have adopted strategies that fit their requirements and help them perceive a control of their time. While no filing is often considered as the worst-case scenario for managing ones e-mail, this study suggests that not filing may be optimal for some users. For example, those with low volumes of incoming e-mail, have non-managerial level jobs and/or part-time workers.

Conversely, those that adopt a spring cleaner strategy seem to create dissonance within themselves. They are less likely to exhibit effective time management behaviours and have a lower perceived control of time. This in turn suggests that they may be more susceptible to decreased job output, job satisfaction and increased job-induced tension.

GENERAL DISCUSSION

The literature finds a strong relationship between perceived control of time and positive job outcomes. Macan's (1994) model of time management proposes that three factors of time management – setting goals and priorities, time management mechanics and preference for organisation – are antecedents to ones perceived control of time. An increasing amount of time is devoted to using e-mail. Popular computer self-help books consistently recommend the use of folders to manage e-mail messages. Incorporating organisation of ones e-mail into the model of time management it was hypothesised that using folders, and thus displaying high levels of the three factors of time management, would be related to increased perceived control of time, and consequently, high job satisfaction and decreased somatic tension.

This field study found that much organisational time was spent by employees using e-mail. While e-mail should increase efficiency, it has the potential to become a workday

burden. Several areas of e-mail use in the studied organisation may develop into more serious issues, such as, amount of time spent, frequent retrieval of messages and managing messages that are no longer needed.

Three different user strategies were identified for managing ones e-mail based on folder usage and frequency of deletion and organisation – frequent filers, spring cleaners and no filers (Whittaker & Sidner, 1996). While the process model of time management intimates that frequent filing of e-mail messages may be associated with a greater perceived control of time, this study found that those who did not use folders at all also scored highly in various time management behaviour and perceived control of time. Instead, it is suggested that the strategy one uses should be a function of the number of messages received, organisational position and hours of work.

Of equal import, is that the employee must also be satisfied with the strategy they utilise. It is proposed that those that spring clean aspire to be frequent filers. Finding that their folder structures or management of their e-mail are not functioning as they would like seems to result in lower perceived control of time. Spring cleaners also generally report lower use of time management behaviours, which may present an obstacle to their aim of becoming frequent filers.

Frequent filers, as hypothesised, exhibited significantly higher scores in all time management factors, including perceived control of time. This suggests that time management techniques and behaviours described in popular management texts may result in the espoused advantages for some individuals.

Unexpectedly, no filing appears to be a useful strategy for some employees. Recall that in paper-based offices, “messy desks” may have been due to four forces, (1) difficulty in creating order to ones files, (2) cognitive difficulty in creating appropriate categories for retrieval, (3) to act as reminders, (4) easy accessibility to frequently used information (Malone, 1983). Spatial location was of great importance, arguably more important, than logical location. These notions may have been transferred to the computer desktop with many users choosing not to structure their e-mail for fear of not meeting their basic needs for finding and reminding.

In fact, not filing, for these individuals, may be considered to be effective time management behaviour. This is consistent with Macan’s (1994) assertion that it is ones perceived control of time that is of fundamental importance, not whether the behaviour is considered by others to be effective time management. It may be that they believe e-mail management to not be a vital part of their jobs and that setting up and maintaining folders is

counterproductive. While, Malone (1983) found some evidence that individuals with messy offices had more difficulty finding information, it was also suggested that there was no indication that the effort spent keeping a neat office was met with equal merit.

This may be at the heart of the complications encountered by spring cleaners. For them, organising folders for their e-mail may not be as worthwhile as expected or the filing system was unsuccessful, thus impinging on their perceived control of time. While they may have intentions to organise their incoming mail regularly, they may leave it longer than they would like. As their inbox gets larger, they receive feedback that their strategy for managing their e-mail is not working which may result in a feeling of no control over their time.

