

# *Managing Stress and Job Performance of Air Traffic Controllers: An Experimental Application of Self-Management Training Concepts*

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## BODY

The importance of human resource management for achieving sustained excellence in organizational performance is being increasingly recognized (e.g., Pfeffer, 1995). Pressures such as frustrated needs of a changing workforce and insufficient organizational adaptability to meet the demands of a rapidly changing environment are requiring executives to explore alternatives for more fully utilizing human resources. Traditional managerial approaches, emphasizing the attainment of desired employee behavior through the utilization of tight external controls – controls which are often punitive in nature – have been subjected to increasing criticism as means for effectively motivating and managing people. Re-engineering and restructuring of jobs and organizations has often placed increasing emphasis on employee autonomy and participation in the workplace. In order to enhance attainment of organizational goals, these developments highlight the need for improved understanding of management methods which may enable individuals – at the managerial or workplace level – to achieve their demands for increased flexibility, autonomy, and challenge, while maintaining organizational capabilities to achieve performance and control objectives. Pragmatic, theoretically-grounded and resource-efficient options are needed in order to facilitate organizational and economic renewal.

Employee self-management, both for individuals and work teams, has received increasing attention in the literature as a promising management technique within organizational settings. These organizations provide contexts in which behavior is determined predominately by individuals rather than by external leaders. Faced with pressures to reduce levels of supervision and meet demands of employees for autonomy, empowerment and challenging jobs, *inter alia*, self-managing employees have frequently been argued as the key to successful performance for contemporary organization in both the public and private sectors. Self-management represents a fundamental element of such organizational processes as leadership, control, and management in general. Self-management training can assist an organization's efforts to engender a new organizational culture, in which individuals take responsibility for their activities and also work together as a team.

Because of the diversity of problems in which self-management training has proven effective and because of the strong theoretical rationale on which this training is based, ***the objective of the present study was to investigate the effectiveness of self-management training with regard to the improvement of job performance, specifically the performance of air traffic controllers.*** Research in the area of air traffic control has found that it is one of the highest stress occupations, with critical personal, organizational and societal implications associated with inability to effectively manage stress and maintain superior performance levels. Many of the performance problems experienced by these individuals have been linked to their inability to effectively manage the high-stress context of the air traffic control position. The present study represents the first field-based empirical effort which uses self-management training to achieve sustained improvement in job performance within a not-for-profit, service sector organization. It is also the first field-based empirical effort to utilize self-management training to improve performance on stress-related as well as other individual and organizational performance dimensions. This study assessed performance through both objective and subjective measures, as well as examining the mediating effects of self-efficacy and outcome expectancies on such performance of air traffic controller.

### *Organization of the paper*

This paper first provides a discussion of the theoretical foundations of self-management and salient aspects of self-management as it applies to organizations and individuals, including principles of social cognitive theory which provide the foundation for self-management. Conceptually, self-management can be viewed as a set of behavioral and cognitive strategies that assist individuals in structuring their environment (at work or elsewhere), establishing self-motivation, and thus facilitating appropriate behaviors for reducing discrepancies from existing performance standards. While everyone practices self-management, not everyone is an effective self-manager, and individuals may even engage in dysfunctional self-management. In addition, self-management can be learned, rather than representing an innate human trait, thus creating an opportunity for enhancing individual performance via self-management training. Training in self-management relates directly to a person's desire and willingness to practice more, or more effectively, self-control than previously. The potential usefulness of self-management in modifying behavior has received broad support in laboratory, clinical, and organizational settings.

Relatively few empirically based experiments have been conducted in organizational settings regarding the efficacy of training in self-management with regard to improving job performance. No such studies have been reported for not-for-profit, service sector settings, despite the importance and contextual differences associated with such settings. To test the principles presented in this paper, an organizationally-based field application was desired in order to rigorously assess job performance implications of the self-management training. Both self-efficacy and outcome expectancies have been shown to be domain-specific and not generalized across unrelated domains, so a domain-specific context was required in order to test this study's concepts. The focus selected was air traffic controllers at a major international air traffic control center in North America. The paper examines the nature of air traffic control and the role of air traffic controllers, including the high level of job-related stress associated with these positions and the implications of failing to adequately manage these job-related stressors. The implicit theory underlying the present study with regard to the performance of air traffic controllers is that many controllers may judge themselves as inefficacious in coping with contextual variables that prevent them from engaging in behaviors necessary for achieving high levels of performance. Furthermore, they may believe that supervisors or peers may persist in their low opinion of the controller even if the controller increases his or her performance. Many people feel that once they have been labeled poor employees, it is difficult for them to change their reputation. Support for this belief can be found in research on attitude perseverance in the face of contradictory evidence and on the impact of feedback.

After developing the theoretical underpinnings for this study, specific, hypothesized relationships regarding self-management and job performance of air traffic controllers are then introduced. We then provide a discussion of the experimental method that was utilized. This study was conducted on white collar employees in a not-for-profit service sector industry, specifically on air traffic controllers working within one of the ten highest volume ATC facilities in North America. The company identified air traffic controllers who had not achieved organization-based performance standards during the preceding year and each such individual was sent a memo inviting him or her to participate in this study. No monetary incentive was

offered for participating in this study and no employee was required to receive the training. The training was offered during normal work hours. 46 individuals volunteered to receive the training.

Employing a reversal design within a field experiment, 23 air traffic controllers were randomly assigned to an experimental group that received self-management training. Consistent with research suggesting that learning may not occur if training is not structured to facilitate learning, even when the training technique itself is appropriate, the training program was customized for the specific industrial and job environment of the participants. MANOVA and subsequent repeated measures ANOVAs revealed that, compared to a control condition (n=23), training in self-management skills significantly improved job performance, with performance increases sustained across a 12 month period post-training. Self-management training also improved performance in managing job-related stress, a critical variable impacting air traffic controllers. The mediating effects of self-efficacy and outcome expectancies on the self-management/performance relationship were revealed. The control group subsequently received identical training one year after the experimental group, producing similar increases in self-efficacy, outcome expectancies and job performance.

The paper concludes by addressing implications of the study's findings for theory and practice. Nevertheless, despite the potential contributions of self-management, there are some considerations that must be taken into account when choosing to use a self-management program, and these considerations are discussed at the end of this paper, along with suggestions for future research.