INDIVIDUAL- AND ORGANIZATIONAL-LEVEL PREDICTORS OF VOLUNTEERING FOR CPR/AED TRAINING: ORGANIZATIONAL CITIZENSHIP BEHAVIOR IN A FEDERAL WORKSITE

by

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(Under the Direction of David M. DeJoy)

ABSTRACT

Organizational citizenship behavior (OCB) is behavior in the workplace that is voluntary and beyond job task requirements. OCB is a subtle aspect of occupational safety and health programming that contributes to the overall quality of work life. An extensive body of literature, since 1983 and the establishment of the OCB concept, has shown that organizational level-factors predict OCB. Because OCB is extra-role behavior, it has been hypothesized that personality or dispositional factors should also be predictive of OCB. Recent research efforts, using the newly developed Prosocial Personality Battery, have found individual-level factors to predict OCB, accounting for variance beyond the organizational variables, although organizational factors remain the stronger predictor category. With the aging of employees and the population and with the need for workplaces to be prepared for emergencies and acts of terrorism, one important OCB is volunteerism for training in Automated External Defibrillators (AEDs) to deal with cardiac distress. This case-control survey of employees, trained and untrained in CPR/AED at a federal, health agency, used the electronic mail system with an embedded URL site to the worldwide web for data collection to assess individual and

organizational factors associated with CPR/AED training. The questionnaire included the Prosocial Personality Battery's measures of self-reported altruism and personal distress to measure the dispositional factor of helpfulness.

Univariate analyses identified job autonomy, job impact, personal distress (or ability to be effective and not lose control in crisis situations), education, volunteerism at work, tenure, job grade level, being in a professional licensure position, and being located at the agency's headquarters as significantly associated with CPR/AED training. The logistic regression model's best predictors of CPR/AED training were (1) being in a professional licensure position, (2) being at headquarters, (3) having job self-efficacy, (4) having self-reported altruism, (5) personal distress (control and effectiveness), and (6) a negative interaction between self-efficacy and self-reported altruism. The model had a predictive concordance of 66.7 %. Without the interaction, predictive concordance dropped to 58.4%. The interaction demonstrated that volunteerism for CPR/AED training can be predicted by a high level of either altruism or job self-efficacy or by higher levels of job self-efficacy in the presence of low altruism or higher levels of altruism in the presence of low levels of job self-efficacy. However, at high levels of both, the prediction of CPR/AED training declines indicating, perhaps, a threshold or optimum level for the two factors together for predicting who will volunteer for CPR/AED training in this setting. The findings support the importance of both individual- and organizational-level factors in predicting the OCB of volunteerism.

INDEX TERMS: Organizational citizenship behavior, volunteerism, CPR/AED, Personality factors, Attitudinal factors, Prosocial Personality Battery, Electronic surveys, Workplace surveys, Psychological empowerment

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CHAPTER 1

INTRODUCTION

In this chapter, volunteering and being trained in cardio-pulmonary resuscitation (CPR) and automated external defibrillators (AEDs) is presented as an organizational citizenship behavior. The significance of organizational citizenship behavior overall in the form of volunteerism to a worksite or organization is discussed, along with a brief theoretical overview of OCB and the factors predicting it. The purposes and objectives of the study and three research hypotheses are stated.

Volunteering and being trained in CPR/AED is a type of extra-role workplace behavior that contributes in important ways to employee and organizational well-being, and can be appropriately classified as an example of organizational citizenship behavior (OCB). OCB is a subtle yet important aspect of occupational safety and health programming, and contributes to the overall quality of work life within organizations. In these times of terrorism, international conflict, and economic uncertainty, it is important to keep in mind that maximizing employee welfare hinges, to a considerable extent, on the willingness of individual employees to extend themselves on behalf of their co-workers and associates. Indeed, the strictest laws and regulations regarding employee protection and environmental control cannot mandate that people will be both willing and able to help in emergencies. It is widely acknowledged that such helping behavior is critically important during emergency situations. The importance of such acts of workplace altruism and helping was certainly brought home in the aftermath of the "9-11 attacks" on the World Trade Center and the Pentagon. Research on the correlates and predictors

of OCB should provide an important frame of reference for understanding workplace volunteerism related to the provision of lifesaving medical assistance.

Theoretical Perspective—Organizational Citizenship Behavior and Volunteerism

A considerable body of empirical research on OCB has accumulated during the past 20 years and the first use of the concept (Smith, Organ, & Near, 1983). Although OCB has been defined differently by different investigators (LePine, Erez, & Johnson, 2002), there is general agreement that OCB refers to individual employee contributions in the workplace that go beyond formal job requirements and contractually rewarded achievements (Borman & Motowidlo, 1993; Borman, Penner, Allen, & Motowidlo, 2001; Brief & Motowidlo, 1986; Organ & Ryan, 1995). There is also broad consensus that OCB contributes in important ways to the social context of the organization, its overall effectiveness, and its functionality. Brief and Motowidlo (1986) described 13 kinds of OCB, including assisting co-workers, volunteering, and representing the organization favorably to outsiders.

From the beginning, research has focused on the interplay of job/organizational factors and dispositional/personality factors. Models of OCB highlight organizational factors such as organizational fairness (pay, process, and leader fairness) and task characteristics and scope (variety, feedback, autonomy, significance, variety, and task identity) as determinants of OCB (Fahr, Podsakoff, & Organ, 1990). In general, research shows that traditional measures of employee morale such as job satisfaction and organizational commitment predict OCB. More recent research suggests that fairness and equity perceptions may underlie these relationships. Models of OCB have sought to identify dispositional/personality factors such as the big 5 personality traits, particularly (1) conscientiousness which reflects dependability, planfulness,

and perseverance and (2) agreeableness which reflects friendliness, likeability, and "getting along" as determinants of OCB (Konovsky & Organ, 1996; Organ & Ryan, 1995). However, only recently have researchers begun to document variance in OCB attributable to these individual dispositional factors, largely by using a new inventory, the Prosocial Personality Battery (PSB), to assess personality/disposition, with particular emphasis on empathy and helpfulness (Borman et al, 2001; Penner, Midili, & Kegelmeyer, 1997). The PSB has also been able to distinguish between volunteers and nonvolunteers and intent to volunteer (Penner, 2002; Penner, Fritzsche, Craiger, & Freifeld, 1995), finding higher prosocial behavior levels of other-oriented empathy and helpfulness among volunteers.

The literature contains meta-analyses of relevant research and concludes that both organizational factors and individual factors contribute to OCB (Borman et al., 2001; Colquitt, Conlon, Wesson, Porter, & Ng, 2001; LePine et al., 2002; Organ & Ryan, 1995). A continuing issue in this literature concerns the relative importance of individual and organizational factors and the nature and extent of their interactions. The present study seeks to build on previous research to further confirm volunteerism for a health promoting behavior in a worksite as organizational citizenship behavior and to extend understanding of the relationships between organizational and individual factors on discretionary behaviors that contribute to worksite effectiveness and functionality.

Problem Statement

In November 2000, President Clinton signed into law the Cardiac Arrest Survival Act (HR2498) that directed placing AEDs in federal buildings and provided nationwide Good Samaritan protection, exempting from liability a person who renders emergency treatment with an AED to save a life (www.padl.org; April 22, 2002). AEDs are devices designed to deliver a

metered electrical shock to overcome ventricular fibrillation in a cardiac arrest (ECRI—Emergency Care Research Institute, 1996). Ventricular fibrillation is the most common condition in cardiac arrest and is an uncoordinated quivering of the heart that does not pump blood or generate a pulse. It is fatal if not treated. For every minute of delay between ventricular fibrillation and defibrillation, the expected survival declines by 10% (Rubin, 2001).

The availability of AED equipment and CPR/AED trained persons to apply CPR/AED procedures addresses the health problem of about 1.1 million heart attacks each year. About 460,000 of these heart attacks are fatal (www.nhlbi.nih.gov/acintime/aha/aha.htm; November 10, 2002). About 250,000 people experience cardiac arrest prior to reaching a hospital (Rubin, 2001). Although rare, sudden death is the most common cause of death on commercial airlines (Alves et al., 2001; Lyznicki, Williams, Deitchman, & Howe, 2000). Morbidity and mortality for most cardiovascular diseases are decreasing, but rates of sudden cardiac arrest are not (Riegel, 1998). Because the risk of out-of-hospital cardiac arrest increases with age and the fact that the number of older Americans is increasing, the number of out-of-hospital heart attacks may be expected to increase. The American Heart Association estimates about 50,000 to 100,000 of an estimated 350,000 sudden cardiac deaths could be prevented if AEDs were as readily available as fire extinguishers (Sachs & Kerwin, 2001). The public placement of AEDs is part of the American Heart Association's "Chain of Survival" strategy (early access, CPR, early defibrillation, and early Advanced Cardiac Life Support) to save lives from heart attacks (Riegel, 1998).

If the AED public access program and the Presidential mandate are to fulfill the purpose of saving lives of people in ventricular fibrillation or cardiac arrest anywhere and at any time, a large number of persons trained in CPR/AED need to be available in all settings--workplaces,

schools, shopping malls, airports, office buildings, entertainment complexes, athletic venues, etc. in urban, suburban, and rural communities. In the workplace, training can be (1) mandated as part of job task requirements and responsibility (i.e., job in-role performance) or (2) voluntary (i.e., extra-role organizational citizenship behavior). However, for a variety of reasons related to practicality and legal liability, being trained in CPR/AED is most often voluntary and not linked to specific job responsibilities or competencies. Volunteering to be trained in CPR/AED is individual behavior in a workplace that is discretionary, not directly or explicitly recognized by the formal reward system, and promotes the effective functioning of an organization (Organ, 1997). It therefore seems reasonable to consider volunteering to be trained and being trained in the use of AEDs to be a form of organizational citizenship behavior.

The federal AED guidelines include the requirement for training programs as part of cardiopulmonary resuscitation (CPR) training because AEDs are used in conjunction with CPR The federal agency in this study is part of the U.S. Department of Health and Human Services (DHHS) and developed its proposal for implementing the AED guidelines in September 2001. AED training became part of CPR courses at the agency in the late 1990's, but minimal information about the inclusion of AED training as part of the CPR course was included in recruitment efforts at that time. The agency intensified its recruitment communications for AED training in early 2002 to parallel installation of the AEDs. The agency's Office of Health and Safety and its contractor for its Lifestyle Program conducts the CPR/AED training of employees. At this agency, training in AED usage is voluntary.

Purpose of the Study

The overall purpose of this study is to understand characteristics of persons who volunteer for and become trained in CPR/AED in a federal workplace, and to determine if

individual and organizational variables found to correlate with other types of volunteerism and OCB can predict in this context who volunteered and was trained. To date, the factors associated with volunteering and being trained in CPR/AED among employees have not been directly assessed. A broad spectrum of employees representing all categories of the workforce is needed as volunteers since cardiac arrest could occur anywhere at any time in the workplace. A very large number of men and women spend a large portion of their waking hours at work. This is an important setting for emergency response preparation. The objective of the federal and national AED programs is to have both AED equipment and trained employees readily available to reduce the time between cardiac arrest and defibrillation.

The worksite participating in this study is a large federal agency in which a number of employees have already volunteered for and have been trained in CPR/AED. Therefore this is a case-control study to identify differences between volunteers and non-volunteers. Group 1 includes all employees who previously volunteered for and were trained in CPR/AED, 471 employees (cases). Group 2 (the controls) is a sample of 1,600 from the remaining approximately 8,500 employees who did not volunteer and are untrained. The study will assess the association of selected individual- and organizational-level variables that have been found to predict other types of organizational citizenship behavior and volunteerism.

The study results will be used to inform future efforts to recruit employees to be trained in CPR/AED in order to maintain a cadre of employees trained in CPR/AED in events of cardiac arrest in the workplace. The study is expected to improve recruitment by helping to segment the employees into groups that can be targeted with specific, relevant integrated marketing communications to encourage their volunteering for CPR/AED training. Knowing the demographic and psychographic characteristics (age, educational level, gender, supervisory

status, types of position, religiosity, helpfulness, other volunteerism, tenure, perceived job autonomy, etc.) of persons who have and have not volunteered provides a basis for the agency to design its recruitment communications. For example, persons with similar characteristics to persons who already use a product, in this case, volunteering for CPR/AED training, are often the easiest group to attract as new customers for that product. The study is also expected to identify groups who are willing to be trained and some of the barriers that have prevented them from volunteering for such training. Recruitment communications can be designed to address and overcome such barriers. The study's results will contribute to the empirical evidence regarding the interrelationships among selected individual and organizational influences on volunteerism and OCB. Further the study results may provide insights into the relationships between the actual job characteristics and OCB-volunteerism as well as OCB as reflecting aspects of a healthy organization (DeJoy & Wilson, 2003; Vandenberg, Park, DeJoy, Wilson, & Griffin-Blake, 2002) since the data acquired will include job category, supervisory status, tenure, and perceived job satisfaction, organizational fairness, autonomy/control, and impact.

The study and its results are also timely to national attempts to be prepared for consequences of acts of terrorism both in and outside the workplace. In February 2003 the American Red Cross launched a new program "Together We Prepare Campaign," one component of which is CPR/AED training, to assist businesses in mitigating the impact of both natural and man-made disasters. Results should be relevant to the ARC's program with businesses and other employer efforts to prepare the workplace for emergencies whether resulting from terrorism, the aging population, or conditions such as obesity, diabetes, and lack of physical activity which are producing a population highly vulnerable to cardiovascular health problems including cardiac arrest.

In summary, this research is important to understanding which individual and organizational variables influence volunteerism and training for CPR/AED in the workplace. The research will also add to the agency's understanding of the relationship of quality of work life (organizational factors) to willingness to participate in CPR/AED training offered by an employer. It has potentially important implications related to worksite emergency preparedness through training employees in CPR/AED.

Research Question and Hypotheses

The basic question guiding this research is what individual- and organizational-level variables (exposures) are associated with volunteering for and being trained in CPR/AED. Specifically, the following hypotheses will be evaluated in this study:

1Ho: There are no differences among individual-level factors (demographic variables such as age, gender, education, income, and dispositional variables such as religiosity and altruism/helpfulness) in predicting who among employees will exhibit the organizational citizenship behavior of volunteering for CPR/AED training.

$1H_1$: Among individual-level factors, education, religious organization membership, and helpfulness are the best predictors of employees who will exhibit the organizational citizenship behavior of volunteering for CPR/AED training.

Among individual-level factors that have been studied, educational level, religious organization membership, and helpfulness have been found to be strong predictors of volunteerism. According to a large number of studies, level of education is the strongest and most consistent predictor of volunteerism, perhaps, because at higher levels of education, it builds awareness and sensitivity to community and organizational problems, creates a sense of civic responsibility, and relates to higher occupational achievement that gives people the resources to volunteer as well as the self direction that is conducive to social participation (Smith, 1994; Wilson & Musick, 1997). Another consistently strong predictor of volunteerism is belonging to a religious organization. The Independent Sector from its biannual national surveys

has consistently reported belonging to a religious organization as greater among volunteers than nonvolunteers (www.independentsector.org; April 22, 2003). Penner (2002) found the correlation so strong between religiosity (how religious they were) and volunteerism that he suggests that some measures of religiosity be included in comprehensive studies of volunteerism. The factor of Helpfulness, a measure of prosocial action on the Prosocial Personality Battery, has been found to have a high correlation with prosocial behavior, organizational citizenship performance, and volunteerism in a number of recent studies (Borman et al., 2001; Penner, 2002; Penner, Fritzsche, Craiger, & Freifeld, 1995). This study examined these individual factors in relation to the OCB of volunteering for CPR/AED training.

2Ho: There are no differences among organizational-level factors in predicting who among employees will exhibit the organizational citizenship behavior of volunteering for CPR/AED training.

$2H_1$: Among organizational-level factors, the factors of job satisfaction, perceived organizational justice/fairness, and job autonomy/self-direction are the best predictors of employees who will exhibit the organizational citizenship behavior of volunteering for CPR/AED training.

Initial and subsequent research on organizational citizenship behavior has found job satisfaction to be a major predictor of OCB (Bateman & Organ, 1983; Organ & Ryan, 1995; Smith et al., 1983). Additionally satisfaction has been found to correlate with other organizational factors that correlate with OCB including organizational justice or fairness. A number of studies have sought to better understand the relationships among satisfaction and fairness, and OCB. One of these studies found organizational fairness to have the more fundamental relationship with OCB than job satisfaction (Fahr et al., 1990). This same study also found job autonomy/self-direction to have a more fundamental relationship with OCB than satisfaction. Recently Wilson and Musick (1997) found job autonomy/ self-direction to be a

strong primary predictor of volunteerism. This study examined these three organizational-level factors in relation to the OCB of volunteering for CPR/AED training.

3Ho: Individual factors and organizational factors do not differ in their ability to predict employees who will exhibit the organizational citizenship behavior of volunteering for CPR/AED training.

$3H_1$: Organizational-level factors are better predictors of the organizational citizenship behavior of volunteering for CPR/AED training among employees than are individual-level factors.

An extensive body of literature, since 1983 and the establishment of the OCB concept, has shown that organizational level-factors predict organizational citizenship behavior (Organ & Ryan, 1995). A growing number of studies have found individual-level factors to predict organizational citizenship behavior, accounting for variance beyond that attributable to organizational variables; consistently, however, they report organizational-level factors to be the stronger predictor category (Borman et al., 2001; Penner, 2002; Penner et al., 1997; Penner & Finkelstein, 1998). This study examined the relationship of both categories of factors to the OCB of volunteering for CPR/AED training.

CHAPTER 2

LITERATURE REVIEW

Introduction

In this chapter, literature relevant to this study is reviewed. This literature review was the guiding framework for this study whose purpose was to examine individual- and organizational-level predictors of a health-related organizational citizenship behavior (OCB) in a federal work site. The specific OCB studied was volunteering for and being trained in cardiopulmonary resuscitation/automated external defibrillation (CPR/AED).

OCB itself is conceptualized as behavior that is beyond job task requirements and is discretionary. Penner, et al. (1997) and Penner (2002) have presented persuasive evidence that OCB and volunteerism are conceptually and operationally similar, and, thus, studies concerned with OCB would be informative about volunteerism and vice versa. Therefore this is a review of factors that have been identified as predictors or correlates of OCB and volunteerism. Additionally, because the study focused specifically on volunteering for training in AED usage, literature on lay persons trained in AED was included.

Concepts and Definitions

OCB was first referred to as a distinct variable by Smith, Organ, and Near (1983) (Bateman & Organ, 1983; Organ & Ryan, 1995) to describe a category of performance not explained by usual employment incentives. Smith and colleagues trace OCB's roots to Katz in 1964 who identified three basic behaviors essential to organizational functioning: (1) that employees need to be recruited and retained; (2) that they must carry out job tasks in a

dependable way; and (3) that there must be positive activity that goes beyond task requirements. OCB is that positive activity. OCB is defined as performance in a workplace that is discretionary, extra-role behavior that is not compensated for by the organization's formal reward system, but contributes to organizational efficiency, effectiveness, and functionality by shaping the social context that supports job tasks (Organ, 1988; Organ & Ryan, 1995; Williams & Anderson, 1991). OCB is often described as having five dimensions. The original two dimensions are altruism (helping other individuals) and generalized compliance (more impersonal form of conscientious citizenship) (Smith et al., 1993). Generalized compliance, compliance, and conscientiousness are interchangeable terms in the literature for this OCB-dimension. The three additional dimensions are courtesy (efforts to prevent problems with associates or co-workers), sportsmanship (willingness to bear minor, temporary personal inconveniences without complaints), and civic virtue (constructive involvement in the organization's issues and governance) (LePine et al., 2002; Organ, 1988). LePine and colleagues conducted a meta-analysis of OCB dimensions using 37 studies since 1983 (with 395 effect sizes and a total sample size of 16,330). Their overall findings were that, except for sportsmanship, the dimensions of OCB are highly related to each other (internal reliability consistency of .70), that the five dimensions are essentially equivalent indicators of OCB, and that, perhaps, OCB should begin to be thought of as a latent construct.

OCB can be personalized as the good soldier in an organization (Bateman & Organ, 1983; Kidder & Parks, 2001), that is, the person with the good attitude, who puts forth extra effort, who is just so pleasant to work with, who takes part in the policies of the organization, who follows the rules, who defends the organization, or who volunteers to help fellow employees or the organization itself.

Organ (1997; Organ & Paine, 1999) removed his descriptive limitation on OCB as related only to extra-role behavior, recognizing that OCB enters into performance assessment and that the nature of organizations, jobs, and roles is changing (e.g., emphasis on teams and team work). Organ related his revised conceptualization of OCB as similar to Borman and Motowidlo's (1993) and Motowidlo and Van Scotter's (1994) construct of contextual performance or citizenship performance (Borman et al., 2001), interchangeable names for activities that contribute to organizational effectiveness beyond the activities that comprise the job tasks. Tepper, Lockhart, and Hoobler (2001) provided additional support for not restricting OCB to extra-role behaviors in their study of employees' own role delineations (as in role or extra role) as a moderator in the relationships between employees' perceptions of procedural justice and performance of OCBs. LePine et al. (2002) discussed proposed models of OCB from Coleman and Borman (2000) and Williams and Anderson (1991) based on the target of the behavior, the individual (OCBI) or the organization (OCBO). OCBI includes the dimensions of altruism and courtesy; OCBO includes the dimensions of compliance, sportsmanship, and civic virtue. LePine and associates provided an extensive historical overview of studies through 2000 that traces the development of constructs that attempt to capture the highly similar domains of OCB and contextual performance/citizenship performance.