Implications

The results obtained suggest that those who consider their e-mail behaviour to be classified as spring-cleaning are prime candidates for further training due to their low perceived control of time, and lower preference for setting goals and priorities and organisation. The information gathered finds that spring cleaners are most likely to have been involved in e-mail training, and training content included setting up and using folders. While this provides some evidence for transfer of training, it highlights the importance of training needs analysis and tailoring of training to individuals. This study suggests more targeted training of individuals that may be experiencing problems with their e-mail use, particularly spring cleaners. Perhaps more general time management training would be of added value, particularly on efforts that increase control perceptions, rather than e-mail training beyond the fundamentals of how to use the program, as training on folder usage does not seem to be universally useful.

The individual differences observed in the way one organises their e-mail, and the effects of that choice, negate investment in expensive e-mail programs that purport to aid organisation and retrieval by automatically filtering and classifying messages in order to reduce information overload. Furthermore, this study highlights the importance of the integration and awareness of psychological principles and research when designing computer programs.

Organisational policy implications may be derived from this study. It is suggested that organisations assess the amount of time and resources that are devoted to e-mail use and to create or alter policy if this is not aligned with their ideal.

Limitations and future research

While many relationships and associations were found that lend weight to the hypotheses, causal statements cannot be made. Additionally, there may be many plausible explanations for the results obtained. E-mail is only one part of organisational life and one's time management that it may not be prudent to suggest that organising one's e-mail in a specific way will lead to increased quality of work life.

A possible limitation to this study is the nature of the sample. Future studies should examine larger sample sizes and other workplaces. It may be the case that the results obtained are specific to this organisational environment. Additionally, it may be the case that these employees, through occupational self-selection, nature of the organisation and job content, have a higher preference for organisation and categorisation that may have skewed results.

Reliance on self-report measures limit the conclusions of this study. Ideally, objective measures of job performance and actual use of time management behaviours should be used. Moreover, to increase accuracy, access to computer system records would have also been useful to gauge the contents of e-mail programs and rectify the missing data set problems encountered. This would also eliminate the possibility of estimation or deception on the part of participants. One must also be mindful that access to company databases may not always be possible due to privacy issues and such like.

Mudrack (1997) recommended an amended version of the TMB scale for research purposes, which was used in this study. High internal consistency reliability is necessary for a test to be valid (Nunnally, 1978). Kline (1993) and Nunnally (1978) state that coefficient alphas should not be tolerated if they are below .7. Observing the coefficient alphas achieved in this study, the factor perceived control of time is still problematic. While at .67 it approaches the suggested minimum reliability it may be of concern. Further analyses of the perceived control of time factor and re-evaluation of the item structure may be necessary, particularly as it is this principal factor which has bearings on valued job outcomes.

This study provides preliminary evidence to question the behaviours promoted by populist texts regarding organisation of one's electronic mail. An interesting paradox was uncovered whereby having no filing system, for some individuals, may have no deficits in terms of control of time perceptions, and thus more positive job outcomes. Additionally, those who used a "spring cleaning" approach, that is, tried unsuccessfully to adhere to filing messages into various folders at regular intervals as encouraged by e-mail management

commentators, may be associated with low levels of perceived control of time. Interventions were therefore proposed that directly target control of time perceptions rather than specific folder usage. Intuitively, suggestions of folder creation and utilisation within ones electronic mail program are appealing and would seem to be related to time control perceptions. This study reminds us that time perceptions and time control perceptions are individual-made. They are intensely personal and cannot be governed or manipulated by universal rules or mechanisms.

REFERENCES

- Adams, G. A., & Jex, S. M. (1997). Confirmatory factor analysis of the Time Management Behavior Scale. *Psychological Reports, 80*, 225-226.
- Adams, G. A., & Jex, S. M. (1999). Relationships between time management, control, work-family conflict, and strain. *Journal of Occupational Health Psychology, 4*(1), 72-77.
- Baecker, R., Booth, K., Jovicic, S., McGrenere, J., & Moore, G. (2000). Reducing the gap between what users know and what they need to know. *ACM's Conference on Universal Usability, Washington, D. C., Nov 16-17*. Retrieved May 2, 2001, from University of Toronto web site:
http://www.dgp.toronto.edu/~joanna/papers/cuu_2000_baecker.pdf
- Balter, O., & Sidner, C. (2000). Bifrost Inbox Organizer: Giving users control over the inbox. *Lotus Research* (Rep. No. 00-08). Retrieved May 2, 2001, from
[http://www.lotus.com/lotus/research.nsf/6df4c4360fec57c6852569750054ca69/30fd6beb1e85d7918525697d0064bbe0/\\$FILE/BifrostPaperReport.pdf](http://www.lotus.com/lotus/research.nsf/6df4c4360fec57c6852569750054ca69/30fd6beb1e85d7918525697d0064bbe0/$FILE/BifrostPaperReport.pdf)
- Barreau, D., & Nardi, B. A. (1995). Finding and reminding: File organization from the desktop. *SIGCHI Bulletin, 27*(3), 39-43.
- Brenner, V. (1997). Psychology of computer use: XLVII. Parameters of internet use, abuse and addiction: The first 90 days of the internet usage survey. *Psychological Reports, 80*, 879-882.
- Czerwinski, M., Cutrell, E., & Horvitz, E. (2000). Instant messaging and interruption: Influence on task type on performance. *Proceedings of OZCHI 2000 Conference on Human Factors and Computing Systems*. Retrieved March 14, 2001, from ACM Digital Library: <http://www.acm.org>
- Derogatis, L. R., & Cleary, P. A. (1977). Confirmation of the dimensional structure of the SCL-90: A study in construct validation. *Journal of Clinical Psychology, 33*, 981-989.

- Dolle, R. (1994). Welcome to e-mail. *Journal of Environmental Health*, 56(8), 34-36.
- Drucker, P. (1966). *The effective manager*. London: Penguin.
- Ferris Research. (2000). How email affects productivity. Retrieved March 14, 2001, from <http://www.ferris.com/rep/20000202/SM.html>
- Frone, M. R. (2000). Interpersonal conflict at work and psychological outcomes: Testing a model among young workers. *Journal of Occupational Health Psychology*, 5(2), 246-255.
- Hallowell, E. M., & Ratey, J. J. (1994). *Driven to distraction: Recognizing and coping with Attention Deficit Disorder from childhood through adulthood*. New York: Pantheon Books.
- Hassard, J. (1991). Aspects of time in organization. *Human Relations*, 44(2), 105-125.
- Hiltz, S. R., & Turoff, M. (1985). Structuring computer-mediated communication systems to avoid information overload. *Communications of the ACM*, 28(7), 680-689.
- Hindle, T. (1998). *Manage your time*. London: Dorling Kindersley.
- Holland, J. L., & Gottfredson, G. D. (1994). *CASI Career Attitudes and Strategies Inventory: An inventory for understanding adult careers*. Odessa, FL: Psychological Assessment Resources Inc.
- Jex, S. M., & Elacqua, T. C. (1999). Time management as a moderator of relations between stressors and employee strain. *Work & Stress*, 13(2), 182-191.
- Jones, S., Bock, G., & Brassard, A. (1990). Using electronic mail: Themes across three user interface paradigms. *SIGCHI Bulletin*, 21(3), 45-48.
- Jovicic, S., & Baecker, R. (1999). Time-based archiving and retrieval of email. Retrieved May 2, 2001, from University of Maryland, Department of Computer Science web site: <http://www.cs.umd.edu/hcil/about/events/history-workshop/slides/Jovicic/sld001.htm>
- Kline, P. (1993). *The handbook of psychological testing*. London: Routledge.
- Lahmers, A. G., & Zulauf, C. R. (2000). Factors associated with academic time use and academic performance of college students: A recursive approach. *Journal of College Student Development*, 41(5), 544-556.
- Lamb, L., & Peek, J. (1995). *Using email effectively*. Sebastopol, CA: O'Reilly & Associates, Inc.
- Lang, R. J., Gilpin, J. L., & Gilpin, A. R. (1990). Stress-related symptoms among dental hygienists. *Psychological Reports*, 66, 715-722.
- Langford-Wood, N., & Salter, B. (1999). *Successful use of e-mail in a week*. London: Hodder & Stoughton.