Penner (2002) defined and described volunteerism as having four salient attributes: longevity, planfulness, nonobligatory helping or prosocial behavior, and in an organizational context. It differs from bystander helping behavior which he defined as short-term, unplanned, sometimes obligatory, and situational. Prosocial behavior is helping, altruistic cooperative behavior that is beneficial to others (Gagné, 2000; Schroeder, Penner, Dovidio, & Piliavin, 1995). Brief and Motowidlo (1986) described prosocial behavior as acts of helping, sharing,

donating, cooperating, and volunteering, or positive social acts performed to produce and maintain others' wellbeing. For some researchers, prosocial behavior requires that the person perform the behavior without expected reward or recognition (Schroeder et al., 1995). Brief and Motowidlo suggested a broad working definition of prosocial behavior in an organizational setting that includes acts performed by a member of an organization, directed toward an individual, group, or organization with whom he or she interacts while carrying out his or her organizational role, and performed intending to promote the welfare of the individual, group, or organization toward whom it is directed. Penner, Midili, and Kegelmeyer (1997) concluded that volunteerism is a conceptually related phenomenon to OCB and that what is known about one can be applied to the other.

Based on these definitions and descriptions in the literature of organizational citizenship behavior and volunteerism, volunteering for CPR/AED training in the workplace can be viewed as a form of prosocial organizational citizenship behavior. The characteristics of volunteerism--planning (preparing), to provide nonobligatory assistance to a colleague(s) or stranger(s) in distress, in the future, in an organizational context is an OCB. Moreover, it involves going beyond job role requirements, at one's own discretion, without formal compensation, for training that will contribute to organizational effectiveness and functionality. Therefore, the variables and their relationships described in empirical literature that measure and predict organizational citizenship behavior should be applicable to understanding who volunteers for and is trained in CPR/AED in the workplace.

Major Predictors of OCB/Volunteerism

In general, research suggests that the major correlates of OCB and related types of volunteerism and extra-role behavior in organizations can be classified into two large categories:

individual- and organizational-level variables. The individual-level variables include demographics, personality/disposition, and religiosity. The terms, personality and disposition, (Organ & Ryan, 1995) are used interchangeably for personality or long-term traits of the individual. Personality as studied in OCB has addressed the Big Five personality elements (agreeableness, conscientiousness, extraversion, neuroticism, and openness), other-oriented empathy and helpfulness (Penner, 2002), and positive and negative affectivity (Borman et al., 2001; Organ & Ryan, 1995). Demographic variables have included age, gender, education, income, ethnicity, geographic background, and marital status (Gillespie & King, 1985; Penner, 2002). Religiosity is also considered an individual-level variable (Penner, 2002).

The organizational-level category consists of situational and organizational attitude variables. Situational variables include type of job (professional, manager, white collar, blue collar), tenure, full-time/part-time/permanent/temporary positions, and job design or task scope. The organization attitudinal variables include perceived job satisfaction, job stress, organizational justice or fairness, job autonomy, job self-efficacy, job impact, job commitment, leader supportiveness, and job security. These organizational variables reflect the domains of job design, organizational climate, and job future dimensions specified by DeJoy and Wilson (2003) in their model of organizational health promotion.

Individual-Level Predictors of OCB/Volunteerism

Demographic Variables

According to surveys of volunteerism in the United States, just under 50% of the U.S. population volunteer. Wilson and Musick (1997) in their Americans' Changing Lives [Panel] Survey report volunteerism levels of 49.8% for time 1 (1986) and 49.3% for time 2 (1989). The Independent Sector (www.independentsector.org; April 10, 2003) found, from its national

surveys, volunteerism levels of 54.4% (1989), 51.1% (1991), 47.7% (1993), 48.8% (1995), 55.5% (1998), and 44% (2000). In a recent study of volunteers, Penner (2002) found that the demographic block of variables contributed significantly to number of organizations (R^2 =.045, p<.001) and length of time as a volunteer (R^2 = .085, p<.001), but not for amount of time spent volunteering. Smith (1994), in a review of studies for the period 1975-1992 on demographic determinants of volunteering, concluded that persons most likely to volunteer are those who hold the most dominantly preferred social characteristics: male, married, long-term residents, employed and highly paid, with high occupational prestige and higher levels of education.

Gender. Findings regarding gender as a predictor of OCB/volunteerism have been mixed. Unlike Smith, the Independent Sector, in its biennual surveys, routinely has found the majority of volunteers to be women. Most recently, the Independent Sector's 7th biennial survey (telephone data collection from 4,000 persons for the period May through July 2001) (www.Independentsector.org; April 10, 2003) found that among the estimated 83.9 million adults who volunteer, more women (46%) than men (42%) volunteer. Penner's (2002) study of more than 1,100 volunteers found 77% of respondents were women, albeit this was not a randomly selected sample. However, when he separated those who had volunteered in the previous 12 months from those who had not, gender did not correlate with any of his three aspects of volunteerism (number of organizations, length of service, or amount of time). In contrast, Happel (1998) in a study of 121 American Red Cross volunteers found a significant difference between males and females in the number of hours volunteered, with males spending more time than females. Although this was a small sample, the results are important to the proposed study because they are from American Red Cross (ARC) volunteers. The American Red Cross reports training 11 million persons per year in vital life saving skills that include

CPR/AED (www.redcross.org/news/ds/training/030407workplace.html; April 7, 2003). Organ and Ryan (1995) looked at gender as a predictor or possible moderator variable of OCB in their meta-analysis of 55 studies. They reported that few studies actually reported *F* or *t* tests of differences in OCB between men and women, or correlations with gender. In their meta-analysis, gender did not predict OCB-altruism, which is sometimes viewed as a feminine dimension of OCB. Sweeney and McFarlin (1997) found gender differences associated with the interactions of distributive and procedural justice and job satisfaction, major predictors of OCB. Procedural justice seemed to have a greater impact on women's job satisfaction than on men's, whereas distributive justice seemed to have a greater impact on men's job satisfaction than on women's.

Kidder (2002) purported conducting the first study to examine the relationships between gender and performance of OCBs. She hypothesized that gender (male/female) would be related to the performance of gender–typed OCBs (for females, positive relation to OCB-altruism; for males, positive relation to OCB-civic virtue); that gender orientation (masculine/feminine) would be related to performance of gender-typed OCBs (being feminine, positive relation to OCB-altruism; being masculine, positive relation to OCB-civic virtue); and that gendered occupation would be related to the performance of gender-typed OCBs (nurses, related to OCB-altruism; engineers, related to OCB-civic virtue). Results partially supported that gender relates to gender-congruent OCBs in that females were less likely to report performing OCB-civic virtue than males. Also occupational identity was related to reports of gender-congruent OCBs, i.e., nurses were more likely to report female-related OCB-altruism and less likely to report the male-related OCB-civic virtue, whereas engineers were less likely to report OCB-altruism and more likely to report OCB-civic virtue. The gender by occupation interaction was not significant for OCB-altruism, but was significant for OCB-civic virtue (i.e., male nurses were more likely to report

OCB-civic virtue than female nurses. The study is relevant to this current study because women may consider CPR/AED training to be a male-related OCB. Gillespie and King (1985), in an earlier study of American Red Cross volunteers, found that the second most important reason given for volunteering was to obtain training and skills. In their study, twice the percentage of men than women as well as younger volunteers (≤38 years of age) gave this employment-related reason for volunteering. This raises the issue of whether men and younger employees will see training in CPR/AED as career enhancing, and as such will be more likely to volunteer and be trained in CPR/AED than women and older employees.

Education. Happel (1998) found persons who had completed high school and some college volunteered more hours. She found that different educational levels related to the different types of tasks people volunteered for. Having a professional degree and higher income was predictive of volunteering for administrative tasks. Some high school and some college were predictors of disaster work. No schooling and the importance of family support were predictive of volunteering for combined tasks (administrative, disaster work, other). This raises the question of how CPR/AED training is perceived. For example, if it is perceived as disaster work, it may attract persons with less than a full college education and fewer professionals. Penner (2002), in his study of volunteers, found that 48% had completed some college. When he separated out active (having volunteered in the last 12 months) versus non-active volunteers, education correlated, significantly and positively, with number of organizations worked for, length of service at the primary organization/agency, and amount of time as a volunteer at that organization/agency. Wilson and Musick (1997) found education to be one of the two most important factors associated with who volunteers, and recommended that education should be included as a variable in studies of volunteerism.

Age, income, and race/ethnicity. Age seems to be related to number of organizations and hours of volunteerism. Happel (1998) found age to be a significant predictor of hours of volunteerism, with the number of hours higher among older people. Penner (2002) also found that age correlated, significantly and positively, with number of organizations and length of time spent working for that organization. Penner (2002) found that 48% of volunteers had a family income of $40,000 or more, but employment was not specified in this study. Happel (1998) found that persons who were employed full time volunteered fewer hours, perhaps explaining the relationship between age and number of hours volunteering. Penner (2002) reported that income correlated, significantly and positively, with number of organizations volunteered for. Ethnicity also seems to play a role in who volunteers. Happel (1998) found Caucasians, as compared with African Americans or Hispanics, were more likely to contribute a higher number of hours volunteering. Penner (2002) also reported 90% of his volunteers to be of European ancestry.

Summary–Demographic Variables

The research on gender as related to volunteerism is mixed with some sources finding that men volunteer at higher levels than women. Gender may also come into play regarding who volunteers based on employees' perception of CPR/AED training as a behavior relevant to men or to women, and/or (2) as an activity that will enhance employment. Collectively, studies would suggest that educational level plays an important role in who volunteers, and that the more highly educated are more likely to volunteer, perhaps, because education has positioned them to know more about the needs of the community and the organization, to have not only the skills but also the resources to volunteer, and to have jobs that allow them to engage in volunteer activities. Age seems to be related to the number of organizations people volunteer for and length of time they have volunteered. Income also seems to influence who volunteers. Socioeconomic status should

be considered in studying the influence of ethnicity on volunteerism. Therefore the current study included measures to collect individual-level data on gender, education, age, income, and ethnicity, as well as voluntary behaviors.

Religiosity

Penner (2002) examined religiosity in his study of influences on sustained volunteerism. Of the persons who responded to the electronic survey, 60% were Protestant or Catholic, 25% belonged to other religions, and 15% reported not belonging to an organized religion. Religiosity correlated with all three aspects of volunteerism (more organizations volunteered for, length of time being a volunteer, and amount of time spent in volunteering). The stronger the religiosity beliefs the more organizations they volunteered for, the longer they had been a volunteer, and the more time they spent as a volunteer. These same patterns of relationships held when respondents who worked for religious organizations were excluded. The religiosity variable was so strongly associated with volunteerism that Penner suggested that some measure of religiosity be included in comprehensive studies of volunteerism.

In the Independent Sector's survey data from 2001 (www.Independentsector.org/media; April 22, 2003) and their report *Faith and Philanthropy,* volunteers were more likely to belong to religious organizations than non-volunteers (75.6% vs. 58.0%); 54% of volunteers served secular organizations, 25% volunteered at religious congregations, and 20% volunteered at both. Wilson and Musick (1997) found volunteering was highest for religious organizations (28.5%), followed by educational (20.3%), other (17.9%), senior citizen (9.9%), and political (7.6%) organizations. Based on Penner's and the Independent Sector's findings, the current study collected data on the religiosity of employees and on religious organization membership.

Personality/Dispositional Variables

The best known and most extensive attempt to relate personality/disposition correlates with OCBs is Organ and Ryan's (1995) quantitative, meta-analysis of 55 studies from 1983 through 1994. The personality/dispositional variables examined were conscientiousness, agreeableness, and negative and positive affectivity. Organ and Ryan hypothesized that the mean estimated population correlations between personality/dispositional measures and OCB would be greater than those between organizational/attitudinal variables and OCB. The meta-analysis did not support their hypothesis. The personality/dispositional variables, with the possible exception of conscientiousness, did not correlate as well with OCB as did the organizational/attitudinal variables. The personality/dispositional variable of conscientiousness correlated with OCB almost to the same extent as the organizational/attitudinal variable of job satisfaction. However, when self- report studies were excluded, the correlation was reduced. This suggested that self-report acts as a moderator which inflates the level of association between conscientiousness (the personality trait) and OCB. Organ and Ryan did not disparage individual personality/ dispositional variables as predictors of OCB. They proposed that organizational/attitudinal measures might predict OCB extra-role or contextual performance to the extent that they load on a general morale factor "m" that is similar to the "g" factor (knowledge and intelligence) recognized in predicting in-role behavior. Then personality/disposition enters into OCB to the extent that differences in innate temperament or stable personality factors, directly or indirectly, contribute to differences in this "m" factor.

Borman and colleagues (2001) analyzed 20 additional studies, since Organ and Ryan's meta-analysis, that examined relationships between OCB and individual personality/dispositional variables (conscientiousness, agreeableness, negative and positive affectivity, extraversion, locus

of control, collectivism, other-oriented empathy, and helpfulness). They found higher mean uncorrected correlations between the four dispositional variables (conscientiousness, agreeableness, positive affectivity, and negative affectivity) and OCB than those reported by Organ and Ryan. Borman and colleagues also found other-oriented empathy and helpfulness, the two measures of personality/disposition from the new Prosocial Personality Battery (discussed below) to correlate higher with OCB than the Big Five Personality dimensions -- neuroticism/emotional stability, extraversion (includes excitement seeking), openness (or intellect), agreeableness (includes altruism), and conscientiousness (Barrick & Mount, 1991). They concluded that individual-level personality/dispositional variables do contribute to predictions of OCB.

The Prosocial Personality Battery

Borman and colleagues (2001) were successful in identifying personality/dispositional contributions to OCB, largely because of the new inventory for measuring these variables: the Prosocial Personality Battery (PSB). The PSB was the product of work by Penner, individually (Penner, 2002), and with collaborators (Penner, Fritzsche, Craiger, & Freifeld, 1995; Borman et al., 2001), to study the personality/dispositional correlates of volunteerism and organizational citizenship behavior. These researchers considered prosocial behavior as too complex to be adequately predicted by one personality characteristic. Organ (1994) had also suggested that personality factors related to OCB needed to be measured with a constellation of dimensions rather than using one dimension from the Big Five Personality dimensions. Penner et al. (1995) undertook to develop the Prosocial Personality Battery. Through a comprehensive literature search, they looked for personality scales that had a theory or model to explain why the personality characteristic should be associated with prosocial tendencies. Their resulting PSB

currently is made up of 30 items from its original 128. The items load on two factors: Other-oriented Empathy and Helpfulness (Borman et al. 2001, Penner et al., 1995; L. A. Penner, personal communication, January 6, 2003; Penner, 2002). On the PSB 22 items measure Other-oriented Empathy and eight items measure Helpfulness. Other-oriented Empathy is characterized as experiencing empathy, responsibility, and concern for the well being of others (i.e., prosocial thoughts and feelings). Helpfulness is characterized as a self-reported history of helpful actions with an absence of personal physical reactions to the distress of others (i.e., prosocial behavior).

Penner and colleagues (1995) reported that scores on both factors were significantly correlated with the intent to volunteer. They reported that data, collected from use of the PSB among employees in a retail chain, showed that both factors correlated significantly with the employees' self-reports of prosocial behavior. According to Penner and colleagues, scores on Helpfulness among volunteers were significantly higher for volunteers who had worked for multiple charities.

Penner and colleagues (1995) also reported on the correlations between the PSB factors and (1) the Big Five Personality dimensions of neuroticism/emotional stability, extraversion (includes excitement seeking), openness (or intellect), agreeableness (includes altruism), and conscientiousness (Barrick & Mount (1991), and (2) the Wiggins personality model's dimensions of Dominance and Nurturance. Penner and his associates expected that Other-oriented Empathy and Helpfulness would correlate with Agreeableness among the Big Five. They report that Other-oriented Empathy showed the expected significant correlation with Agreeableness (r=.52, p<.001); however, Helpfulness did not (r =.11, ns). They reported results from an unpublished study that Other-oriented Empathy (r=.52, p<.001) and Helpfulness (r =.23, p<.01) correlated with Nurturance; Helpfulness also was correlated significantly with

Dominance ($r = .34$, $p < .01$). Data from another unpublished study yielded a significant correlation between Other-oriented Empathy and Nurturance ($r = .61$, $p < .01$), but not between Helpfulness and Nurturance ($r = .01$, ns). Again, Helpfulness was significantly related to Dominance ($r = .34$, $p < .01$). The findings that Helpfulness did not correlate significantly with Agreeableness or Nurturance but did with Dominance seemed contradictory. Penner speculated (1) that people who score high on Helpfulness engage in prosocial actions only when they believe their actions will be effective (impact) and (2) that there is a small but significant correlation between the scores for the Helpfulness factor and a sense of self-efficacy. This led Penner and colleagues to conclude that Helpfulness may be a better predictor of prosocial behavior than the Other-oriented Empathy factor because of self confidence and self-efficacy, which are more strongly associated with Helpfulness. Their second conclusion was that persons engage in prosocial actions because of what it does for them rather than what it does for other people. In other words, prosocial actions may be a way for them to demonstrate self-efficacy.

Penner and colleagues (1997) discussed findings from two studies that found significant and unique variance in OCB attributable to individual personality/dispositional measures. In the first study, employees of a retail store completed a survey of measures of Other-oriented Empathy and Helpfulness, mood, job satisfaction, and a scale developed to measure OCB-altruism and OCB-compliance. Other-oriented Empathy correlated significantly with both OCB-altruism and OCB-compliance. Helpfulness correlated significantly with OCB-altruism. They then conducted a hierarchical multiple regression for OCB in which the measures of mood and job satisfaction were entered first followed by the measures of Other-oriented Empathy and Helpfulness. Both PSB measures accounted for significant and unique variance in the prediction of OCB-altruism. Other-oriented Empathy accounted for significant and unique variance in

OCB-compliance. The second study replicated the first study but substituted organizational justice (fairness) for job satisfaction as the organizational/attitudinal factor. Again, both Other-oriented Empathy and Helpfulness correlated significantly with OCB-altruism. Other-oriented empathy correlated significantly with OCB-compliance. In the hierarchical multiple regressions, both dimensions accounted for unique variance in the OCB-altruism dimension. Other-oriented Empathy accounted for unique variance in OCB-compliance. Penner and his colleagues concluded that these studies found substantial and replicated relationships between personality/dispositional measures and OCB using the PSB in contrast to other studies that used traits from the Big Five Factor Personality Model. They proposed that Other-oriented Empathy and Helpfulness are more directly relevant to prosocial actions (including OCB) than are those measured by the Agreeableness dimension of the Big Five. They further proposed that the prosocial variables of Other-oriented Empathy and Helpfulness account for variability that cannot be accounted for by organizational/attitudinal variables. Wilson and Musick (1997) reported the individual personality/dispositional variable of altruism to be higher among volunteers, after accounting for education (discussed above) and work-related variables (discussed below).

Summary–Personality/Dispositional Variables

Organ and Ryan (1995) did not find individual-level factors of personality/disposition to correlate with OCBs with the possible exception of conscientiousness. More recent research, using the new PSB inventory that measures Other-oriented Empathy and Helpfulness, however, has documented variance in OCB attributable to dispositional/personality variables beyond variance in OCB attributable to organizational-level variables. Effectiveness or impact and self

efficacy may play roles in how Helpfulness contributes to OCB. The current study included the Helpfulness measure from the PSB to assess personality/disposition and OCB.

Organizational-Level Predictors of OCB/Volunteerism

There is an extensive body of literature on organizational-level predictors of OCB. These organizational variables are sometimes classified as situational, attitudinal, or morale factors. Paramount among organizational correlates or predictors of OCB is job satisfaction (Organ & Ryan, 1995). Penner (2002) also found that satisfaction with the voluntary organization relates to aspects of volunteerism, i.e., length and amount of time volunteering. Two premises underlie the relationship between job satisfaction and OCB (Organ & Ryan, 1995). The first premise is an assumption that satisfaction represents an assessment of the work context and environment and is a way for the employee to maintain equilibrium in their social-exchange contract with the employer. OCB results from the employee's assessment of how s/he is treated by the employer and is a way for the individual to maintain equilibrium with the employer, by paying back through OCB (Bateman & Organ, 1983; Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Thus, satisfaction relates to OCB to the extent that it reflects the employee's assessment of fairness. The second premise is that job satisfaction is a reflection of the positive affective state or trait (Smith et al., 1983) or morale of the employee that results in OCB (Bateman & Organ, 1983).