- Lansdale, M. (1988). The psychology of personal information management. *Applied Ergonomics*, 19(1), 55-66.
- Lantz, A. (1998). Heavy users of electronic mail. *International Journal of Human-Computer Interaction*, 10(4), 361-379.
- Macan, T. H. (1994). Time management: Test of a process model. *Journal of Applied Psychology*, 79(3), 381-391.
- Macan, T. H. (1996). Time-management training: Effects on time behaviors, attitudes, and job performance. *The Journal of Psychology*, 130(3), 229-236.
- Macan, T. H., Shahani, C., Dipboye, R. L., & Phillips, A. P. (1990). College students' time management: Correlations with academic performance and stress. *Journal of Educational Psychology*, 82(4), 760-768.
- Malone, T. W. (1983). How do people organise their desks? Implications for the design of office information systems. *ACM Transactions on Office Information Systems*, 1(1), 99-112.
- Navon, D. (1978). On a conceptual hierarchy of time, space and other dimensions. *Cognition*, 6, 223-228.
- Minsky, B. D., & Marin, D. B. (1999). Why faculty members use e-mail: The role of individual differences in channel choice. *The Journal of Business Communication*, 36(2), 194-214.
- Moore, W. E. (1963). *Man, time and society*. New York: Wiley.
- Mudrack, P. E. (1997). The structure of perceptions of time. *Educational and Psychological Measurement*, 57(2), 222-240.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Parsons, R. (1996). *Getting a grip on time*. Auckland, NZ: Cedar.
- Patterson, M. A., (2000). *Email in daily work*. Unpublished Research Project. Department of Social and Decision Sciences, Carnegie Mellon University. Retrieved December 13, 2000, from http://www.andrew.cmu.edu/user/mp72/email_in_daily_work.html.
- Payne, S. J. (1993). Understanding calendar use. *Human-Computer Interaction*, 8, 83-100.
- Raymond, D. R., Canas, A. J., Tompa, F. W., & Safayeni, F. R. (1989). Measuring the effectiveness of personal database structures. *International Journal of Man-Machine Studies*, 31, 237-256.
- Sharp, C. (1981). *The economics of time*. Oxford: Martin Robertson.

- Sharf, B. (1999). Beyond netiquette: The ethics of doing naturalistic discourse research on the internet. In S. Jones (Ed.), *Doing internet research: Critical issues and methods for examining the net* (p. 243-256). Thousand Oaks: SAGE Publications.
- Speier, C., Valacich, J. S., & Vessey, I. (1999). The influence of task interruption on individual decision making: An information overload perspective. *Decision Sciences*, 30(2), 337-360.
- Straus, S. G., & McGrath, J. E. (1994). Does the medium matter? The interaction of task type and technology on group performance and member reactions. *Journal of Applied Psychology*, 79(1), 87-97.
- Swartz, J. (2001, June 27). E-mail overloads workers, companies [Electronic version]. *USA Today*. Retrieved July 3, 2001, from <http://www.usatoday.com/careers/news/2001-06-27-email.htm>
- Takkinen, J., & Shahmehri, N. (1998). Are you busy, cool, or just curious? – CAFÉ: A model with three different states of mind for a user to manage information in electronic mail [Electronic version]. In P. A. Lundgren (Ed.) *Human IT* no. 1/98, March 1998. Retrieved March 14, 2001, from ACM Digital Library: <http://www.acm.org>
- Taylor, J. (2000). Electronic mail, communication and social identity: A social psychological analysis of computer-mediated group interaction. In L. Pemberton & S. Shurville (Eds.) *Words on the web: Computer mediated communication* (pp. 96-105). Exeter, England: Intellect Books.
- Tunstall, J. (2000). *Easy email: How to make email work for you*. St Leonards, NSW: Allen & Unwin.
- Whalen, J. (2000). *E-mail @ work*. Edinburgh Gate, Harlow: Pearson Education.
- Whittaker, S., & Sidner, C. (1996). Email overload: Exploring personal information management of email. Retrieved March 14, 2001, from <http://www.acm.org/pubs/articles/proceedings/chi/238386/p276-whittaker/p276-whittaker.html>
- Williams, E. (1998). Email interpretation in an organisation: A recipient perspective. Unpublished MComm Research Project. Victoria University of Wellington. Retrieved March 9, 2001 from Victoria University of Wellington web site: <http://www.vuw.ac.nz/~ericw/research.htm>