Job Satisfaction, Organizational Justice/Fairness, Organizational Commitment, and Leader Supportiveness

Organ and Ryan (1995), in their meta-analytic study of OCB research since 1983, analyzed job satisfaction, perceived fairness/organizational justice, organizational commitment, and leader supportiveness/leader consideration as correlates (predictors or moderators) of OCB overall, and by its five constituent dimensions of altruism, compliance, courtesy, sportsmanship,

and civic virtue. Organ and Ryan (as discussed previously) hypothesized that correlations between individual-level measures and OCB would be greater than correlations between organizational-level measures and OCB. This hypothesis was not supported. Instead organizational-level measures correlated more strongly with OCB than individual-level (personality/dispositional) variables. This meta-analysis did not find that any one organizational/attitudinal measure (satisfaction, fairness, organizational commitment, or leader supportiveness) was a superior predictor of OCB compared to the others. The organizational/attitudinal measures were also highly correlated with each other. Organ and Ryan suggest that these attitudinal measures might overlap to capture a work-relevant psychological state of morale (m) that predicts OCB (extra-role performance) that is similar to the general (g) factor wherein cognitive ability is the best predictor of task or in-role performance.

LePine and colleagues (2002), in their meta-analysis of OCB literature, also examined relationships between the OCB dimensions and various organizational-level predictors (e.g., job satisfaction, fairness, commitment, leader support, and conscientiousness). They reported that the overall relationship between these predictors of OCB does not depend on how OCB is behaviorally defined (altruism, compliance, courtesy, sportsmanship, and civic virtue). They found these relationships to be somewhat smaller than those reported by Organ and Ryan (1995). For all predictors, the relationships with OCB were not the same in terms of effect sizes, indicating the possibility of moderators. LePine and colleagues identified 19 studies with correlations between predictors and a measure of OCB which allowed them to compare predictors with dimensions of OCB and with the overall measure of OCB. They like Organ and Ryan found the predictive relationships with the overall OCB to be as good or better than with the individual dimensions. Their overall finding from their meta-analysis is that most of the

dimensions of OCB are highly related to each other with no apparent differences in relationships with the most frequently used organizational-level predictors. They offered the caveats of same source limitations, insufficient domain research, and low statistical power in some studies.

Interrelationships Among Job Satisfaction, Organizational Justice/Fairness, and OCB

Researchers have attempted to understand the interrelationships among satisfaction, fairness, and OCB. Organ and Ryan's (1995) hypothesis that fairness would be a better predictor of OCB-altruism than satisfaction, however, was not supported. Specifically, the uncorrected *r* for satisfaction was .237 and for fairness, .185. This conflicts with results from Farh, Podsakoff, and Organ (1990). Farh and associates argued that a half century of research has found job satisfaction to correlate with many variables including equity of outcomes (fairness) and task scope characteristics. They proposed that the correlation between satisfaction and OCB might reflect a more fundamental relationship between a strong correlate of OCB that also correlates with satisfaction. Thus, satisfaction would correlate with OCB, but not to the extent that this fundamental variable would. They reported that many studies document a correlation between fairness and OCB, specifically, (1) Dittrich and Carrell's (1979) finding that fairness correlated more strongly with less absenteeism (OCB) than satisfaction did with less absenteeism, and (2) Scholl, Cooper, and McKenna's (1987) finding of pay fairness correlating higher with OCB extra-role performance (r=.41) than satisfaction with OCB extra-role performance (r=.19). Farh and colleagues also reported the correlations of various task scope characteristics (e.g., job variety, feedback, autonomy, significance, variety, and identity) with satisfaction. They hypothesized that fairness and/or task scope (job autonomy) would have the stronger, more fundamental relationship(s) to OCB than satisfaction. Using hierarchical multiple regression, they tested for unique variance from fairness, task scope, and satisfaction on OCB. They found

fairness to account for unique variance in OCB-altruism beyond satisfaction (change in R^2 =.079, p <.01), but not for OCB-compliance. They found task scope to account for unique variance when entered into the model after both satisfaction and fairness (change in R^2=.042, p<.01). In contrast, satisfaction did not add significantly to variance (1) when entered after fairness or (2) when entered after fairness, followed by task scope. Satisfaction added to the variance (change in R^2= .021, p<.05) when entered after the task measures. They concluded that the relevant causal variables related to OCB are fairness and task scope, and that satisfaction and OCB correlate because they are common effects of fairness and task scope.

Dimensions of Organizational Justice/Fairness

Organizational justice, i.e., fairness in the workplace, has been studied primarily as (1) distributive justice (i.e., fairness of outcome distributions) and (2) procedural justice (i.e., fairness of the procedures used to determine outcome distributions) (Colquitt, Conlon, Wesson, Porter, and Ng, 2001). Colquitt and colleagues conducted a meta-analytic review of organizational justice research between 1975 and 1999 that included 183 studies. They examined the relationships among the distributive and procedural dimensions of organizational justice and several other predictors of OCB, including outcome satisfaction (with pay, promotions, and evaluations), overall job satisfaction, and organizational commitment. The correlations of these predictors with OCBO and OCBI were also assessed. Distributive justice had high correlations with outcome satisfaction (r_c=.61), job satisfaction (r_c=.56), and organizational commitment (r_c=.51); moderate correlation with OCBO (r_c= .25); and weaker correlations with OCBIs (r_c=.15). Similarly, procedural justice had high correlations with outcome satisfaction (r_c=.48), job satisfaction (r_c=.62), organizational commitment (r_c=.57); moderate correlations with OCBO

(r_c=.27); and weaker correlations with OCBI (r_c=.22). They concluded that the distributive and procedural dimensions of organizational justice each contribute uniquely to fairness perceptions.

Williams, Pitre, and Zainuba (2002) looked at the influence of distributive (the organizational reward system), procedural (the organization's decision making procedures) and interactional (fair treatment by supervisors) justice on the intention of employees from a variety of industries to perform OCB. Their results found distributive, procedural, and interactional justice to correlate significantly with OCB intentions: interactional justice at r=.45, p<.001; procedural justice at r=.31, p<.001; and distributive justice at r = .24, p<.05. When the shared variance was partialed out by hierarchical regression analysis, interactional justice emerged as the predictor of OCB.

Tenure

In Organ and Ryan's (1995) meta-analytic study of dispositional and attitudinal variables and OCB, tenure with the organization did not predict OCB as they had hypothesized. They also had hypothesized that the relationship between fairness and OCB-compliance would be moderated by tenure, age, gender, rank, or restriction in range of OCB. They found no evidence to support this hypothesis. Penner et al. (1995) reported results from Penner and Fritzsche's 1993 study using the PSB to distinguish between volunteers and non-volunteers. Scores on both Other-oriented Empathy and Helpfulness were higher for volunteers who had worked longer (tenure) for the charity (≥6 mos. versus > 6 months). In Penner and Finkelstein's (1998) study of determinants of volunteerism, length of service (tenure) was significantly and positively correlated with Helpfulness (r = .21), Other-oriented Empathy (r = .21), and organizational satisfaction (r=.20).

Job Autonomy/Self-direction, Job Type, and Occupational Site

Wilson and Musick (1997) in their two-panel study (1986 and 1989) examined relationships between self-directed work and volunteerism. Their sample included 1,502 people employed full-time at the time of the first interview. Their independent variables were (1) occupational categories (professionals, managers and administrators, sales and clerical, blue collar-- craft workers, service workers, and operatives); (2) occupational situs (self-employed, private firm, and government agency); (3) work hours (number of many weeks worked in the past year and average number of hours worked per week), (4) volunteer index (summary of church, synagogue, other religious organization; school or educational organization; political group or labor union; senior citizen group; and other national or local organization); (5) education (total years from 0-17), and (6) altruism. Data were acquired from respondents, interviewed in their homes by persons from the Survey Research Center of the University of Michigan. Analyzing data from the second panel, Wilson and Musick reported volunteering to be highest among government employees, followed by self-employed, and then private industry for all job categories of employees. They also found that self-direction (job control/autonomy) was an important variable regarding who volunteers. Occupational self-direction increased volunteerism especially among the better educated. Volunteerism was highest among those who considered themselves self-directed, accounting for about one-third to a half of the occupational differences. Part of the reason blue collar workers volunteer less is that their jobs afford them less autonomy. Within each occupational site, higher-status occupations volunteered more. They concluded that self direction provides the resources necessary to be a volunteer; that public sector employees may be more exposed to community problems and the needs of people for help, resulting in their high rates of volunteerism; and that in all three employment sectors,

managers are more likely to volunteer than blue collar workers. Farh and colleagues (1990) had also found task scope (which includes job autonomy) to correlate with OCB.

Summary—Organizational-level Predictors

Tenure has not been found to be a predictor of OCB but has been associated with the dispositional factors of Helpfulness and Other-oriented Empathy in predicting length and amount of volunteerism. Job autonomy (a dimension of job design) appears to be an important predictor of who volunteers and who demonstrates OCB. Job satisfaction and perceived fairness also have been found to correlate with and predict OCB. There appears to be some evidence that both fairness and job autonomy may have a stronger fundamental relationship with OCB than satisfaction, but that the relationships are clouded due to their high correlations with job satisfaction. The relationships among fairness, satisfaction, and OCB are complicated also by the three dimensions of fairness (organizational justice: distributive, procedural, and interactional) and their relationships to two dimensions of OCB—OCBI (directed to individuals) and OCBO (directed to the organization). Two large, recent meta-analytic studies, however, found that the five dimensions of OCB correlated highly with each other and no one dimension correlated with the OCB predictors better than with an overall measure of OCB. A third large meta-analytic study of organizational justice and its dimensions found all dimensions to correlate highly with OCBs and job satisfaction. Therefore measures of job satisfaction, distributive and procedural justice/fairness, tenure, and job autonomy, as well as self efficacy and job impact (related to Helpfulness and job autonomy) were included in the current study.

Lay Users of Automated External Defibrillators

The Automated External Defibrillator is a new technology as is the idea of public placement of AEDs for operation by the lay public. Most research to date has focused on

comparing survival rates among persons resuscitated by the different categories of personnel whose occupations have presented them with the equipment, training, and opportunity to perform CPR/AED. These have included a range of first responders beyond paramedics such as firefighters (Gerhardt, 1999), police (Ross, Nolan, Hill, Dawson, Whimster, & Skinner, 2001; Groh, Newman, Beal, Fineberg, & Zipes, 2001), flight attendants (Page et al., 2000) security guards (Valenzuela, Roe, Nihol, Clark, Spaite, & Hardman, 2000) , and fitness instructors (Balady, Chaitman, Foster, Froelicher, Gordon, & VanCamp, 2002). Several studies have addressed survival rates among persons resuscitated by young people (Gundy, Comess, DeRook, Jorgenson, & Bardy, 1999; Lawson & March, 2002), and elderly persons or elderly spouses (Meischke, Rea, Eisenberg, and Rowe, 2002). Riegel (1998), in her overview of training nontraditional responders to use AEDs, described public access defibrillation as use of AEDs by people other than paramedics and traditional first responders such as firefighters, police, or flight attendants. She described three levels of nontraditional responders. Level 1 refers to people such as lifeguards, security guards, health club facility staff. Level 2 refers to laypersons such as family members of persons at risk for heart attack. Level 3 refers to minimally trained witnesses. These persons do not have a duty to respond to medical emergencies, but who are likely to respond after being trained. Her review, however, focused on effectiveness of training of first responders and on nontraditional responders at levels 1 and 2 and offered little information to inform the proposed study. Some studies have looked at the appropriate placement of AED equipment in reducing access time to equipment (Gratton, Lindholm, & Campbell, 1999; Frank, Rausch, Menegazzi, & Rickens, 2001). Again, these are tangential to the proposed study.

Only one study was found that might inform the proposed study. Meischke et al. (2002) studied 159 senior citizens in King County, Washington, and their intention to use AEDs after

being trained. Having a dichotomous outcome, they used logistic regression (the method of analysis to be used in the proposed study) and obtained odds ratios and 95% confidence intervals for intention to use an AED and the variables of gender, age, education, and self-perceived abilities (self-efficacy). Self-efficacy was the only factor significantly correlated with intent to use the AED. As discussed above in the sections on individual-level factors and OCB, self-efficacy was related to Helpfulness, a variable that was examined in the proposed study of factors predictive of being trained in CPR/AED. One other study (Prina, White, & Atkinson, 2002) reported a favorable attitude (satisfaction) towards AEDs when the lay responder was able to restore a pulse, i.e., had an impact. Having an impact has been proposed as related to Helpfulness as a predictor of OCB.

Summary of the Literature Reviewed on Individual- and Organizational-level Predictors of OCB/Volunteerism

Organizational citizenship behavior has included the concept of volunteerism since its inception (1983), describing behaviors that are discretionary, helpful to the functioning of the worksite organization, but that are not part of the employee's job's requirements or compensated for by the organization's formal reward system. Recent studies have noted parallel and complementary characteristics between OCB and volunteerism as planned, lengthy, prosocial behavior, directed towards others/strangers, and in an organizational context. Numerous researchers have identified and documented correlations and interactions between organizational-level (situational, attitudinal, and morale) factors such as perceived job satisfaction, organizational fairness or justice (distributive and procedural), and job control/autonomy and OCB overall and by its dimensions (altruism, compliance, civic virtue, courtesy, and sportsmanship). Job satisfaction correlates with numerous other OCB predictors.

Organizational justice or fairness and its relationship to OCB has been studied principally using two of its three dimensions—distributive and procedural justice. Both are highly correlated with OCB. Task scope or job autonomy or self-direction has been found to be highly predictive of both OCB and volunteerism. Researchers continue to seek to understand the relationships and interactions among predictors themselves and with OCB.

Researchers have also sought to relate individual-level, personality/dispositional variables, including the Big Five Personality dimensions (neuroticism, extraversion, openness, agreeableness, and conscientiousness) to OCB, believing personality to be compatible with the concept of OCB as contextual performance. Fewer studies have focused on dispositional variables than on organizational variables in relation to OCB. With the possible exception of the personality dimension of conscientiousness, earlier studies found minimal correlation or effect from dispositional variables on OCB. Recently a new measure, the Prosocial Personality Battery, has been developed. Studies using the PSB have found correlations between its two dimensions of prosocial personality, Other-oriented empathy and Helpfulness, and OCB and volunteerism. They report finding additional variance in OCB attributable to dispositional factors beyond organizational variables, albeit at lower levels.

Studies of OCB and volunteerism have included demographic variables (age, gender, education, income, and ethnicity) and annual surveys of volunteerism routinely present demographic profiles of volunteers. Education has been found to be an important variable that coupled with job autonomy predicts volunteerism. Several recent studies have focused on gender and its relationship to OCB and volunteerism. There are mixed results on which gender is more likely to volunteer. Gender does seem to have a role related to reasons for volunteering, and

perhaps, type of OCB engaged in. Self-reported versus other- reported responses seem to act as a moderator in correlations between predictor variables and OCB.

In summary, based on the reviewed literature, the current case-control study examined selected individual-level variables, specifically education, religiosity, and helpfulness and selected organizational-level variables, specifically, job satisfaction, fairness, and job autonomy/self-direction as predictors of the OCB, CPR/AED training. Measures on job self-efficacy and impact were included for possible relationship to helpfulness as a predictor of OCB. No study of the relationships among these variables and CPR/AED training was identified in the literature. The selected variables of this current study were selected to determine if volunteering for CPR/AED training and being trained fits basic established variable associations with volunteerism and OCB. They were selected in an effort to offer further empirical insights as to the relative contributions of individual-level versus organizational-level variables as predictors of OCB. Finally, they were selected to provide information that would be useful to recruiting new volunteers for CPR/AED training.

CHAPTER 3

METHODS

Overview

The purpose of this chapter is to describe the methods that were used to conduct this study. The study setting, population and sample, study design, variables, data instrument, data collection procedures, and plans for statistical analysis are described. The final section presents limitations to the study and efforts to overcome them.

Organizational Context of Study

The study site was the headquarters and field sites of a large, health focused, federal agency headquartered in the Southeast. There were approximately 9,000 employees, largely Civil Service (General Schedule—GS; just over 8,500) and Commissioned Corps (CC) who are uniformed, career service medical and health science officers (just under 1,000) at this agency; 69 % worked in the headquarters area (U.S. Department of Health and Human Services, 2002). The average age of GS employees was 45.5 years, and the average length of service was 14.3 years. Among CC employees, the largest number was in the age group 46-50 years. Among GS employees 67 % were White, 24.2% Black, 3.1 % Hispanic, 5.1 % Asian/Pacific Islander, and 0.5 % American Indian/Alaskan Native. Among CC employees, 83.1 % were White, 6.7 % Black, 3.1 % Hispanic, 6.6 % Asian/Pacific Islander, and 0.6 % American Indian/Alaskan Native. Among GS employees, 40.3 % were male and 59.7 %, female, and among CC employees, 60.6 % were male and 39.4 %, female. This was a highly educated workforce. Over 70 % of the employees in this agency held a conferred undergraduate college degree (or higher)

compared with 40 % of Federal employees overall. Specifically, among GS employees at this agency, 21.0 % reported some college or occupational program education, 29.5 a college degree, 24.4 % a master's degree, and 16.2 % a doctorate level degree. Among the major occupational series (25 most populated job series) at the agency, 776 persons were classified in the Medical Officer Series, 882 in the General Health Science Series, and 887 in the Public Health Program Specialist Series. In the Secretary Series and Office Automation Clerical and Assistant Series, there were 255 and 396 persons, respectively. The overall employee/supervisory ratio was 6.2/1 (includes both GS and CC employees). The average GS grade was GS 11 Step 2 (range GS 1-GS 15). The greatest numbers of CC officers were ranked as CO-04 (210), CO-05 (232), and CO-06 (342), range CO-01 to CO-08 (U. S. Dept. Health and Human Services, 2002). In the analysis of results, representativeness of the cases and controls to the agency employee population overall would be done by generally comparing the cases and controls self-reported demographic data collected by the survey with these agency published data. (U.S. Department of Health and Human Services, 2002).

Study Design

This was a case-control study among a population of employees of a federal agency that used the agency's e-mail system and the worldwide web for data collection. The study was designed to determine relationships between selected individual- and organizational-level variables (i.e., exposures) in four categories (demographic, dispositional, situational, and organizational) and a dichotomous outcome variable, i.e., being trained (the cases) or not trained (the controls) in CPR/AED.

Study Participants

All participants in this study were employees of a federal agency. Four hundred seventy-one (471) employees of the approximately 9,000 employees had received CPR/AED training at agency headquarters. In this study, these 471 employees were separated from the overall population to form Group 1 (the cases). The Office of Health and Safety that provided CPR/AED training provided their list of trainees to a computer programmer who was a staff person in the office responsible for maintaining the agency's employee directory. This computer programmer had privileged access to employee data and was specially certified to deal with confidential information. The computer programmer pulled the e-mail addresses of persons trained in CPR/AED from the master employee directory and established them as Group 1.

Group 2 (the controls) was a systematic random sample of 1,600 (20%) employees drawn from the remaining approximately 8,500 employees (headquarters and field sites). According to a CDC case-control study expert, S. Jay Smith (personal communication, June 18, 2003), a sample of 1,600 should be considered sufficient to generate 300 responses, the number also expected from the case sample. The computer programmer selected two numbers between 0 and 9, known only to him, and from the employee directory, at every fifth employee, selected that employee or next occurring employee with one or the other of the two numbers as the last digit in his or her e-mail address. These became Group 2. If after going through the list, the sample number of 1,600 had not been reached, the list was collapsed, the computer programmer selected two new numbers and then proceeded again at every fifth employee to select that employee or next occurring employee with one or the other digit as the last digit in his or her e-mail address until the final sample size was reached (1,600). The list was collapsed several times in order to pull 1,600 names. Both groups received a prenotification e-mail about the survey

from the Director of the Office of Health and Safety and an initial survey transmittal message from the researcher, and first and second reminder messages to non-respondents, also from the researcher. The two groups received a slightly tailored questionnaire. The questionnaire format and content was identical for both groups, except for a slight modification to the instructions (Appendix A). Group 1's instructions stated "The survey should take between 7-10 minutes." Group 2's instructions stated "The survey should take less than 10 minutes." Thus, if a respondent preferred to download and mail the questionnaire to the researcher, the researcher would know whether to assign it to Group 1 or Group 2, by referring to the wording of the instructions. The electronically completed questionnaires were collected in a URL database and matched to numbers preassigned to their e-mail address by the computer program (10,000-10,471 for Group 1 and 20,000 to 21,600 for Group 2). The response data were collected as an excel program and transferred to a SAS file for data analysis. The computer program was written so that e-mail addressees who had responded would not receive reminder messages. Only the computer programmer had access and the technical skill to relate the web questionnaire to the e-mail address. During the survey a technical problem occurred between 2:15 and 2:45 on Dec. 2 when the second reminder was sent at 2 p.m. During this period, respondents called to relate their problem of not being able to submit their questionnaires electronically. Based on messages from these 18 respondents, the computer programmer was able to reset the questionnaire for these respondents and have them resubmit their questionnaires.