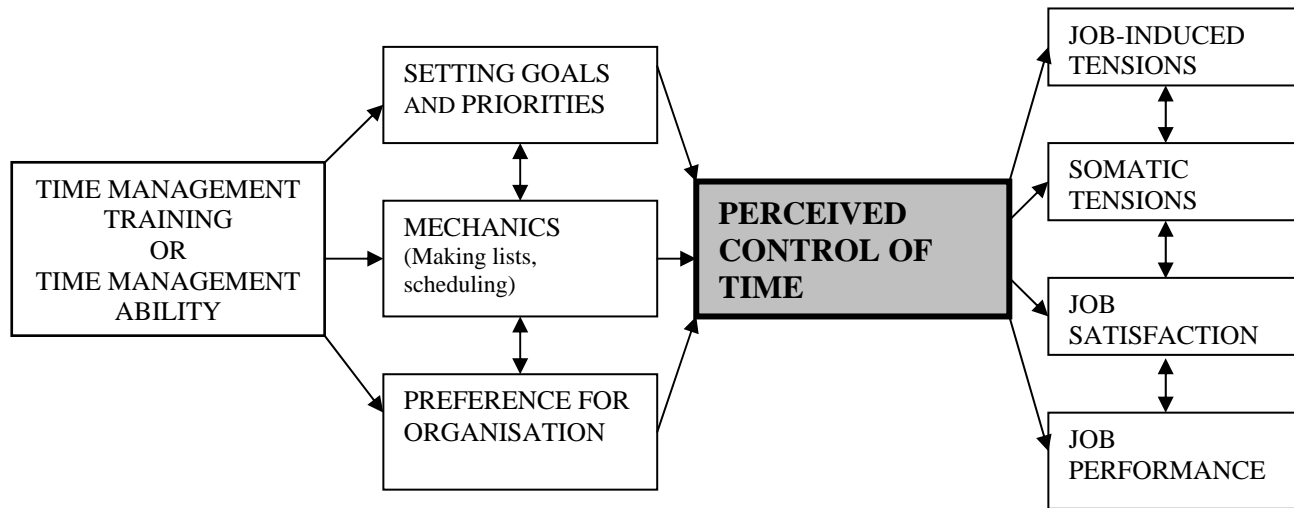


Figure 1: adapted from Macan's (1994) 'Process Model of Time Management'

Table 1.
Descriptive statistics for Time Management Behaviour Scale (TMB) and all other scales

Scale	Number <i>M</i>	of items	Observed <i>SD</i>	Coefficient range	alpha
TMB					
Overall TMB score	103.87	31	13.79	72-140	.80
Setting goals and priorities	3.16	10	.65	1.3-4.8	.82
Preference for organisation	3.88	8	.66	2.25-5	.71
Mechanics	2.73	8	.83	1-4.875	.73
Perceived control of time	3.88	5	.66	2-5	.67
Outcome measures					
Somatic tension	19.75	12	5.83	12-39	.77
Job satisfaction	66.58	21	9.55	36-82	.88
Demographic and background variables					
Age (years)	43.13	1	10.44	20-65	-
Sex ^a	1.84	1	.37	1-2	-
Position ^b	.14	1	.35	0-1	-
Work hours ^c	1.55	1	1.55	1-2	-
Tenure (months)	74.42	1	75.78	1-322	-
E-mail tenure (years)	3.78	1	2.38	0-12	-
Check e-mail ^d	2.56	1	1.20	1-6	-
Daily use ^e	2.68	1	2.01	1-9	-
Clean up ^f	2.66	1	1.75	1-9	-
Find function ^g	.09	1	.29	0-1	-
Forward messages ^h	.06	1	.24	0-1	-
Keep messages to remind ⁱ	.78	1	.42	0-1	-
Handling e-mail problems ^j	1.52	1	.76	1-4	-
<hr/>					
Scale	Number <i>M</i>	of items	Observed <i>SD</i>	Coefficient range	alpha
E-mail statistics					
Number of folders	9.02	1	17.35	0-164	-
Inbox messages	64.44	1	127.60	0-906	-
Total messages	202.59	1	345.88	0-1935	-
Inbox messages <1 month	34.28	1	52.50	0-428	-
Daily messages	11.62	1	15.76	0-125	-
E-mail category ^k	1.87	1	.87	1-3	-
Training ^l					
Good messages ^m	.64	1	.48	0-1	-
Using folders ⁿ	.21	1	.41	0-1	-
	.47	1	.50	0-1	-