Participant Recruitment

A prenotification e-mail message was sent to each prospective participant in each of the two groups on Nov. 14 (Appendix B) from the Acting Director of the Office of Health and Safety explaining that they should expect to receive a questionnaire and that it was important that

they participate by completing the questionnaire. On Nov. 18 two workdays after the prenotification message, the investigator (via the system established by the computer programmer) sent an e-mail to each participant that included the embedded questionnaire URL site link (Appendix B). At no time did the investigator have access to the e-mail addresses of either the sample or the respondents. Seven days (Nov. 25) and 14 days (Dec. 2), respectively, after the first transmittal of the questionnaire, first reminder (Appendix B) and second reminder messages (Appendix B), containing the group-specific, embedded questionnaire URL site link, were sent to remaining prospective participants from the investigator. These messages were connected to the e-mail lists by the computer programmer. The two group e-mail files and URL file are being maintained for one year from the start of this study.

Data Collection Procedures

Group 1 and Group 2 were directed to click at the embedded URL site and then to complete the questionnaire on line. The questionnaires were numbered at the URL site by Group as received. These databases were transferred as an excel spreadsheet to the SAS database for data analysis. To further enhance confidentiality, participants were given the option to download the questionnaire and submit it anonymously to the researcher's office mail address.

This study's proposal received approval from the Institutional Review Boards at the University of Georgia (Project Number: H2004-10054-0, begin date 11/05/03 and end date 11/04/04) and at the federal agency (Protocol 4081, begin date 10/27/03 and end date 10/26/04). Permission to survey the employees was obtained through the Labor-Management Committee of the agency and its Deputy Chief Operating Official, Senior Advisor for Strategy and Innovation, and Chief of Staff. An overview of this study's proposal was given to the Administrative Officers for each Center in the agency.

Consent Procedures

All employees were sent a prenotification, promotional message seeking their participation in the survey. This notification described the purpose of the survey. In the e-mail soliciting participation of employees, employees were told that their participation was voluntary, that their responses were confidential, and that the investigator could not link questionnaires to the respondents. The investigator was identified in the e-mails (prenotification through reminders) along with her e-mail address and her mailing address in the event a respondent wished to contact her. Employees gave their consent by completing and submitting the electronically provided questionnaire or downloading and mailing it anonymously to the investigator. If during the study, a participant wished to retract or withdraw his or her questionnaire, the participant would have had to reveal his or her e-mail address to the computer programmer/web master who would then have had to track that address to the sample groups and then to the web database assigned number and then to the SAS database to retrieve the questionnaire. No requests for retraction or withdrawal were received.

Data Management and Data Entry

The request to participate in the survey was distributed via an e-mail message to both groups of employees. The URL site was embedded in the e-mail messages from the investigator, and employees in the two sample groups were able click on the URL site to initiate the survey. The survey questionnaire from pilot tests was estimated to take between 7-10 minutes to complete. If the participant could not complete the survey initially, there was a “save button” so that the participant could complete it later. After completion, the participant could click at the “press here” message to submit the survey electronically to the web data file. Each survey was numbered as it was received at the web database. The survey web database was exported as an

excel spreadsheet to the SAS file. There were no personal identifiers. Following data collection, all data, even though there were no personal identifiers, were stored in a password protected file. Questionnaires mailed to the researcher were entered into the excel spreadsheet by the computer programmer. All original forms were stored in a locked file. All backup disks and any paper printouts were kept in a locked file. The computer programmer kept his/her programming guide in a locked file. The computer programmer's guide is to be destroyed along with the e-mail lists no later than Nov. 4, 2004.

Measures

The questionnaire consisted of 49 questions, representing 27 independent variables (exposures or explanatory variables) and one dichotomous outcome variable (Appendix A). All participants, regardless of group membership, received the same questionnaire content.

Individual-Level Measures

*Demographic measures.*The five demographic measures were (1) GS level or CC level, as a surrogate for income, as a categorical variable, following classifications utilized by the agency (Q. 42); (2) gender, as male or female, a dummy/categorical variable (Q. 44); (3) age, in years at last birthday, as a categorical variable (i.e., less than 30 years, 31 to 40 years, 41 to 50 years, 51 to 60 years, and 61 years or older (Q. 45); (4) race/ethnicity, a categorical variable, following classifications utilized by the agency (Q. 46); and (5) educational level , as a categorical variable, following classifications utilized by the agency (Q. 49).

*Volunteerism measures.*The nine measures of volunteerism included eight independent variables and the one outcome variable: (1) self-reported volunteerism, as a dichotomous (yes/no) variable, for both outside of work and at work (Qs. 1 and 3); (2) hours volunteered outside work in last 12 months as a continuous variable; (Q.2); (3) trained in CPR/AED, as a

dichotomous (yes/no) outcome variable (Q. 4); (4) certified in CPR/AED as a dichotomous (yes/no) variable (Q.5); (5) trained in CPR/AED at CDC as a dichotomous (yes/no) variable (Q. 6); (6) willingness to be trained (not at all willing, slightly willing, moderately willing, and very willing) as a Likert scale (Q. 7); and (7) if willing to be trained, reasons for not being trained, as a categorical variable (a. job too demanding, b. training never offered, c. have applied but no space available, d. never a good time, and e. other reason as a short, open-ended response) (Q. 8); and (8) if unwilling to be trained, reasons for being unwilling, as a categorical variable (a. job too demanding, b. not interested in CPR/AED training, c. can't do mouth to mouth resuscitation, d. don't want to do mouth to mouth resuscitation, e. afraid of electronic paddles, and f. other reason as a short, open-ended response) (Q. 9).

Dispositional measures. The three dispositional variables were helpfulness, religiosity, and membership in a religious organization. The 8-items (Qs. 30-37) that measure Helpfulness on the Prosocial Personality Battery (Penner, 2002) were used. The estimated reliability for the two subscales that when summed make up the Helpfulness factor, based on 1,111 respondents, was $\alpha = .77$ for the 3-items that measure personal distress/effectiveness (PD) and $\alpha = .73$ for the 5 items that measure self-reported altruism (SRA) (Penner et al., 1995). For measuring personal distress, a 5-point scale (1 = Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; and 5=Strongly Agree) was used. Self-reported altruism was also a 5-point scale (1=Never; 2=Once; 3=More than Once; 4=Often; and 5=Very Often). The score for the Helpfulness factor was the sum of scores of PD (total reversed) and SRA. One question (Q. 47--Do you consider yourself religious? Was measured using a Likert scale, not religious at all, slightly religious, moderately religious, and very religious was used to assess religiosity. Another question (Q.48--Do you

consider yourself a member of a religious organization?) was measured as a dichotomous (yes/no) variable.

Organizational-Level Measures

Situational measures. The five situational variables to be measured included (1) Position categories utilized by the agency (scientific, communications, program manager/analyst, skilled trade, managerial, technology, support/administrative, and other) (Q. 38); (2) Scientific, professional categories requiring licenses or certification (are you a physician, nurse, dentist, pharmacist, or veterinarian), as a dichotomous (yes/no) variable Q. 39); (3) Supervisory status, as a dichotomous (yes/no) variable (Q. 40); (4) Tenure--years of employment at the agency, as a categorical variable (1to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, 21 to 25 years, 25 to 30 years, and 31 years and over (Q. 41); and (5) duty station located in Georgia as a dichotomous (yes/no) variable (Q. 43).

Attitudinal measures. Six organizational variables were assessed: (1) Job control/autonomy, measured by the 3-item scale adapted from the Job Diagnostic Survey (Hackman & Oldham, 1975, 1980) (coefficient $\alpha = .77$) (Qs. 10-12); (2) Self-efficacy (sense of mastery and confidence in work role), measured by the 3-item scale from Spreitzer (1995) ($\alpha = .81$) (Qs. 14-16); (3) Impact (form of efficacy, ability to meaningfully influence the workgroup or team), measured by the 3-item scale from Spreitzer (1995) ($\alpha = .88$) (Qs. 17-19); (4) Distributive Equity, measured by the 4-item scale from Bavendam, Boyer, and Sorensen (1986) ($\alpha = .95$) Qs. 20-23) ; (5) Procedural Equity, measured by the 6-item scale from Greenberg (1986) ($\alpha = .95$) (Qs. 24-29); and (6) Job satisfaction, measured by one item from Hackman and Oldham, 1975) (Q.13—"Generally speaking, I am very satisfied with my job."). All the

organizational scales used a 5-point Likert scale (1= Disagree Strongly; 2=Disagree; 3=Neutral; 4=Agree; and 5= Agree Strongly).

The data collection instrument (paper version) was pilot tested among 12 employees (medical, nonmedical, supervisory, nonsupervisory, clerical, and mid-level professional). Each person answered the questionnaire and then met with the researcher to discuss the instrument—understanding of the questions and response process, clarity of the questions and format, ease of responding, reluctance to respond, length of time to complete, and at what point, if any, they became tired (Appendix C). The e-mail system, involving all four messages with appropriately attached questionnaires, were tested electronically to make sure it functioned appropriately. Additionally, the above 12 employees tested the e-mail system and its connection to the URL site and completed the questionnaire on line to assess time to complete and to make sure it functioned appropriately. These 12 questionnaires (6 for each of the 2 groups) were transferred from the URL site into a SAS database to make sure the data transfer functioned appropriately.

Power Analysis

Power analysis for logistic regression (appropriate for a dichotomous outcome variable) was conducted to determine the sample size. In this study the limitation for sampling was the number of persons who were trained (volunteered and were trained) in CPR/AED, that is, the 471 cases. The confidence level was set at alpha = .05 and effect size, at h=.20, a small effect (Cohen, 1988, p. 198). According to Cohen (1988, p.189) detecting a small effect at a power level of .79 would require 300 persons in each group. Therefore the full 471 persons in Group 1 (the cases) were surveyed in an attempt to acquire 300 surveys from the cases (those trained in CPR/AED). To obtain 300 controls, the minimally acceptable number for comparison with cases from the remaining 8,500 employees untrained in CPR/AED, a sample of 1600 (20 %) was

drawn, postulating that it would be easier to obtain responses from persons trained in CPR/AED than from those not trained.

Statistical Analyses

Logistic regression was the major statistical method used in this study. The goal was to evaluate the extent to which individual or grouped variables were associated with the dichotomous outcome of being or not being trained in CPR/AED. The first step in analyzing the data was to do frequency analysis to identify missing data and to resolve issues related to missing data. The data were reviewed to determine if the missing data were randomly or systematically omitted. The data were reviewed to see if the variable with missing data was essential to analysis for the hypotheses. This was especially important in logistic regression because logistic regression models require an answer for all included variables from every participant or it will drop that participate out of the analysis (listwise deletion). Step 2 was an exploratory factor analysis using SPSS for Windows Release 11.5.1 (SPSS, Inc., 2002) to determine if the items loaded on the expected factors. The relationships between the factors (individual and organizational) were examined to determine if they were in the expected direction and of the expected magnitude. Inter-item correlations and inter-correlations among variables were assessed in this process. Step 3 was to run descriptive analyses to assess the similarity and representativeness of the respondents to the target audience or source population, to gain an understanding of the data, and to describe the respondents. Step 4 was to run the Independent-Samples χ^2 test or Independent Samples *F* Test for each independent variable for group membership (cases or controls). Step 5 was to use logistic regression modeling to analyze the extent to which individual or grouped variables are associated with the dichotomous outcome of being or not being trained in CPR/AED and to identify key influential variables in volunteering

for and being trained. Logistic regression was an appropriate method for analyzing data in a study with a dichotomous dependent variable (Pedhazur, 1997; Kleinbaum, 1994). The data were analyzed using SAS 8 (SAS Institute, Inc., 2001).

Study Limitations

There were several threats to the validity of this study and other limitations. One threat, as in all studies, is type 1 and type 2 error, i.e., rejecting a hypothesis when it should be retained or retaining a hypothesis when it should be rejected. The large sample size in this study and the power analyses as well as the probability value should have reduced inaccurate conclusions. Probability was set at .05 and power at .79 to detect a low effect to determine case and control sample size.

Use of electronic system surveys is a contemporary, evolving data collection method in many workplaces and offers many potential benefits, including cost savings, rapid access, and efficiency in data collection. However, because it is not a fully developed scientific method, its benefits and risks are not fully known. One known risk as for all surveys is low response rates. Response rates for all types of surveys (mail, electronic, telephone, etc.) have declined in recent years. Cho and LaRose (1999), among comparative studies of e-mail and mail survey response rates, reported the response rates for e-mail to be lower than those of both mail and telephone conducted surveys, but that e-mail surveys done in organizational settings do generate high response rates. The Office of Management and Budget expects, in general, a 70% response rate, but researchers are becoming accustomed to rates of 55-60%. Sheehan (2001) in a review of 31 e-mail surveys reported a decline from 1986 of a mean response rate of 61.5% for two surveys to a mean response rate of 24% for two studies in 2000. This study site has participated in annual Quality of Work Life Surveys on Organizational Climate with low response rates of 20% in 2002

and 22% in 2003, down from 28% in 2001. A recent survey from the agency's director had a response rate of over 50%. Recommended procedures for increasing response rates included a prenotification message and follow-up messages. These procedures were used in this study. The response rate for this study was 43%.

According to Sheehan (2001) research is mixed regarding the influence of survey length on response rates. It was estimated that the questionnaire to be used in this study would require from 7 to10 minutes to complete. The questions were all close-ended, one word, or one-number responses except for one probing item which allowed for a brief open-ended response. Thus length and complexity of responses did not seem that they would pose problems to participants. Another influence on response rate is topic salience. The cover messages attempted to covey the salience of this study to the employees. Because this worksite had extensive demographic information on its employees, it would be possible to determine the representativeness of the respondents on demographic and some situational variables to the overall employee population being studied.

Another issue related to the transparency of the study purpose, and in this study, could became a threat (hypothesis guessing) to construct validity (Trochim, 2000), in that respondents would respond based on what they guessed to be the purpose of the survey rather than on their true behaviors or beliefs, that is providing social desirability answers rather than their genuine responses. As is the case in all studies occurring at the workplace, some respondents might have been reluctant to answer the questions honestly, perhaps fearing some perceived repercussions to their employment, and would answer them differently if this were not a worksite distributed questionnaire. Another limitation is external validity or generalization of the relational conclusions to other populations. This was reduced in this study by the large sample size as well

as the fact that the study design offered participation to employees in various locations across the United States, although most employees were located in the Southeast. Although the study did not address all predictors associated with the latent variable of occupational citizenship behavior (i.e., having volunteered and been trained in CPR/AED), it included the widely accepted explanatory variables).

CHAPTER 4

RESULTS

In this chapter, the results of the case-control study to identify individual and organizational factors associated with the organizational citizenship behavior of volunteering and being trained in CPR/AED among employees of a federal agency are presented. The chapter begins with a description of the sample of employees who completed the survey, the response rate, and selection of the final cases and controls for the analyses. Next, the cases and controls are compared in terms of a set of demographic characteristics. These characteristics are also used to assess the representativeness of the cases and controls to the overall workforce at this federal agency. Following this, considerations related to missing data are addressed, and the performance of the measures and scales used in this study is examined using inter-item correlations, exploratory factor analysis, and internal consistency coefficients (Cronbach alpha). Following these descriptive analyses, results from univariate tests performed to compare cases and controls on each of the principal variables in the study are reported. Then, results from the logistic regression techniques and models employed to provide a multivariate test of the data to assess the three hypotheses guiding this study are reported and discussed. Finally, based on these analyses, decisions are made regarding the three hypotheses.

Descriptive and Univariate Analyses

The Sample and Response Rate

A sample of 2,071 employees (471 cases, employees trained in CPR/AED, and 1,600 controls, employees not trained, according to agency records) was requested to participate in the

study by completing a 49-item web-based questionnaire. They were sent up to four electronic messages (Nov. 14, 18, 25, and Dec.2) requesting their participation. A total of 900 responded: 280 from the 471 employees classified as trained/cases and 620 from the 1,600 employees considered untrained/controls for a response rate of 43 %. The response rate itself might be indicative of the level of OCB at the agency in that participation in the survey was an act of volunteerism. Of these, 93 % (836) submitted the questionnaire electronically and 7 % (64) printed and mailed in the questionnaire. Eleven additional questionnaires received through office mail after the survey closing date (Dec. 12) were not included in the study. The largest number of respondents submitted the questionnaire following the first electronic transmission of the survey with lower secondary and tertiary peaks at the time of the first and second reminder messages (See Appendix D for responses by days elapsed since initial survey transmission).

Comparison of Participants with Non-Participants

Participants and non-participants were compared on pay category, pay level, tenure, and supervisory status, using data from the agency's employee computerized directory. By pay category, 12% of participants were Commissioned Corps and 88% were General Schedule employees; 13% of non-participants were Commissioned Corps and 87% were General Schedule. By pay level, participants were at level 10 and non-participants at level 9. By tenure, participants averaged 9.1 years and non-participants, 8.3 years. By supervisory status, 27% of participants and 21.3% of non-participants, were supervisors. Data on all other survey measures were not available for non-participants.

Selection of Final Cases and Controls

Responses to two questions (Question 4: "Are you trained in CPR and AED?" and Question 6: "Were you trained in CPR and AED in a course offered at the agency or sponsored

by the agency?") were used to select the final cases and controls for the study. Of 894 responses to Question 4, "Are you trained in CPR and AED?", 478 persons (278 from the original case group and 200 from the original control group) reported being trained. This indicates the agency's training records were incomplete. Of the 478 persons who reported being trained, 98 responded "No" to Question 6, "Were you trained in CPR and AED in a course offered at the agency or sponsored by the agency?" Because it was not known for these 98 persons whether or not they had volunteered for the CPR/AED training, these 98 respondents were dropped from the study. This left 380 respondents as the cases (i.e., trained in CPR/AED at the agency). Of the 416 respondents who reported not being trained (Question 4), 6 responded that they were trained at the agency (Question 6). Because of the inconsistency between their responses to Questions 4 and 6, these 6 respondents were dropped, leaving 410 respondents as the controls (i.e., persons who were not trained in CPR/AED at the agency). The results presented in this chapter regarding the study variables (Figure 1) are based on 380 cases and 410 controls.

Demographic Characteristics of Cases and Controls

Demographic characteristics for the 380 cases and 410 controls were compared using the Independent Samples χ^2 Test (Table 1). The two groups did not differ significantly by gender, age, or race/ethnicity. Both groups had a higher percentage of women than men (60% and 64 %, respectively). The most represented age group for both was 41-50 years of age. By race/ethnicity, the majority in both groups were White not of Hispanic origin (74 % and 71 %), followed by Black/African American not of Hispanic origin (19 % and 21 %), Asian/Pacific Islander (both 4 %), Hispanic (2% and 3 %), and Alaskan Native/American Indian (both < 1 %).