Note:

^a 1 = male; 2 = female

^b 0 = non-manager; 1 = manager

^c 1 = part time; 2 = full time

^d 1 = Continually, I read the messages as they arrive; 2 = Several times a day;
3 = At some occasion during the day; 4 = Several times a week;
5 = Once a week; 6 = More seldom; 7 = Never

^e 1 = less than 15 minutes; 2 = 15 - 30 minutes; 3 = 30 - 45 minutes;
4 = 45 minutes - 1 hour; 5 = 1 hour - 1.25 hours; 6 = 1.25 - 1.5 hours;
7 = 1.5 - 1.75 hours; 8 = 2 hours; 9 = More than 2 hours

^f 1 = Daily; 2 = Weekly; 3 = Fortnightly; 4 = Monthly; 5 = Every 2 months;
6 = Every 3 months; 7 = Twice a year; 8 = Yearly; 9 = Never

^g 0 = no; 1 = yes

^h 0 = no; 1 = yes

ⁱ 0 = no; 1 = yes

^j 1 = Handling my e-mail has never been a problem;
2 = I have had some problems handling my e-mail; 3 = I cannot handle my
e-mail; 4 = I do not have enough time to handle my e-mail

^k 1 = no filer; 2 = spring cleaner; 3 = frequent filer

^l 0 = no; 1 = yes

^m training content - 0 = no; 1 = yes

ⁿ training content - 0 = no; 1 = yes

^o training content - 0 = no; 1 = yes

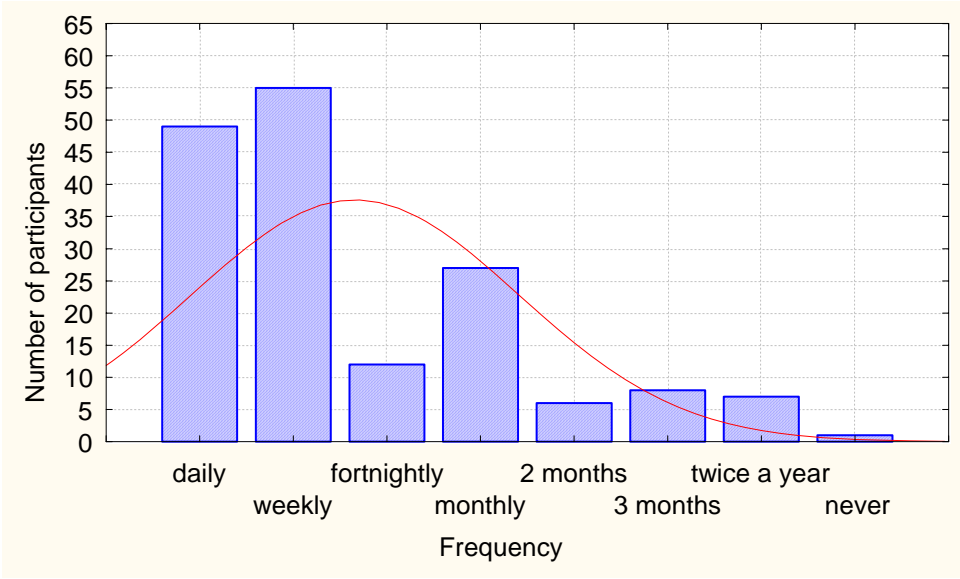


Figure 2. How often employees cleaned up their electronic mail inboxes

Table 2.
Summary frequencies and percentages of mailbox usage for the three strategies for managing e-mail