However, cases and controls differed significantly in educational level, job grade level, being in professional licensure positions, and being in jobs located in Georgia. There was a

Study Variables

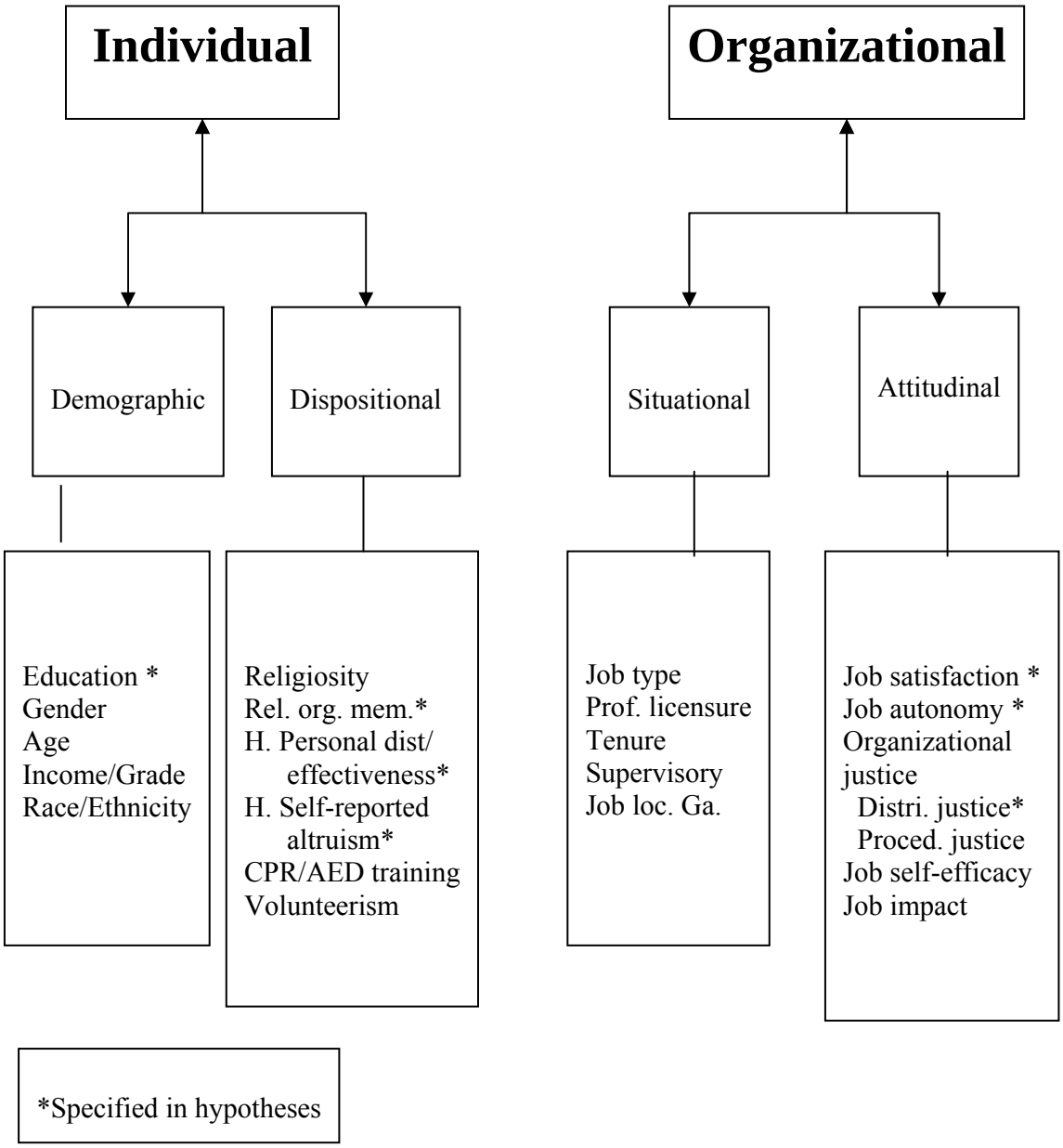


Figure 1. Study Variables

Table 1

Demographic Characteristics of Cases and Controls

Demographic Characteristic	Cases		Controls		χ^2
	N	%	N	%	
Gender Female	222	60	257	64	1.71
Male	149	40	142	36	
Age <30 yrs.	20	5	28	7	6.25
31-40 yrs.	87	23	89	22	
41-50 yrs.	147	40	132	33	
51-60 yrs.	98	26	133	33	
≥61 yrs.	20	5	22	5	
Race/Ethnicity White not of Hisp. Origin	271	74	284	71	1.27
Black not of Hisp. Origin	70	19	85	21	
Asian/ Pacific Islander	13	4	16	4	
Hispanic	<10	2	12	3	
Alaskan Native/Amer. Ind.	<10	<1	<10	<1	
Education High school	4	1	21	5	21.91**
Some college	43	12	66	16	
Associate degree	23	6	16	4	
College	47	13	56	14	
Post College	27	7	36	9	
Masters	109	29	113	28	
MD/PhD	80	21	62	15	
Post doctoral	41	11	33	8	
Job Grade GS 1-8/Wage Categories	40	11	48	12	18.76**
GS 9-12, CC 1-4	107	29	152	38	
GS/GM 13-15, CC 5-6	216	58	189	47	
SES and other high levels	1	<1	9	2	
Other	9	2	3	<1	
Prof. Licensure Position Yes	68	18	21	5	31.90**
No	306	82	380	95	
Job Located in Georgia Yes	328	88	291	72	28.73**
No	46	12	112	28	

** $p < .01$; *** $p < .0001$

higher percentage of cases than controls with education at the doctoral (21 % versus 15 %) and post doctoral (11% versus 8 %) levels. Cases had a higher percentage than controls in the upper job grade levels of GS 13-15, CC 5-6, the agency's most highly populated grade levels (58 % versus 47 %). Cases had a higher percentage than controls in professional licensure positions (physician, nurse, dentist, pharmacist, or veterinarian) (18 % versus 5 %) and in jobs located in Georgia (88 % versus 72 %).

Representativeness of Cases and Controls to Agency Employees Overall

The representativeness of the cases and controls to the agency employees overall was assessed using demographic data collected in the survey and publically available data on this agency's workforce (U.S. Dept. Health and Human Services, 2002) (Table 2). Cases and controls were similar to agency employees overall in gender (62 % female compared with 58 % female), age (41-50 years compared with 45.4 years), and race/ethnicity (the largest percentage being White not of Hispanic origin, 73 % and 75 %, followed by Black not of Hispanic origin, 20% and 17%. The educational levels at the masters (29 %) and doctoral levels (18 %) for cases and controls were somewhat higher than for the agency overall (masters, 24 % and doctoral, 16 %). However, the agency data underestimate educational level because they do not include the Commission Corps employees who tend to be physicians or scientists at the doctoral and post doctoral levels. The cases and controls had a higher percentage than the agency overall in the GS 13-15 and CC 5-6 levels (52 % compared with 40 %). The cases and controls and the agency population had the same percentage (11%) for professional licensure positions. The cases and controls had a higher percentage than the agency overall for persons located in jobs in Georgia (80 % versus 69 %). This may reflect the difficulty employees outside agency headquarters had in accessing the embedded web site. Although all invited participants for the survey could

Table 2

Demographic Characteristics of Cases and Controls and Agency Employees Overall

Demographic Characteristic	Cases and Controls		Agency Employees Overall	
	N	%	N	%
Gender Female	479	62	5269	58
Male	291	38	3863	42
Age <30 yrs.	48	6	723	8
31-40 yrs.	176	23	2398	26
41-50 yrs.	279	36	3123	34
51-60 yrs.	231	30	2449	27
≥61 yrs.	42	5	440	5
Race/Ethnicity White not of Hispanic Origin	555	73	--	75
Black not of Hispanic Origin	155	20	--	17
Asian/ Pacific Islander	29	4	--	5
Hispanic	20	3	--	3
Alaskan Native/American Ind.	<10	<1	--	<1
Education High school	25	3	572	8
Some college	109	14	1500	21
Associate degree	39	5		
College	103	13	2144	30
Post College	63	8		
Masters	222	29	1715	24
MD/PhD	142	18	1143	16
Post doctoral	74	10		
Job Grade GS 1-8 /Wage Categories	88	11	1520	17
GS 9-12, CC 1-4	259	33	2981	33
GS/GM 13-15, CC 5-6	405	52	3663	40
SES and other high levels	10	1	40	<1
Other	12	2	929	10
Prof. Licensure Position Yes	89	11	774	11
No	686	89	6060	89
Job Located in Georgia Yes	619	80	6193	69
No	158	20	2940	31

receive the e-mails, those outside of headquarters could not access the website which was protected by the agency's electronic firewall. Most inquiries to the principal investigator were to report this problem. Although the inquirers were faxed copies of the questionnaire for mailing back anonymously to the principal investigator, this required more effort on the part of a respondent than electronic access and transmission. There is no way to know how many in the sample outside of Georgia did not participate because of this difficulty. Overall, however, cases and controls were demographically very similar to the agency's population.

Missing Data

Observations from the 790 cases and controls were analyzed for missing data. A frequency analysis found that, for the 49 questions making up the survey, missing data per question ranged from less than 1 % to 3.1 %. The questions on race/ethnicity and religiosity had the highest percentage of missing responses (both 3.1 %). Among the seven composite variables or scales (two subscales of helpfulness, job autonomy, job impact, distributive justice, procedural justice, and job self-efficacy), the six items related to procedural justice had missing data ranging from less than 1 % to 3 %, and the eight items on helpfulness (i.e., the personal distress/effectiveness and self-reported altruism subscales) from 1 % to 2.4 %.

Of the 49 survey questions, two were follow-up, open-ended questions that allowed persons to provide reasons for willingness or unwillingness to volunteer for CPR/AED training. Of the remaining 47 close-ended questions, the number of questions answered per respondent ranged between 31 and 47. The percentage of the potential 47 questions answered was 95 % for cases and 94 % for controls. In examining the survey responses for patterns of missing data, six respondents did not answer any of the demographic, situational, religiosity, helpfulness, and procedural justice questions. Five others did not answer the demographic, situational, religiosity,

and helpfulness questions, but did answer the procedural justice questions. These 11 respondents (1 % of the 790 cases and controls) did not seem to have common response patterns on the other items they answered. Questions might have been overlooked due to the electronic placement of questions, but this seems unlikely. Rather, these appear to be conscious decisions by the 11 respondents not to answer these questions.

For analysis, when data were missing in the scaled items (personal distress/effectiveness, self-reported altruism, job autonomy, job impact, distributive justice, procedural justice, and job self-efficacy), the scale score included only those items answered. In the logistic regression analysis, observations for respondents who had missing data for non-scaled variables or zero for a scaled variable were omitted (listwise deletion). No missing data were imputed for either scaled or single item variables. The logistic regression model discussed below is based on data from 703 respondents (335 cases and 368 controls). SAS 8 (SAS Institute, Inc., 2001) was used for all analyses except the exploratory factor analysis which used SPSS for Windows Release 11.5.1 (SPSS, Inc., 2002).

Inter-item Correlation Matrices for Scales

Inter-item correlations were computed for the seven scales in this study. For the helpfulness factor, the items within each of its two component subscales (personal distress/effectiveness and self-reported altruism) were highly correlated ($p < .0001$), but the two subscales themselves were not correlated with each other. This is to be expected because the values for the two subscales are added to form the helpfulness factor in Penner's Prosocial Personality Battery (Penner, 2002). Items within each of the organizational attitudinal scales (job autonomy, job impact, distributive justice, procedural justice, and job self-efficacy) were also

highly correlated with each other ($p < .0001$). See Appendix E for the inter-item correlation matrices for these scales.

Exploratory Factor Analysis for Scales

An exploratory factor analysis (EFA) was conducted using principal axis factoring with direct oblimin rotation for a 7-factor solution. Factors were the two subcomponents of helpfulness (personal distress/effectiveness and self-reported altruism), job autonomy, distributive justice, procedural justice, job self-efficacy, and job impact. Efforts to construct a single scale called helpfulness by combining the two subscales (personal distress/effectiveness and self-reported altruism) were unsuccessful, supporting Penner's assertion that these two scales in the Prosocial Personality Battery measure different dimensions of helpfulness. All items loaded highly onto the expected factor with the exception of one item from the autonomy scale ("My job denies me any chance to use my personal initiative or discretion in carrying out the work") which loaded marginally and almost equally on job impact and on job autonomy. It was retained with the autonomy scale in Table 3.

A factor correlation matrix was also generated as part of the EFA (Appendix F). As might be expected from the factor loadings, the largest factor correlation was between procedural justice and distributive justice ($r = .61$). This high correlation is expected according to many researchers who have found these dimensions to correlate so highly that they consider organizational justice to be unidimensional. Other researchers consider organizational justice to be a two-dimensional construct comprised of distributive and procedural justice, while still others include a third dimension referred to as interactional justice (Colquitt, Conlon, Wesson, Porter, and Ng, 2001). Procedural justice correlated negatively with job impact ($r = -.37$) and positively with job autonomy ($r = .30$). Distributive justice also correlated similarly with job

Table 3

Exploratory Factor Analysis: Structure Matrix for 7-Factor Solution – Principal Axis Factoring with Direct Oblimin Rotation

	Procedural Justice	Self-Reported Altruism	Job Impact	Distributive Justice	Job Self-Efficacy	Job Autonomy	Personal Distress (Effectiveness)
Procedural Justice							
Hear concerns	**.874**	.059	-.297	.503	-.115	.254	.097
All sides	**.853**	.054	-.338	.522	-.088	.268	.038
Feedback	**.845**	.073	-.319	.498	-.089	.272	.082
Clarification	**.833**	.086	-.309	.502	-.113	.261	.093
Guidelines	**.816**	.019	-.298	.531	-.043	.236	.094
Appeal	**.796**	.031	-.337	.540	-.082	.249	.018
Self-Reported Altruism							
Offered help	.006	**.709**	-.051	-.072	-.169	.002	-.101
Allowed to borrow	.070	**.689**	-.112	.023	-.111	.048	-.035
Helped stranger	.007	**.685**	-.084	-.038	-.116	.025	-.099
Go ahead in line	.076	**.659**	-.083	.044	-.189	.057	-.016
Looked after pet	.049	**.588**	-.117	.042	-.073	.045	-.066
Job Impact							
Control	.363	.119	**-.906**	.354	-.262	.438	-.069
Influence	.364	.132	**-.897**	.366	-.276	.458	-.059
Impact	.254	.107	**-.751**	.235	-.356	.375	-.155
Distributive Justice							
Reward effort	.560	-.009	-.310	**.928**	-.070	.314	.128
Reward respons.	.560	-.008	-.333	**.919**	-.065	.305	.120
Reward stress	.517	.002	-.327	**.895**	-.071	.374	.097
Reward work	.624	.035	-.362	**.884**	-.076	.320	.125
Job Self-Efficacy							
Assured	.110	.166	-.313	.090	**-.868**	.178	-.218
Confident	.102	.182	-.244	.065	**-.816**	.181	-.167
Skills	.041	.105	-.258	.037	**-.627**	.188	-.205
Job Autonomy							
Independent	.274	.050	-.442	.335	-.205	**.931**	-.045
Decide	.276	.028	-.419	.317	-.181	**.839**	-.013
Denies	.189	.129	-.308	.211	-.262	**.298**	-.186
Personal Distress (Effectiveness)							
Lose Control	.106	-.037	.063	.136	.203	-.030	**.872**
Deal w. Emerg.	.089	-.077	.092	.116	.193	.015	**.740**
Go to Pieces	.059	-.089	.068	.088	.169	-.055	**.722**

autonomy (r = .36). Job impact correlated negatively with job autonomy (r = -.49) and distributive justice (r = -.37), but positively with job self-efficacy (r = .34).

Coefficient Alphas for Scales

Coefficient alphas for the scales used in this study were: .82 for personal distress/effectiveness subscale of helpfulness, .79 for self-reported altruism subscale of helpfulness, .64 for job autonomy, .95 for distributive justice, .93 for procedural justice, .80 for job self-efficacy scale, and .89 for job impact. The coefficient alpha for job autonomy was marginally acceptable due to the weak loading of the "denies" item.

Correlation Matrix for All Variables in the Study

A full correlation matrix for all variables in this study, expect the two open-ended questions, is included in Table 4. Of particular interest to this study's research hypotheses were the correlations of the individual-level variables (education, personal distress/effectivness, self-reported altruism, religiosity, and religious organization membership) and the organizational-level attitudinal variables (job satisfaction, distributive justice, procedural justice, job autonomy, job self-efficacy, and job impact) with each other and with the outcome variable of training in CPR/AED. All the organizational-level attitudinal variables correlated significantly with each other, but only job autonomy and job impact correlated significantly with the outcome variable. Of the individual-level variables, education and personal distress/effectiveness correlated significantly with the outcome variable, but self-reported altruism, religiosity, and religious organization membership did not. That both religiosity and religious organizational membership did not correlate with CPR/AED training was explored further by looking at the correlations for nonwork volunteerism, hours of nonwork volunteerism, and work volunteerism. Both religiosity and religious organization membership, although the correlations were small, correlated

Table 4

Correlation Matrix for All Variables in the Study

	Volunteer Nonwork	Vol.Hrs. Nonwork	Vol. Work	CPR/AED Training	CPR/AED Certified	Satisfied	Dis. Just.
Volunteer Nonwork	1						
Vol. Hrs. Nonwork	0.0334	1					
Vol. Work	0.2082***	0.0650	1				
CPR/AED Training	0.0652	0.0524	0.1239**	1			
CPR/AED Certified	-0.0450	0.1272*	0.1090	.4810***	1		
Satisfied	-0.0078	-0.0789	0.0414	-0.0020	-0.0062	1	
Distributive Just.	-0.0329	-0.0941*	-0.0270	-0.0126	-0.0160	0.4561***	1
Procedural Just.	0.0412	-0.0831	0.0073	0.0455	0.0814	0.4564***	0.5953***
Autonomy	-0.0366	0.0801	0.0608	0.0863**	0.0406	0.4796***	0.3478***
Impact	0.0383	-0.0290	0.0382	0.0903**	0.0549	0.5151***	0.3485***
Self-efficacy	0.03448	-0.0027	0.0983**	0.0495	0.1126**	0.1684***	.0716*
Helpfulness	0.0634	0.0441	0.0528	-0.0218	0.0071	0.0130	0.0555
Job Type	-0.0536	0.0570	-0.0004	0.0115	0.0234	0.0355	0.0029
Job Prof. Lic.	-0.0375	-0.0836	0.0545	0.1810***	0.1591***	0.0191	0.0955**
Supervisor	-0.0641	0.0242	-0.0085	0.0450	-0.0466	-0.1344**	-0.0972**
Tenure	0.0603	0.1034*	0.0368	-0.0267	-0.1207**	0.0210	0.0281
Gender	0.0207	0.095*	-0.0967**	0.0432	0.1167**	0.0339	0.0476
Grade	0.0912**	-0.0877	0.0540	0.0629	-0.0286	0.1497***	0.2401***
Ga.	-0.0187	-0.0359	-0.0259	0.1873***	0.0354	0.0339	0.0166
Age	-0.0357	0.0439	0.0164	-0.0258	-0.0859	0.0151	0.0317
Ethnicity	-0.0193	-0.1923***	-0.0414	0.0291	-0.0104	0.1217**	0.1648***
Religiosity	0.2369***	0.1642**	0.0802*	0.0315	-0.0120	-0.0047	-0.0912**
Rel. Mem.	0.2792***	0.1399**	0.1074**	0.0398	-0.0073	0.0297	-0.0101
Education	0.0542	-0.1245**	0.0128	0.1192**	0.0976*	0.0846**	0.1281**
Willing	0.1668**	0.0505	0.0379	0.2700***	0.3007**	-0.0013	-0.0290
Self-report. Altru	-.1081**	0.0817	-.1197**	0.033	-.0583	0.0058	-.0034
Person. Dis. Effect	-.1007**	0.0742	-.1392***	.1260**	-.1239**	-0.0045	.1386***

Table 4 continued

	Proc.Just.	Autonomy	Impact	Self-effic.	Helpful.	Job Type	Job Prof. Lic.
Volunteer Nonwork							
Vol. Hrs. Nonwork							
Vol. Work							
CPR/AED Training							
CPR/AED Certified							
Satisfied							
Distributive Just.							
Procedural Just.	1						
Autonomy	0.3030***	1					
Impact	0.3596***	0.4695***	1				
Self-efficacy	0.0943**	0.2557***	0.3060***	1			
Helpfulness	0.0885**	0.0459	0.0818*	0.0646	1		
Job Type	0.0080	0.0392	0.0945**	0.0152	-0.0585	1	
Job Prof. Lic.	0.0360	0.0771*	0.0387	0.0007	-0.0061	0.0388	1
Supervisor	-0.0960**	-0.1242**	-0.3318***	-0.0384	0.0024	-0.0833*	-0.2037***
Tenure	-0.0674	0.0557	0.0728*	0.0532	-0.0506	0.0405	-0.0489
Gender	0.0641	0.0226	0.1065**	-0.0207	-0.0212	0.0692*	0.0367
Grade	0.1257**	0.1551***	0.2516***	0.0274	-0.0295	0.0094	0.2037***
Ga.	0.0461	0.0148	0.0345	0.0661	-0.0198	0.0084	0.0370
Age	-0.1016**	0.0403	0.0661	0.0697*	0.0516	0.0247	0.1152**
Ethnicity	0.0337	0.1374**	0.1346**	-0.0663	0.0298	0.0557	0.0592
Religiosity	-0.0276	-0.0784*	0.0136	0.0629	0.0773*	-0.0231	-0.1417***
Rel. Mem.	0.0281	-0.0393	0.0684*	0.0401	0.0583	-0.0068	-0.0538
Education	0.1084**	0.1221**	0.1390***	-0.0415	-0.1009**	0.0691*	0.3524***
Willing	0.0209	0.0337	-0.0035	0.0176	0.0969*	-0.0353	0.0404
Self-report. Altru	0.0495	.0840*	.1152**	.1559***	.9094***	-.0427	-.0139
Person. Dis. Effect	-.0936**	.0876**	.0673*	.2021***	-.3474***	0.0374	-0.0656

Table 4 continued

	Supervisor	Tenure	Gender	Grade	Ga.	Age
Volunteer Nonwork						
Vol. Hrs. Nonwork						
Vol. Work						
CPR/AED Training						
CPR/AED Certified						
Satisfied						
Distributive Just.						
Procedural Just.						
Autonomy						
Impact						
Self-efficacy						
Helpfulness						
Job Type						
Job Prof. Lic.						
Supervisor	1					
Tenure	-0.1036**	1				
Gender	-0.1061**	0.1303**	1			
Grade	-0.3448***	0.1774***	0.2402***	1		
Ga.	-0.0725*	-0.1467***	-0.0628	0.0957**	1	
Age	-0.0807*	0.5029***	0.1680***	0.2180***	-0.0468	1
Ethnicity	-0.0879**	0.1810***	0.1534***	0.2798***	-0.2154***	0.2510***
Religiosity	0.0467	0.0886**	-0.0631	-0.1795***	0.0013	-0.0083
Rel. Mem.	-0.0417	0.1146**	0.0034	0.0178	-0.0236	0.0300
Education	-0.2952***	-0.0905**	0.2509***	0.6114***	-0.0077	-0.0048
Willing	0.0001	-0.1579**	0.0276	-0.0065	0.0827	-0.1915***
Self-report. Altru	.0320	-.0260	0.0126	.0758*	-.0153	.0699*
Person. Dis. Effect	-0.0675	0.0362	0.0628	-0.0139	-.0769*	0.0179

Table 4 continued

	Ethnicity	Religiosity	Rel. Mem.	Educ.	Willing	Self-report Altruism	Person Dis. Effect
Volunteer Nonwork							
Vol. Hrs. Nonwork							
Vol. Work							
CPR/AED Training							
CPR/AED Certified							
Satisfied							
Distributive Just.							
Procedural Just.							
Autonomy							
Impact							
Self-efficacy							
Helpfulness							
Job Type							
Job Prof. Lic.							
Supervisor							
Tenure							
Gender							
Grade							
Ga.							
Age							
Ethnicity	1						
Religiosity	-0.2584***	1					
Rel. Mem.	-0.0847*	0.5789***	1				
Education	0.2145***	-0.2318***	-0.0704*	1			
Willing	-0.1124**	0.0647	0.0518	0.1294**	1		
Self-report. Altru	0.0007	.1219**	-.0894**	-.0937**	.1299**	1	
Person. Dis. Effect	-.0715*	.0922**	-0.0600	0.0258	0.0832	.0740*	1

significantly and positively with nonwork volunteerism (r = .24 and r = .28), nonwork hours (r = .16 and r = .14), and work volunteerism (r =.08 and r =.11).

Univariate Comparison of Cases and Controls

Individual-level dispositional variables. The dispositional variables were: religious organization membership; religiosity; and volunteerism, both outside and at work; as well as the number of hours of volunteerism outside work; and the two helpfulness subscales (personal distress/effectiveness and self-reported altruism). These will be referred to as effectiveness and altruism for the remainder of this chapter.

Cases and controls did not differ significantly in religious organization membership (Table 5) or in religiosity ("Do you consider yourself religious?"—not at all, slightly, moderately, or very) (Table 6). Cases and controls differed significantly on the effectiveness subscale but not on the altruism subscale (Table 6). Cases and controls also did not differ significantly regarding volunteerism outside work (62 % versus 55 %) (Table 5), or in the number of hours they volunteered outside work (Table 6). The median number of voluntary hours outside work for both cases and controls was six hours per month. Cases and controls did differ significantly regarding volunteerism at work (Table 5) with the percentage for cases (48%) being higher than that for controls (35%).

CPR/AED training was not listed among the examples offered for volunteerism at work on the questionnaire. Among the cases, 71% reported being currently certified in CPR/AED. Respondents were also asked if they were willing to be trained in CPR/AED. Of the 410 controls, 399 answered the question: 11 % were not at all willing to be trained, 23 % were slightly willing, 30 % were moderately willing, and 37 % were very willing to be trained. Respondents could select among close-ended responses as well as add an open-ended response to

Table 5

Comparison of Cases and Controls on Situational and Dispositional (Dichotomous and Categorical) Variables

Variable	Cases		Controls		X^2
	N	% Yes	N	%Yes	
Dichotomous Variable					
Rel. Org. Member	398	40	370	44	1.09
Volunteer Nonwork	380	62	410	55	3.13
Volunteer Work	378	48	409	35	13.54**
Supervisor	374	69	401	73	1.78
Job Type	344	53	373	48	1.72
Categorical Variable					
Tenure					
(Yrs.)	375		402		16.39**
1-5	125	33	160	40	
6-10	73	19	59	15	
11-15	85	23	61	15	
16-20	44	12	46	11	
21-25	16	4	24	6	
26-30	17	5	34	8	
>31	15	4	18	4	

** $p < .01$

Table 6

Comparison of Cases and Controls on Dispositional and Attitudinal (Continuous) Variables

Variable	Cases		Controls		df	*F*
	N	M	N	M		
Helpfulness	380	2.56	410	2.58	1/788	.36
Effectiveness	350	1.68	381	1.83	1/729	11.41**
Altruism	350	3.08	381	3.02	1/729	.38
Hours Vol. Outside Work	230	11.18	222	9.71	1/450	1.11
Religiosity	360	1.70	394	1.63	1/752	.75
Job Satisfaction	349	3.84	377	3.84	1/724	.00
Job Autonomy	380	3.76	410	3.61	1/788	5.74**
Dis. Justice	380	3.39	410	3.41	1/788	.11
Proc. Justice	380	2.89	410	2.81	1/777	1.59
Job Self-efficacy	380	3.27	410	3.23	1/788	1.65
Job Impact	380	3.39	410	3.19	1/788	7.36**

**$p < .01$

explain why they had not been trained. Among the reasons given for not being trained were job was too demanding or too busy, training not offered or unaware of training opportunities, training not at convenient location or time, fear of failure, or having a disability. Among reasons given for not willing to be trained was fear of mouth-to- mouth resuscitation and using electrically-charged paddles, lack of self-efficacy, and just not wanting to.

Organizational-level situational variables. The five situational variables were: being in a professional licensure position, job located in Georgia, supervisory status, tenure, and job type as a scientist or manager versus other job types. According to the results, there was not a significant association between cases and controls and job type (53 % compared with 48 %) and supervisory status (69 % compared with 73 %) (Table 5). As noted above, there was a statistically significant difference between cases and controls and occupation in a professional licensure position and job located in Georgia (Table 1). Cases and controls also differed significantly regarding tenure with cases having a higher percentage in the 11 to 15 years category (23 %, versus 15 %) and cases having a lower percentage in the 1 to 5 years category (33% versus 40 %) (Table 5).

Organizational-level attitudinal variables. The six organizational attitudinal variables were: job satisfaction, job autonomy, distributive justice, procedural justice, job impact, and job self-efficacy. According to the *F* test results, there were significant differences between cases and controls for job autonomy and job impact. They did not differ significantly in job satisfaction, job self-efficacy, procedural justice, and distributive justice. In general, a high percentage of both cases and controls indicted high levels of job satisfaction. Overall, 74% of cases and 75 % of controls agreed or strongly agreed they were satisfied with their jobs.

Summary—Descriptive and Univariate Analyses

The preponderances of cases and controls were female, middle-aged, White not of Hispanic origin, college-educated, at higher pay levels, and had supervisory responsibilities. The cases and controls were generally similar to the agency's overall employee profile. Statistical analyses showed significant differences between cases and controls for education, job grade level, volunteerism at work, effectiveness, professional licensure position, job located in Georgia, tenure, job autonomy, and job impact.

Logistic Regression Analyses and Modeling

Logistic regression, an appropriate method for analyzing data with a dichotomous outcome variable, was used to assess which independent variables were the best predictors of volunteering and being trained in CPR/AED at the agency. The linearity of ordinal scaled variables was assessed by reviewing scatter plots of scale values versus the outcome variable of CPR/AED volunteerism; there was no evidence of non-linearity. A full model was run containing the individual-level demographic variables (gender, education, race/ethnicity, and pay grade), the individual-level dispositional variables (the two subscales of helpfulness--effectiveness and altruism, religiosity, and religious organizational membership), the organizational-level situational variables (job type, professional licensure position, job located in Georgia, tenure, and supervisory status), and the organizational-level attitudinal variables (job satisfaction, distributive justice, procedural justice, job impact, job autonomy, and job self-efficacy) for the outcome variable of CPR/AED training. Two-way interaction terms were included in the model representing the interactions between the scaled variables (job satisfaction, job autonomy, distributive justice, procedural justice, job self-efficacy, job impact, effectiveness, and altruism), between gender and religiosity, and between gender and the scaled variables.

Collinearity was not considered to be a major problem because the independent variables were not highly correlated. Age was not included because it was restrictive in this study and correlated with tenure. The correlations among the scaled organizational attitudinal variables did not exceed r =.59 (distributive justice with procedural justice), and each attitudinal scale as well as the dispositional scales had been selected to measure specific factors according to the literature and relevant theory.

Because the logistic regression employed listwise deletion, the full model contained observations from 703 respondents (335 cases and 368 controls). After running the full model, including all main effects and interactions, hierarchical backward elimination was used to obtain the final model. For hierarchical backward elimination, non-significant interaction variables were individually removed in order of largest p-value ($p > .05$) until only significant interactions remained ($p < .05$). Then any non-significant main effects not contained in the interaction terms were individually removed in order of largest p-value until only significant main effect variables remained. This required 41 steps.

Full Logistic Regression Model

The results for the logistic regression model are presented in Table 7. In this table, for clarity, there is one row for each main effect variable originally in the model, whether or not that variable was statistically significant in the final model. The odds ratio and odds ratio confidence intervals are also provided. Odds ratios greater than 1 indicate an increased likelihood of volunteering for CPR/AED and being trained at the agency. All odds ratios for the significant variables were above 1.

The main effect variables that were statistically significant with the outcome variable of volunteering for CPR/AED training from highest to lowest parameter value were job self-

Table 7

Logistic Regression Model: Significant Predictors Among Individual-Level (Demographic and Dispositional) and Organizational-Level (Situational and Attitudinal) Variables

INDEPENDENT VARIABLES		Variable in Model			
Variables Included in Logistic Regression Model	Variable Type	Significant $p < .05$	Model Parameter Value	Odds Ratio	OR 95% Confidence Interval
Ethnicity	Categorical				
Gender	Binary				
Professional Licensure	Binary	YES	1.2383	3.45	1.99 - 5.95
Educational Level	Categorical				
Religious	Categorical				
Member Religious Organization	Binary				
Supervisor	Binary				
Tenure	Categorical				
Job Grade	Categorical				
Job Type (Science/Manager)	Binary				
Job in Georgia	Binary	YES	.9281	2.53	1.68 - 3.81
Job Autonomy	Scale				
Job Self-Efficacy	Scale	YES	2.0593	7.84	1.91 - 32.28
Job Impact	Scale				
Distributive Justice	Scale				
Procedural Justice	Scale				
Effectiveness	Scale	YES	.4426	1.56	1.45 - 2.11
Altruism	Scale	YES	2.0549	7.81	1.84 - 33.09
Job Satisfaction	Scale				
Significant Interaction terms:					
Self-efficacy * Altruism		YES	-.6373	.53	0.34 - 0.82

efficacy, altruism, professional licensure position (physician, nurse, dentist, pharmacist, or veterinarian), job located in Georgia, and effectiveness. All model main effect parameter values were positive. The one significant interaction term involving job self-efficacy and altruism was negative. The model correctly predicted membership or classified by group membership 66.7% of the time.

The close similarity of the odds ratios for job self-efficacy (7.84) and altruism (7.81) is noteworthy as well as their fairly wide confidence intervals compared with the lower odds ratios for professional licensure position (3.45), job located in Georgia (2.53), and effectiveness (1.56). and their narrower confidence intervals (Table 7). The wider confidence intervals for job self-efficacy and altruism suggest the interaction effect for these two variables as well as other possible modifying effects. A well-established moderator is self-report which Organ and Ryan (1995) had identified in their meta-analytic study of predictors of organizational citizenship behavior as inflating the altruism effect. All data in the model were self-report. Logically job self-efficacy or one's belief in his/her competency to perform activities or a job with skill, particularly if that job is health-related, might carry over to a health-related task such as CPR/AED. It was also logical that altruism (to be helpful to others) and effectiveness (in emergencies) would be predictive of the organizational citizenship behavior of volunteering for CPR/AED training. The negative interaction between job self-efficacy and altruism, however, is not readily explained. In order to visualize the negative interaction, an interaction plot was developed (Figure 2). This interaction suggests that for low levels of altruism (< 2.5) volunteerism increases with increasing job self-efficacy, but that at high altruism (> 2.5), volunteerism may decrease with increased self-efficacy. It should be informative to study this

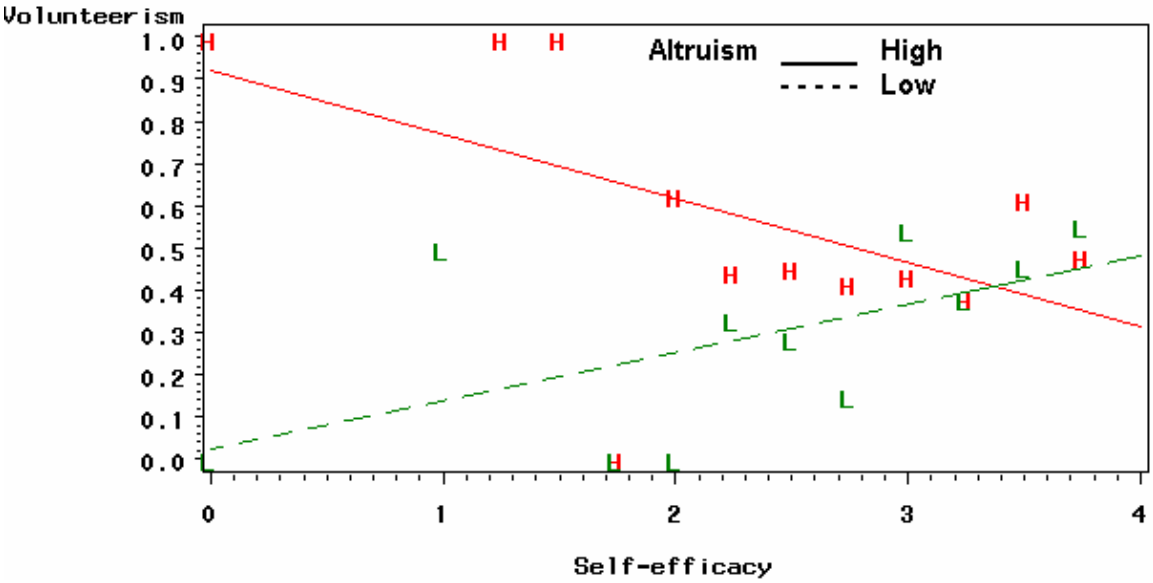


Figure 2. Job Self-efficacy and Altruism as Predictors of Volunteerism

relationship further in populations that are likely to have lower levels of job self-efficacy in order to elucidate further this finding.

Interestingly, job self-efficacy was not significant in the univariate analysis. On the other hand, job autonomy, job impact, and tenure were significant in the univariate but not the multivariate analysis. This is probably due to relatively low correlations with the outcome variable. Being in a professional licensure position and being located at the agency's headquarters were significant in both the univariate and multivariate analyses, likely because there were three times as many persons in professional licensure positions in the cases (18%) than controls (5%). There was also a higher percentage of persons in Georgia among the cases (88%) than the controls (72%). The significance of job in Georgia as a predictor of CPR/AED volunteerism might also reflect more training opportunities at headquarters than field locations.

Additional Analyses

Incremental Models

The full predictive model was examined further in a series of incremental models to demonstrate the roles of the different types of variables and to assist in assessing the hypotheses. The incremental models were run without interaction terms according to the classification of the variables as individual-level demographic, individual-level dispositional, organizational-level attitudinal, and organizational-level situational. The demographic variables were included in each of the incremental models (Table 8).

In the individual-level demographic model (Model 1), education was the only significant predictor and the model had a predictive concordance of 55.6%, not much better than chance. When the dispositional variables (altruism, effectiveness, religiosity, and religious organization membership) were added (Model 2), effectiveness emerged as a significant predictor, replacing

Table 8

Logistic Regression Incremental Models

Model	Percent Concordance	Statistically Significant Variables ($p < .05$)
Model 1: Demographic	55.6	Education
Model 2: Demographic + Dispositional	60.4	Effectiveness
Model 3: Demographic + Organizational-level Attitudinal	60.2	Education; Impact; Satisfaction
Model 4: Demographic + Organizational-level Situational	64.6	Job in Ga.; Prof. Licensure Position
Model 5: Demographic + Organizational-level Situational + Attitudinal	67.8	Job in Ga.; Prof. Licensure Position; Job Impact; Job Satisfaction
Model 6: Demographic + Dispositional + Situational	67.0	Job in Ga.; Prof. Licensure Position; Effectiveness
Model 7: All Categories (Demographic + Situational + Dispositional + Attitudinal)--No Interaction Terms	69.3	Job in Ga.; Prof. Licensure Position; Effectiveness; Job Impact
Original Full Model (Demographic + Situational + Dispositional + Attitudinal) With Interaction Terms	66.7	Job in Ga.; Prof. Licensure Position; Job Self-efficacy; Altruism; Effectiveness; Interaction: Job Self-Efficacy*Altruism

education, and the predictive concordance increased to 60.4 %. These two incremental models found differences in the predictiveness of the individual-level variables in concurrence with the original full model.

In the organizational-level attitudinal model (Model 3), education, job impact, and job satisfaction emerged as the predictors, with a predictive concordance of 60.2 %. When the organizational-level situational and demographic variables were run together (Model 4), job in Georgia and professional licensure position emerged as predictors, and the model had a predictive concordance of 64.6 %. In the organizational-level model that included organizational-level situational and attitudinal variables (Model 5), job in Georgia, professional licensure position, job impact, and job satisfaction were the predictors, and the concordance increased to 67.8 %.

To further test the influence of the situational variables (professional licensure and job in Georgia), another model (Model 6) was run that combined the individual-level demographic and dispositional variables with the situational variables. The resulting predictive concordance was 67.0 %, essentially equal to Model 5. Effectiveness emerged as predictive along with professional licensure position and job in Georgia. The fact that these incremental models found similar predictive concordance at parallel combinations of the organizational-level and individual-level variables seemed to indicate that there were no major differences between individual and organizational levels for predicting CPR/AED volunteerism in this context.

In the last incremental model (Model 7) all four classifications (demographic, dispositional, attitudinal, and situational) were included. Effectiveness, professional licensure position, job in Georgia, and job impact emerged as the best predictors, and the model

concordance was 69.3 % or slightly greater than the original full model (66.7%) that included interaction terms (Table 7). This difference in concordance between the incremental and full models likely reflects the inclusion of the interactions as well as model dynamics related differences in the number of observations for the different variables and missing data among the variables. From the results of Models 4 through 7, it is apparent that the organizational-situational variables of professional licensure position and job located in Georgia are indeed important and have a substantial effect in the model (Table 8). It also appears that at least two other organizational-level attitudinal variables (job impact and job satisfaction) and one demographic variable (education) were important at incremental stages of this modeling. That these variables did not emerge as best predictors in the original full model, probably relates to their lower correlation with the outcome variable.

Stratified Models

To further explore the influence of job location and professional licensure, three stratified models were run (Table 9). The significant predictors from the original full model (job self-efficacy, altruism, effectiveness, and the interaction between job self-efficacy and altruism) were used, but only for persons in jobs located in Ga. and in non-professional licensure positions (Stratified Model A). In these results, effectiveness was no longer significant, reflecting the important relationship between being in a professional licensure position and effectiveness. A second model (Stratified Model B) included job self-efficacy, self-reported altruism, their interaction, but removed effectiveness because it was no longer significant. This model was computed using the same group of employees. Both main effects and the interaction remained significant. The predictive concordance for both stratified models had dropped considerably (58.9 % and 54.9 %, respectively) from that observed in the original full model (66.7 %).

Table 9

Logistic Regression Stratified Models: Respondents with Jobs Located in Ga. and in Non-Professional Licensure or Professional Licensure Positions

Variable	Variable Type	Variable in Model Significant $p < .05$	Model Parameter Value	Odds Ratio	OR 95% Confidence Interval
Non-Professional Licensure Positions					
Stratified Model A					
Job Self-efficacy	Scale	YES	2.3622	10.61	2.07 - 54.38
Altruism	Scale	YES	2.2841	9.82	1.87 - 51.48
Effectiveness	Scale	NO	-.2720	.76	.54 - 1.07
Interaction term: Self-efficacy * Altruism		YES	-.7134	.49	.30 - .81
Stratified Model B					
Job Self-efficacy	Scale	YES	2.4180	11.22	2.19 - 57.55
Altruism	Scale	YES	2.2902	9.88	1.90 - 51.37
Interaction term: Self-efficacy * Altruism		YES	-.7023	2.82	.30 - .82
Professional Licensure Positions					
Stratified Model C					
Job Self-efficacy	Scale	NO			
Altruism	Scale	NO			
Effectiveness	Scale	NO			
Interaction term: Self-efficacy * Altruism		NO			

Predictive Concordance: Model A = 58.9 %; Model B – 54.9 %.

The stratified models demonstrate clearly the importance of professional licensure position to predicting CPR/AED training and its relationship with effectiveness. They also support the importance of the interaction between job self-efficacy and altruism in predicting volunteerism in this situation. Figure 3 contains a plot of the job self-efficacy by altruism interaction for persons in non-professional licensure positions in Georgia. Once again, there was increased volunteerism at low levels of altruism combined with higher levels of job self-efficacy, but a decrease when both factors are high. Volunteerism declined when high levels of both variables were present.

Volunteerism in the Stratified Sample

The importance of professional licensure was further confirmed when Stratified Model A variables were repeated, but this time, using only observations from persons in professional licensure positions (Stratified Model C). All main effects and the interaction were no longer significant (Table 9).

Assessment of the Hypotheses

This research sought to examine the individual- and organizational-level variables (exposures) associated with volunteering for and being trained in CPR/AED.

$1H_1$: Among individual-level factors, education, religious organization membership, and helpfulness are the best predictors of employees who will exhibit the organizational citizenship behavior of volunteering for CPR/AED training.