<i>Strategy</i>	<i>N</i>	<i>Number of Inbox Items</i>	<i>Total Number of Items</i>	<i>Inbox as % of total mailbox</i>	<i>Number of folders</i>	<i>Daily number of messages received</i>
No filers	74	54.30	86.03	74.80	.91	6.14
Spring cleaners	39	105.41	335.44	47.69	10.69	14.69
Frequent filers	52	48.13	268.85	34.17	19.31	17.09

Table 3.**Summary of time management behaviours and job outcome mean scores (standard deviations) by e-mail category**

<i>Strategy</i>	<i>N</i>	<i>Time Management Behaviour Score</i>	<i>Setting goals and priorities</i>	<i>Preference for organisation</i>	<i>Mechanics</i>	<i>Perceived control of time</i>	<i>Somatic tension</i>	<i>Job satisfaction</i>
No filers	74	102.35 (13.61)	3.06 (.63)	3.93 (.66)	2.60 (.87)	3.91 (.64)	20.05 (6.12)	64.28 (9.68)
Spring cleaners	39	99.54 (12.81)	3.04 (.55)	3.61 (.68)	2.78 (.81)	3.62 (.71)	20.64 (6.18)	70.47 (7.63)
Frequent filers	52	109.29 (13.29)	3.41 (.68)	4.01 (.59)	2.87 (.76)	4.04 (.60)	18.63 (5.03)	66.94 (9.81)

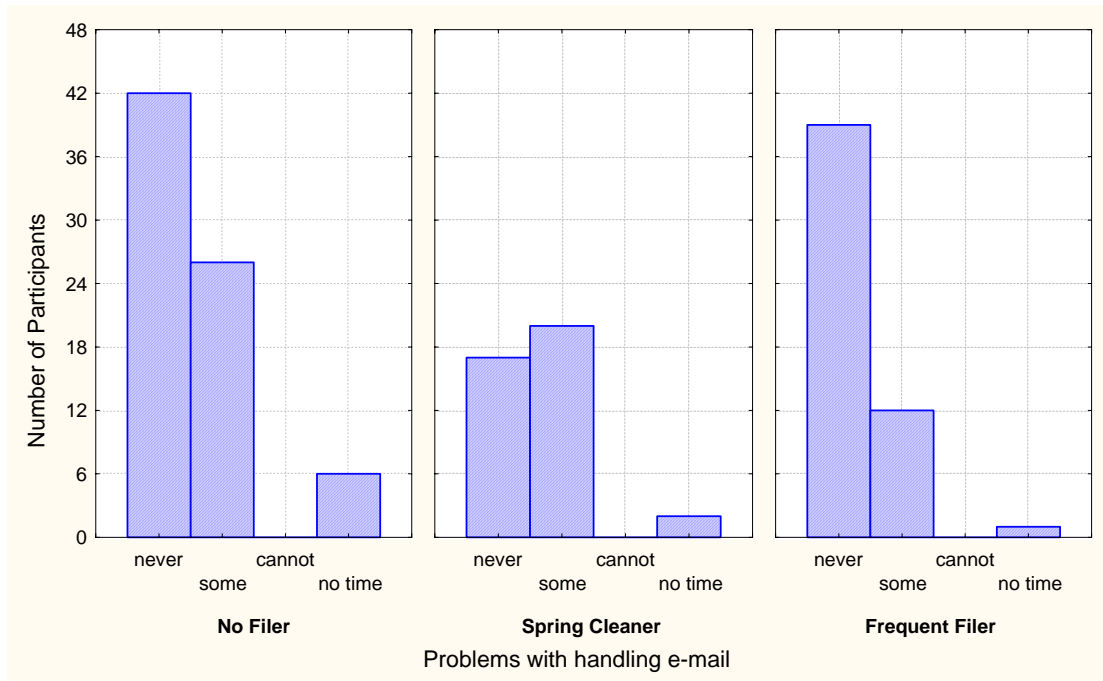


Figure 3. Whether participants had problems handling their electronic mail by strategy.

KEY: never = Handling e-mail has never been a problem.
 some = I have had some problems handling my e-mail.
 cannot = I cannot handle my e-mail.
 no time = I do not have enough time to handle my e-mail