As hypothesized, the individual-level dispositional characteristic of helpfulness was predictive of volunteerism. Both of its subscale components, personal distress/effectiveness and self-reported altruism, emerged as significant predictors of volunteerism for CPR/AED training in the full logistic model. Personal distress/effectiveness had been significant in the univariate analysis, but self-reported altruism had not. Education was significant in the univariate analysis

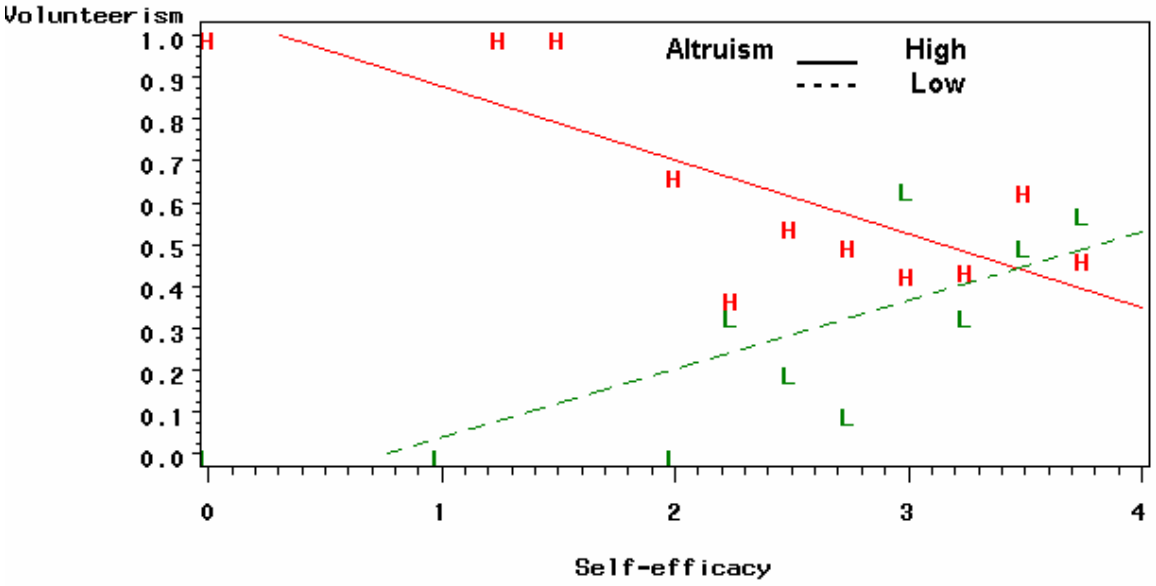


Figure 3. Job Self-efficacy and Altruism as Predictors of Volunteerism in the Stratified Sample

and was significant in several incremental predictive models, but was not retained in the full model. Most likely this was because of its lower correlation with CPR/AED. Neither religious organization membership nor religiosity was significant in any of the analyses. This may be based on the fact that the study was measuring a specific type of organizational citizenship behavior rather than volunteerism in general. When religious organization membership and religiosity were examined for their correlations with volunteerism outside work, number of hours of volunteerism outside work, and volunteerism at work, both were significantly correlated with all three variables. Therefore, based on these overall results, hypothesis 1 was only partially supported.

$2H_1$*: Among organizational-level factors, the factors of job satisfaction, perceived organizational justice/fairness, and job autonomy/self-direction are the best predictors of employees who will exhibit the organizational citizenship behavior of volunteering for CPR/AED training.*

The organizational-level attitudinal factors of job satisfaction and organizational justice were not significantly correlated with CPR/AED training in this study. Job satisfaction was significant in two incremental models predicting CPR/AED training. Job autonomy was significantly associated with case/control status in the univariate analysis but was not retained in the full model. Job impact was also significant in the univariate analysis and several incremental models, but was not predictive in the final model. However, the organizational-level factor of job self-efficacy was predictive in the full model and had the highest odds ratio of all the predictive variables. Additionally, two organizational-level situational factors, professional licensure position and job located in Georgia, were significant in the univariate analysis, as well as in the full predictive model. As demonstrated in several incremental and stratified models, professional licensure position was very important as a predictor of CPR/AED training. Based on these results, hypothesis 2 also received only partial support.

$3H_1$: Organizational-level factors are better predictors of the organizational citizenship behavior of volunteering for CPR/AED training among employees than are individual-level factors.

There were differences between the individual-level and organizational-level variables in the full predictive model with organizational-level variables (professional licensure, job in Georgia, and job self-efficacy) outnumbering the individual-level variables (personal distress/effectiveness and self-reported altruism). However, the individual factor of self-reported altruism and the organizational factor of job self-efficacy had almost identical odds ratios and were part of a significant two-way interaction. It also seemed that much of the predictive difference between the organizational-level attitudinal and individual-level dispositional factors was attributable to the variable, professional licensure position. A series of incremental models produced similar predictive concordances for the two types of variables at parallel stages. Without the situational variable of professional licensure position, when demographic variables were added to dispositional variables in one model or to attitudinal variables in another model, the model concordances were very similar, 60.4 % and 60.2 %, respectively. At another stage, when the situational variables including professional licensure position were included in two incremental models, one with the individual variables (demographic and dispositional) and one with the organizational variables (demographic and attitudinal), again, the model concordances were nearly identical but higher at 67 % and 67.8 %, respectively. These results point to the importance of professional licensure position. Based on these results, and because of the similarities of the organizational and individual-level factors in the full model and at incremental stages, there was little support for hypothesis 3.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the findings of this research project will be summarized, discussed, and interpreted. Conclusions will be drawn based on these findings with implications for the agency where the study was conducted as well as other organizations. Limitations of the study and recommendations for further research will also be presented.

Summary

In summary, logistic regression modeling of data from a sample of employees at a federal public health agency resulted in a model of best predictors that included both organizational- and individual-level factors. The organizational-level predictive factors were the attitudinal variable of job self-efficacy and the situational factors of professional licensure position as a physician, nurse, dentist, pharmacist, or veterinarian and job located in Georgia. The individual-level predictive factors were the dispositional characteristics of self-reported altruism and personal distress/effectiveness. The best predictors included an interaction between job self-efficacy and self-reported altruism. The negative interaction between job self-efficacy and self-reported altruism seemed to indicate that volunteerism increases at either high levels of altruism or job self-efficacy or at higher levels of job self-efficacy if altruism is low. At high levels of self-efficacy and high levels of altruism, volunteerism appeared to decrease. Education, job autonomy, and job impact, which were significant in the univariate analyses, dropped out in the multivariate analyses. Job satisfaction, organizational justice, religiosity, and religious organization membership were not significant in either the univariate or multivariate analysis.

This was contrary to the hypotheses of this study. Religiosity and religious organization membership, however, significantly correlated with other forms of volunteerism. Education, job impact, and job satisfaction were predictive in several incremental models. Based on these results, partial support was provided to the first two research hypotheses of the study, that there were differences among individual-level factors and organizational-level factors, respectively. Results did not support the third research hypothesis, which stated that organizational-level factors should be better predictors of the organizational citizenship behavior of CPR/AED training than individual-level factors. Because the sample was similar to the agency population overall, the results should be applicable to the agency's employees as a whole.

Discussion and Conclusions

Researchers, beginning in the 1980's with the conceptualization of organizational citizenship behavior, have primarily identified organizationally-related attitudinal factors as important predictors of OCB, but because OCB is extra-role behavior and not restrained by the requirements for task performance, it has been hypothesized that personality or dispositional factors should also be predictive of OCB. However, research efforts to demonstrate the correlation of personality with OCB were largely unsuccessful until the mid-90s and the utilization of a newly developed personality measurement tool named the Prosocial Personality Battery (PSB). The PSB measures prosocial personality in terms of two dimensions: Other-Oriented Empathy and Helpfulness. Of the two factors, Helpfulness, with its two subscales of personal distress/effectiveness and self-reported altruism, is asserted to be a better predictor of actual behavior than Other-oriented Empathy (Penner, Fritzsche, Craiger, & Freifeld, 1995). Findings from the current study support the earlier research showing that organizational-level attitudinal factors are correlated with and predictive of OCB, as well as the more recent research

that individual-level dispositional factors (i.e., Helpfulness) also correlate with and predict OCB, including volunteerism.

Organizational-level Factors

In terms of attitudinal variables examined in this study, job self-efficacy was the strongest predictor of OCB. In one of the few previous studies addressing CPR/AED specifically, Meischke et al. (2002) also found self-efficacy to be the strongest predictor of intent to use AED equipment. An interaction between job self-efficacy and altruism was also discussed by Penner, Fritzsche, Craiger, & Freifeld (1995). They proposed OCB to occur because it is a way to demonstrate one's self-efficacy rather than simply reflecting the intention to be helpful. Thus, OCB may be done to benefit the performer of the behavior as well as the recipient. However, their use of the term self-efficacy seems to relate more to the concept of self-esteem or global self-efficacy than to work competence or job or task specific self-efficacy as conceptualized by Spreitzer (1995). In the current study, CPR/AED might be an actual or assumed job task for persons in the professional licensure positions of physician, nurse, dentist, veterinarian, or pharmacist, thus this would be consistent with the predictiveness of both job self-efficacy and professional licensure position in the present study.

Job self-efficacy as the dominant predictor among the organizational attitudinal variables in this study may relate not only to the type of volunteerism, CPR/AED training, which is skill-based, but also to the study setting which is a public sector, medically-oriented organization. Wilson and Musick (1997), in their study of the impact of work on volunteering, found that public sector workers, persons in complex and self-directed jobs (especially higher educated persons), and persons in higher status positions volunteer the most. The findings in the current study with respect to professional licensure positions seem consistent with those of Wilson and

Musick. Job autonomy, also considered to be important by Wilson and Musick did not emerge as a strong predictor in the present study of CPR/AED volunteerism. It was, however, significantly correlated with CPR/AED training and significant in the univariate analysis. Similarly, job impact, a measure of control and influence over one's workgroup, significantly correlated with CPR/AED at the univariate level but was not significant in the final multivariate model.

Interestingly, although the current study was not designed to assess the effects of psychological empowerment (Spreitzer, 1995) on OCB or volunteerism, high levels of all four of its dimensions may have been operating in this workplace sample to predict CPR/AED training. Psychological empowerment in the workplace is a construct that seeks to capture job incumbents' thoughts and perceptions about job autonomy, job self-efficacy, job impact, and meaning (i.e., the value of the work goal in relation to the employee's or individual's own values and beliefs) as a determinant or measure of an effective and competitive work organization (Spreitzer, 1995). The components are also included under higher order constructs in a recently developed healthy work organization model that expands the view of individual health and well being in the workplace (Vandenberg, Park, DeJoy, Wilson, and Griffin-Blake, 2002). The current study intentionally addressed job autonomy, job self-efficacy, and job impact, three components of psychological empowerment, for their predictiveness of organizational citizenship behavior. Serendipitously, it also may have included the fourth dimension "meaning" in the form of personal licensure position or helpfulness or both, in that physicians, nurses, dentists, veterinarians, or pharmacists or persons with high levels of helpfulness would share the same values as the employing organization which, in this case, would be improving people's health. That all four of these variables were significant at various stages of analyses might suggest that

psychological empowerment may also be an important predictor of OCB and volunteerism, and thus, OCB and volunteerism might be measures of organizational health.

Another organizational- attitudinal factor, job satisfaction, has been paramount as a predictor of OCB in previous research (Organ and Ryan, 1995). In the current study, it was not significant in either the univariate analysis or full mulitvariate model, although it did have some impact in the incremental-stage models. That its impact was not greater is due probably to the fact that this sample showed high levels of job satisfaction for both cases and controls (over 75 %). In other studies job satisfaction and organizational justice (fairness) correlate highly with each other and with OCB. Researchers have posited that organizational justice, usually measured as distributive justice and procedural justice, may hold the stronger underlying relationship with OCB than job satisfaction. Indeed, Fahr, Podsakoff, and Organ (1990) found fairness (distributive justice, procedural justice, and interactional justice) and job task, which included job autonomy, to be more highly correlated and predictive of OCB than job satisfaction. Following current practice in organizational research, organizational justice in this study was measured by both distributive and procedural justice, but neither was significant at any stage of analysis. The third dimension of organizational justice, interactional justice, was not measured. Interactional justice refers to interpersonal and informational justice, or how people are treated by authorities and explanations about why outcomes were distributed in certain ways (Colquitt, Conlon, Wesson, Christopher, and Ng (2001). Since the OCB in the current study required permission from supervisors to volunteer for training during work time, it may have been the appropriate dimension of fairness to include. Williams, Pitre, and Zainuba (2002) recently found interactional justice to be the best predictor of OCB.

The findings for professional licensure position are consistent with the type of OCB studied and with the conclusion from other studies that certain professions seem to attract helpful people (Wilson & Musick, 1997). But professional licensure position did not correlate significantly or positively with nonwork and other types of volunteerism, or with self-reported altruism and effectiveness. This appears somewhat contradictory and may lead us to conclude that the significance of this variable may relate more to the tasks of professional licensure positions and the type of volunteerism under study than to a desire to volunteer. It may also well reflect the large number of health professionals in this organization. That job location was predictive likely reflects differences typically found between headquarters and field staff for training opportunities as well as the difficulty field staff had in accessing and submitting the survey questionnaire electronically because of the agency's firewall protections.

Individual-level Factors

Among the individual-level variables, only the dispositional variables of self-reported altruism and personal distress/effectiveness (not losing control in crisis situations) were important predictors of employees who will demonstrate OCB in this study. Self-reported altruism had an odds ratio of almost 8 and equal to that of job self-efficacy. The confidence interval was wide, likely reflecting the interaction with job self-efficacy. Personal distress/effectiveness had an odds ratio of 2, but had a narrower confidence interval. The finding that these two components of the Helpfulness factor of the PSB were predictive of OCB is consistent with Borman, Penner, Allen, & Motowidlo's (2001) recent findings that personality is correlated with and can predict OCB. The finding that the personal distress/effectiveness scale predicted CPR/AED volunteerism is not surprising in that the scale addresses control and effectiveness in emergency situations. That both subscales were predictive was also expected in

this study since self-reported altruism measures altruistic behavior rather than empathy. This finding of dispositional factors as predictors of volunteerism using the PSB may also add convergent evidence for the use of the PSB as a tool for measuring disposition as part of organizational citizenship behavioral research.

Education was expected to be a predictor of OCB in this study. It had a significant correlation with CPR/AED in the univariate analysis, but it was surpassed in the full predictive model by other variables whose correlations were higher with the outcome behavior. Education was important in this study in that people in professional licensure positions, which require a high level of education, volunteered more often for CPR/AED training. Wilson and Musick (1997) proposed that high-level positions or occupational status might simply be a surrogate for educational achievement. They also suggest that education exposes people to civic needs and issues and the need for volunteerism. However, within this organization, there is also a high educational level among persons not in professional licensure positions. But when this was controlled for in the stratified models, professional licensure position dominated as a strong predictor of volunteerism, supporting the compatibility of the professional licensure position with this particular OCB. Income has also been found to be associated with volunteerism. In the current study, however, grade as a surrogate for income was not a statistically significant predictor of OCB.

Gender was not a statistically significant predictor of OCB in this study, nor was it expected to be. Organ and Ryan (1995) found few studies that actually reported *F* or *t* tests of difference in OCB between men and women, or correlations with gender. Results have been mixed in other studies for gender as a predictor of OCB (Kidder, 2002 and Happel, 1998). In other studies, men and women, and older and younger employees, may volunteer for different

reasons (i.e., men and younger employees may volunteer for career advancement) (Gillespie and King, 1985). The current study did not address reasons for volunteering, only reasons for not volunteering.

Religiosity and membership in a religious organization were expected to be predictive of volunteerism in this study, but they were not. The fact that religiosity or religious organization membership were not significant predictors in this study likely relates more to the type of volunteerism studied than to volunteerism in general. This is supported by the significant correlations found for both religiosity and religious organization membership with volunteerism outside work, number of hours of volunteerism outside work, and other work volunteerism. It is also possible that some in the sample may not have considered CPR/AED to be volunteerism in the pure sense.

Individual-level and Organizational-level Factors

This study's findings demonstrate that both individual and organizational-level factors are important in predicting the OCB of volunteering for CPR/AED training. The full predictive model in this study found selected individual-level and organizational-level factors to be predictive of OCB. Most important to the model was the relationship between professional licensure positions and personal distress/effectiveness and the interaction between job self-efficacy and altruism. The negative interaction between job self-efficacy and self-reported altruism is perhaps one of the more interesting findings of this study for organizations overall. It appears that volunteerism increases at high levels of one or the other of job self-efficacy or self-reported altruism. But surprisingly, volunteerism decreases when both are at high levels. Whether organizations can impact long-term personality is not fully known, but it is definitely known that organizations can influence employee organizational attitudes, particularly job

autonomy, job impact, and job self-efficacy through job design and training and skills development. An interaction between employee personality and factors under the influence or control of organizations should be of interest to both public and private sector, non profit and for profit organizations.

Recommendations

The interaction between job self-efficacy and self-reported altruism observed in this study as well as the possibility that a high level of psychological empowerment contributed to the organizational citizenship behavior of volunteering and being trained in CPR/AED both need further study. There may be an opportunity whereby increases in the components of psychological empowerment (i.e., meaning, the shared values between an organization and its employees; job autonomy job impact; and job self-efficacy) might not only improve the effectiveness of the organization overall but also its preparedness for crises through CPR/AED training, provided the organization promotes such training. Yet the possibility that an interaction exists between high levels of job self-efficacy and self-reported altruism that decreases volunteerism needs to be better understood to avoid unforeseen consequences of certain levels of job self-efficacy on CPR/AED training and other OCB.

Organizations, from a practical position, should consider whether their training opportunities are equitable among their employees and worksites. The finding in this study that being in a position at the agency's headquarters was predictive of OCB training suggests a possible disparity in training opportunities for employees at different worksites as well as differences between headquarters and field sites in preparedness in CPR/AED training whether for terrorism attack or heart attack.

A key question not addressed by the current study and relevant to organizational preparedness as well as other purposes for CPR/AED training is what are the specific reasons people volunteered for this particular OCB. Future studies should include asking persons who have been trained, specifically why they undertook their training. In this study being in a professional licensure position was highly predictive of CPR/AED training. For this agency, this group should remain an important source of volunteers for CPR/AED. However, further research is recommended to understand the predictors of volunteerism among persons in non-professional licensure positions.

Organizational justice has been studied for its association with OCB largely by its distributive justice and procedural justice dimensions. Neither was predictive of the OCB in this study. Perhaps, these are not the important dimensions for predicting volunteerism requiring approval for training on company time. Possibly interactional justice, the suggested third dimension of organizational justice, because it relates to interpersonal treatment such as the relationship between the supervisor and the person supervised, is more relevant to predicting volunteerism. This should be explored.

The current study's goal was not to examine an optimum level of volunteerism for CPR/AED training in an organization. In this study's organizational setting which was health focused, employed numerous health professionals, and emphasized CPR/AED training, approximately 500 employees among a workforce of about 9,000 persons reported being trained in CPR/AED. Future research efforts need to explore the levels of CPR/AED training needed to maintain a prepared organization in terms of CPR/AED as a component of organizational preparedness.

This raises perhaps the most important area for further research. Organizational citizenship behavior was initially thought of as extra-role behavior that was beyond task or job requirements and not compensated for by the organization's formal reward system. More recent studies tend to view OCB as citizenship performance or contextual performance that is critical to both in-role and extra-role behaviors. One form of citizenship performance in today's complex workplace is volunteering for CPR/AED training. Once viewed simply as extra role behavior to save lives of individuals in coronary distress, it is now envisioned as part of an organization's overall preparedness for terrorist attacks, and thus might more accurately be considered in-role behavior. This raises the questions of: (1) can workplace needs for CPR/AED training as an aspect of preparedness be met by employee volunteerism, and (2) can and should organizations require this training for employees as part of in role-behavior. This introduces a large body of future research ranging from what is the number of trained persons needed in an organization in order to be considered prepared to what are the psychological, fiscal, and legal issue ramifications to organizations if CPR/AED training were required in-role behavior.

In terms of limitations, this study occurred in a public sector, health-oriented agency. Such worksites have been found to produce higher levels of volunteerism, and indeed in this study, 62% of cases and 55% of controls reported volunteerism outside work. Cases in this study reported a higher level of volunteerism at work than controls. This may be associated with a combination of higher levels of education and the mission of the studied agency. In other venues, educational levels might be lower and certainly many other organizations do not have public health as their mission and product or a large number of health professionals as employees. Yet all organizations as a part of overall workplace preparedness for acts of terrorism or emergencies need employees trained in CPR/AED. Therefore similar studies should be undertaken in for-

profit and non-profit private sector settings and in other public sector organizations to assess and further confirm the organizational and individual factors that impact CPR/AED training and other forms of organizational citizenship behavior.

REFERENCES

Alves, P. M., de Freitas, E. J. J., Mathias, H. A., daMotta, A. E. A., Silva, R. D. A., Muller, M., Almeida, S. F. B., Stapleton, E., Timerman, S., & Ramires, J. A. F. (2001). Use of automated external defibrillators in a Brazilian airline: A 1-year experience. *Arq Bras Cardiol, 76,* 310-4.

Balady, G. J., Chaitman, B., Foster, C., Froelicher, E., Gordon, N., & Van Camp, S. (2002). Automated external defibrillators in health/fitness facilities. *Circulation, 105,* 1147-1150.

Baranowski, T., Perry, C. L., & Parcel, G. S. (1997). How individuals, environments, and Health Behavior Interact: social cognitive theory. In K. Glanz, F. M. Lewis, & B. K. Rimer (Eds.), *Health Behavior and Health Education: Theory, research, and practice* (2nd ed.) (p. 164). San Francisco: Jossey-Bass, Inc.

Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44,* 1-25.

Bateman, T. S., & Organ, D. W. (1983). Job satisfaction and the good soldier: The relationship between affect and employee citizenship. *Academy of Management Journal, 26,* 587-595.

Bavendam, J. M., Boyer, M., & Sorensen, W.B. (1986). Distributive justice. In J. L. Price & C.W. Mueller (Eds.), *Handbook of organizational measurement.*Marshfield, MA: Pitman.

Borman, W. C., & Motowidlo, S. J. (1993). Expanding the criterion domain to include elements of contextual performance. In N. Schmitt & W. C. Borman (Eds.), *Personality selection* (pp. 71-98). San Francisco: Jossey-Bass.

Borman, W. C., Penner, L. A., Allen, T. D., & Motowidlo, S. J. (2001). Personality predictors of citizenship performance. *International Journal of Selection and Assessment, 9,* 52-69.

Brief, A. P., & Motowidlo, S. J. (1986). Prosocial organizational behaviors. *Academy of Management Review,11,* 710-725.

Cho, H., & LaRose, R. (1999). Privacy issues in internet surveys. *Social Science Computer Review, 17,* 421-434.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). N.J.: Lawrence Erlbaum Associates.

Coleman, V. I., & Borman, W. C. (2000). Investigating the underlying structure of the citizenship performance domain. *Human Resource Management Review, 10,* 25-44.

Colquitt, J.A., Conlon, D.E., Wesson, M. J., Porte, C. O. L. H., & Ng, K. Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology, 86,* 425-445.

DeJoy, D. M., & Wilson, M. G. (2003). Organizational health promotion: Broadening the horizon of workplace health promotion. *American Journal of Health Promotion, 17,* 337-341.

Dittrich, J. E., & Carrell, M. R. (1979). Organizational equity perceptions, employee job satisfaction, and department absence and turnover rates. *Organizational Behavior and Human Performance, 24,* 29-40.

ECRI (Emergency Care Research Institute) (1996). Automated external defibrillators. *Health Devices, 25,* 271-298.

Farh, J-L., Podsakoff, P.M., & Organ, D.W. (1990). Accounting for organizational citizenship behavior: Leader fairness and task scope versus satisfaction. *Journal of Management, 16,* 705-721.

Frank, R. L., Rausch, M.A., Menegazzi, J. J., & Rickens, M. (2001). The locations of nonresidential out-of-hospital cardiac arrests in the city of Pittsburgh over three-year period: Implications for automated external defibrillator placement. *Prehospital Emergency Care, 5,* 247-251.

Gagné, Marylène (2000). *The role of autonomy support and autonomy orientation in the internalization of autonomous regulation for prosocial behavior*. Thesis: University of Rochester Dept. of Clinical and Social Science in Psychology.

Gerhardt, R. T. (1999). Field deployment of automated external defibrillators to a federal fire service unit under medical direction of a military emergency service. *Military Medicine, 14,* 877-880.

Gillespie, D.F., & King, I. P. (1985). Demographic understanding of volunteerism. *Journal of Sociology and Social Welfare, 12,* 798-816.

Gratton, M., Lindholm, D. J., & Campbell, J. P. (1999). Public-access defibrillation: Where do we place the AEDs. *Prehospital Emergency Care, 3,* 303-305.

Greenberg, J. (1986). Determinants of perceived fairness of performance evaluations. Journal of *Applied Psychology, 71,* 340-342.

Groh, W., J., Newman, M. M., Beal, P. E., Fineberg, N. S., & Zipes, D. P. (2001). Limited response to cardiac arrest by police equipped with automated external defibrillators: Lack of survival benefit in suburban and rural Indiana—The police as responder automated defibrillation evaluation (PARADE). *Academic Emergency Medicine, 8,* 324-330.

Grundy, J. W., Comess, K. A., DeRook, F. A., Jorgenson, D., & Bardy, G. H. (1999). Comparison of naïve sixth-grade children with trained professionals in the use of an automated eternal defibrillator. *Circulation, 100,* 1703-1707.

Hackman, J. R., & Oldham, G. R. (1980). *Work redesign.* Reading, Massachusetts: Wesley Publishing Company.

Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of Applied Psychology, 60,* 159-170.

Happel, C.L. (1998). *Characteristics of American Red Cross volunteers: Creating a profiling assessment*. Unpublished doctoral dissertation, Spaulding University.

Kidder, D.L. (2002). The influence of gender on the performance of organizational citizenship behaviors. *Journal of Management, 28,* 629-648.

Kidder, D.L., & Parks, J. M. (2001). The good soldier: who is s(he)? *Journal of Organizational Behavior 22,* 939-959.

Kleinbaum, D. G. (1994). *Statistics in the Health Sciences Series.* Logistic Regression: A Self Learning Text. New York: Springer.

Konovsky M. A. & Organ, D. W. (1996). Dispositional and contextual determinants of organizational and citizenship behavior. *Journal of Organizational Behavior, 17,* 253-266.

LePine, J. A., Erez, A., & Johnson, D. E. (2002). The nature and dimensionality of organizational citizenship behavior: A critical review and meta-analysis. *Journal of Applied Psychology 87,* 52-65.

Lawson, L. & March, J. (2002). Automated external defibrillation by very young, untrained children. *Prehospital Emergency Care, 6,* 295-298.

Lyznicki, J. M., Williams, M. A., Deitchman, S. D., & Howe, J. P. (2000). Inflight medical emergencies. *Aviation, Space, and Environmental Medicine, 71,* 832-838.

Meischke, H. W., Rea, T.D., Eisenberg. M.S., & Rowe, S. M. (2002). Intentions to use an automated external defibrillator during a cardiac emergency among a group of seniors trained in its operation. *Heart & Lung, 31,* 25-29.

Motowidlo, S. J., & Van Scotter, J. R. (1994). Evidence that task performance should be distinguished from contextual performance. *Journal of Applied Psychology, 79,* 475-480.

National Center for Health Statistics (2002).

Organ, D.W. (1997). Organizational citizenship behavior: It's construct clean-up time. *Human Performance, 10*, 85-97.

Organ, D. W., & Paine, J. B. (1999). A new kind of performance for industrial and organizational psychology: Recent contributions to the study of organizational citizenship behavior. In C. L. Cooper & I. T. Roberson (Eds.), *International review of industrial and organizational* (pp. 337-368). John Wiley & Sons, Ltd.

Organ, D.W., & Ryan, K. (1995). A meta-analytic review of attitudinal and dispositional predictors of organizational citizenship behavior. *Personnel Psychology, 48,* 775-802.

Organ, D. W. (1994). Personality and organizational citizenship behavior. *Journal of Management, 20,* 465-478.

Organ, D.W. (1988). *Organizational citizenship behavior: The good soldier syndrome*. Lexington, MA: Lexington Books.

Page, R. L., Joglar, J. A., Kowal, R. C., Zagrodzky, J. D., Nelson, L. L., Ramaswamy, K., Barbera, S. J., Hamden, M. H., & McKenas, D. K. (2000). Use of automated external defibrillators by a U.S. airline. *The New England Journal of Medicine, 343,* 1210-1216.

Pedhazur, E. J. (1997). *Multiple regression in behavioral research: Explanation and prediction* (3rd ed.). New York: Harcourt Brace College Publishers.

Penner, L.A. (2002). Dispositional and organizational influences on sustained volunteerism: An interactionist perspective. *Journal of Social Issues, 58,* 447-467.

Penner, L. A., & Finkelstein, M. A. (1998). Dispositional and structural determinants of volunteerism. *Journal of Personality and Social Psychology, 74,* 525-537.

Penner, L. A., Fritzsche, B. A., Craiger, J.P., & Freifeld T. R. (1995). Measuring the prosocial personality. In J.Butcher & CD Spielberger (Eds.), *Advances in personality assessment* (pp. 147-163). Hillsdale, NJ: Erlbaum.

Penner, L. A., Midili, A. R., & Kegelmeyer, J. (1997). Beyond job attitudes: A personality and social psychology perspective on the causes of organizational citizenship behavior. *Human Performance, 10,* 111-131.

Prina, L. D., White, R. D. & Atkinson, E. J. Automated external defibrillators an first responders: A satisfaction survey. *Resuscitation, 53,* 171-177.

Riegel, B. (1998). Training nontraditional responders to use automated external defibrillators. *American Journal of Critical Care, 7,* 402-410.

Ross, P., Nolan, J., Hill, E., Dawson, J., Whimster, F., & Skinner, D. (2001). The use of AEDs by police offiers in the city of London. *Resuscitation, 50,* 141-146.

Rubin, J. (2001). Automated external defibrillators: The CHO's role. *Chemical Health & Safety,* 12-16.

Sachs, R. G., & Kerwin, J. (2001). Automated external defibrillators and sudden cardiac arrest. *New Jersey Medicine,* 39-41.

Scholl, R. W., Cooper, E. A., McKenna, J. F. (1987). Referent selection in determining equity perceptions: Differential effects on behavioral and attitudinal outcomes. *Personnel Psychology, 40,* 113-124.

Schroeder, D. A., Penner, L. A., Dovidio, J. F., & Piliavin, J. A. (1995). *The psychology of helping and altruism*. New York: McGraw Hill, Inc.

Sheehan, K. (2001). E-mail survey response rates: A review. *Journal of Computer-Mediated Communication, 6,* ELECTRONIC JOURNAL, 20 pages.

Smith, C. A., Organ, D. W., & Near, J. P. (1983). Organizational citizenship behavior: Its nature and antecedents. *Journal of Applied Psychology, 68,* 653-663.

Smith, H. S. (1994). Determinants of voluntary association participation and volunteering: A literature review. *Nonprofit and Voluntary Sector Quarterly, 23,* 243-263.

Spreitzer, G.M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38,* 1442-1465.

Sweeney, P. D., & McFarlin, D. B. Process and outcome: gender differences in the assessment of justice. *Journal of Organizational Behavior, 18,* 83-98.

Tepper, B. J., Lockhart, D., & Hoobler, J. (2001). Justice, citizenship, and role definition effects. *Journal of Applied Psychology, 86,* 789-796.

Trochim, W. (2000). *The Research Methods Knowledge Base* (2nd ed.). Cincinnati, OH: Atomic Dog Publishing.

U.S. Department of Health and Human Services. Centers for Disease Control and Prevention. Workforce Analysis Report. First Quarter 2002 http://intranet.cdc.gov/hrmo/work3.html; June 26, 2003.

Valenzuela, T. D., Roe, D. J., Nichol, G., Clark, L. L., Spaite, D. W., & Hardman, R. G. (2000). Outcomes of rapid defibrillation by security officers after cardiac arrest in casinos. The *New England Journal of Medicine, 343,* 1206-1209.

Vandenberg, R. J., Park, K. O., DeJoy, D. M., Wilson, M. G., & Griffin-Blake, C. S. (2002). The healthy work organization model: Expanding the view of individual health and well-being in the workplace. In P. Perrewé & D. Ganster (Eds.), *Research in occupational stress and well-being* (pp.57-115). New York: JAI Press/Elsevier Science.

Williams, L. J. & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management, 17,* 601-617.

Williams, S., Pitre, R., & Zainuba, M. (2002). Justice and organizational citizenship behavior intentions: Fair rewards versus fair treatment. *The Journal of Social Psychology, 142,* 33-44.

Wilson, J., & Musick, M.A. (1997). Work and volunteering: The long arm of the job. *Social Forces, 76,* 251-272.

www.independentsector.org (April 10, 2003).
www.Independentsector.org/media (April 22, 2003).
www.nhlbi.nih.gov (Nov. 10, 2002).
www.padl.org (April 22, 2002).
www.redcross.org/news/ds/training/030407workplace.html (April 8, 2003).

APPENDIX A

SURVEY QUESTIONNAIRE

CDC InTRAnet | OD InTRAnet Home

CPR AED Cardiopulmonary Resuscitation Automated-External-Defibrillation

CPR/AED Training -- Employee Survey

Introduction

Thank you for agreeing to participate in this study by completing the following questionnaire. The survey should take less than 10 minutes. Please answer each question. If you wish to change an answer, just go to the question and click on your new response or type in your new answer. Once you complete the questionnaire, you may submit it electronically or you may print it and MAIL it anonymously to Priscilla Holman at Mailstop K-73. You may also choose to print the survey, fill it out by hand, and then mail to Priscilla Holman at Mailstop K-73.

[If you are interrupted before completing this questionnaire and need to come back to it later, go to the bottom of the questionnaire and press SAVE. When you have time to finish the questionnaire, just go to my e-mail to you, click on the web site, and your partially completed questionnaire will appear.]

Part I.

Your Volunteer Activities. Please respond to each statement in terms of how it applies to your volunteering activities. (Go to the appropriate answer for you and click in the circle or box. Type in your responses for questions 8 or 9.)

1. Have you been a volunteer **(performed services outside of work for which you did not receive pay, for example, at a school, religious organization, or community organization)** during the last 12 months?
If yes, go to question 2.
If no, go to question 3.

- ○ Yes
- ○ No

2. When you volunteered (non-work related) during the last 12 months, approximately how many hours per month did you volunteer?

[ ] hrs. per mo.

3. During the last 12 months, have you been a volunteer at work (served on a board such as SHARE or the Credit Union, volunteered as part of a professional organization such as APW, BSSWG, BIG, etc., volunteered for extra assignments, volunteered to monitor equipment, etc.) for which **you did not receive extra pay or credit time?**

- ○ Yes
- ○ No

4. Are you trained in CPR and AED (Cardiopulmonary resuscitation and Automated External Defibrillation)?

If yes, go to question 5.
If no, go to question 7.

- ○ Yes
- ○ No

5. If yes to question 4, are you currently certified in CPR and AED?

- ○ Yes
- ○ No

6. Were you trained in CPR and AED in a course offered at CDC or sponsored by CDC?
If yes, Now go to Part II question 10, skipping questions 7-9.

- ○ Yes
- ○ No

7. How willing are you to be trained in CPR and AED?
If **slightly, moderately or very willing** to be trained, go to question 8.
If **not at all willing** to be trained, go to question 9.

- ○ Not at all willing
- ○ Slightly willing
- ○ Moderately willing
- ○ Very Willing

8. If you are **willing to be trained in CPR and AED but have not yet been trained in CPR and AED,** what are your reasons (click all that apply) for not yet being trained?

- ☐ Job too demanding, so no time to go for training
- ☐ Training never offered to me (never asked)
- ☐ Have applied, but never has been a space available
- ☐ Never a good time for me
- ☐ Other---Although I am willing to be trained in CPR/AED, I have not yet been trained because (use this box area to provide your reasons)

9. If you are **not willing** to be trained in CPR and AED, what are your reasons (click all that apply)?

- ☐ Job too demanding, so no time to go for training
- ☐ Not interested in being trained in CPR/AED
- ☐ Don't think I can do mouth to mouth resuscitation
- ☐ Don't want to do mouth to mouth resuscitation
- ☐ Afraid of electronic paddles used in AED

☐ Other---I am unwilling to be trained in CPR/AED because (use t
to provide your reasons)

Part II.

10. My job permits me to decide on my own how to go about doing the work.

- ○ Disagree strongly
- ○ Disagree
- ○ Neutral
- ○ Agree
- ○ Agree strongly

11. My job gives me considerable opportunity for independence and freedom in how I do the work.

- ○ Disagree strongly
- ○ Disagree
- ○ Neutral
- ○ Agree
- ○ Agree strongly

12. My job denies me any chance to use my personal initiative or discretion in carrying out the work.

- ○ Disagree strongly
- ○ Disagree
- ○ Neutral
- ○ Agree
- ○ Agree strongly

13. Generally speaking, I am very satisfied with my job.

- ○ Disagree strongly
- ○ Disagree
- ○ Neutral
- ○ Agree
- ○ Agree strongly

14. I am confident about my ability to do my job.

- ○ Disagree strongly
- ○ Disagree

- Neutral
- Agree
- Agree strongly

15. I am self-assured about my capabilities to perform my work activities.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

16. I have mastered the skills necessary for my job.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

17. My impact on what happens in my workgroup is large.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

18. I have a great deal of control over what happens in my workgroup.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

19. I have significant influence over what happens in my workgroup.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

Part III.

You and Your Current Job (10-Quick Statements). Please respond to each statement by clicking at the appropriate category.

20. I am fairly rewarded considering my responsibilities.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

21. I am fairly rewarded in view of the stresses and strains of my job.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

22. I am fairly rewarded for the amount of effort I put forth.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

23. I am fairly rewarded for the work that I have done well.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

24. When pay and promotion decisions are made, opportunities are provided to appeal or challenge decisions.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

25. When pay and promotion decisions are made, all sides affected by the decisions have a say.

C Disagree strongly

C Disagree

C Neutral

C Agree

C Agree strongly

26. When pay and promotion decisions are made, standards or guidelines are used so decisions can be made in a fair and consistent way.

C Disagree strongly

C Disagree

C Neutral

C Agree

C Agree strongly

27. When pay and promotion decisions are made, procedures exist to hear the concerns of those affected.

C Disagree strongly

C Disagree

C Neutral

C Agree

C Agree strongly

28. When pay and promotion decisions are made, useful feedback is provided regarding the decisions and how they will be implemented.

C Disagree strongly

C Disagree

C Neutral

C Agree

C Agree strongly

29. When pay and promotion decisions are made, procedures allow for requests for clarification or additional information.

C Disagree strongly

C Disagree

C Neutral

C Agree

C Agree strongly

Part IV.

Your Feelings and Behaviors (8 Quick Questions)—Below are a number of statements that may or may not describe you, your feelings, or your

behavior. Please read each statement carefully and click in the circ
corresponds to your choice. There are no right or wrong responses.

30. I am usually pretty effective in dealing with emergencies.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

31. I tend to lose control during emergencies.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

32. When I see someone who badly needs help in an emergency, I go to pieces.

- Disagree strongly
- Disagree
- Neutral
- Agree
- Agree strongly

33. I have helped carry a stranger's belongings (e.g., books, parcels, etc.).

- Never
- Once
- More than Once
- Often
- Very Often

34. I have allowed someone to go ahead of me in a line (e.g., supermarket, copying machine, etc.)

- Never
- Once
- More than Once
- Often
- Very Often

35. I have let a neighbor who I didn't know too well borrow an item of some value (e.g., tools, a dish, etc.).

- Never
- Once
- More than Once
- Often
- Very Often

36. I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.

- Never
- Once
- More than Once
- Often
- Very Often

37. I have offered to help a person with disabilities or elderly stranger cross a street.

- Never
- Once
- More than Once
- Often
- Very Often

Part V.

This is the LAST part. Just 12 very short questions. Please answer each question below by clicking at the appropriate category or providing the information requested.

38. Job type (Please select the category that best matches the work you do).

- Scientific
- Communications
- Program Manager/Analyst
- Skilled Trade
- Managerial
- Technology
- Support/Administrative
- Other

39. Are you one of the following: physician, nurse, dentist, pharmacist, or veterinarian?

- Yes
- No

40. Do you have supervisory responsibility for other employees?

- Yes
- No

41. Length of service at CDC/ATSDR (Please pick one)

- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21 to 25 years
- 26 to 30 years
- 31 years and over

42. What is your grade or rank?

- GS 1-8, all WB, WG, WL, WS, WT
- GS 9-12, CC 1-4
- GS/GM 13-15, CC 5-6, FC, AD
- SES, SBRS, ALJ, ASG, SL, ST
- Other

43. Is your CDC job or duty station located in Georgia?

- Yes
- No

44. What is your gender?

- Female
- Male

45. What is your age as of your last birthday (Please pick one)

- less than 30 years
- 31 to 40
- 41 to 50
- 51 to 60
- 61 or over

46. What is your ethnic background?

- Asian or Pacific Islander

- ○ Black or African American, not of Hispanic Origin
- ○ American Indian or Alaskan Native
- ○ Hispanic
- ○ White, not of Hispanic Origin

47. Do you consider yourself religious?

- ○ Not religious at all
- ○ Slightly religious
- ○ Moderately religious
- ○ Very religious

48. Do you consider yourself a member of a religious organization?

- ○ Yes
- ○ No

49. What is your highest level of education?

- ○ Some high school
- ○ High school graduate/GED
- ○ Some college or technical/vocational training
- ○ Associate degree (2 years)
- ○ Bachelor degree (4 years)
- ○ Some postgraduate work
- ○ Master's degree
- ○ M.D./Ph.D.
- ○ Post M.D./Ph.D

Thank you for answering this survey. This information will be very helpful in designing programs to assist employees.

To submit your survey electronically, click here SUBMIT

Or

To submit by mail, download (print) your completed questionnaire and mail anonymously to Priscilla Holman, CDC, Mailstop K-73, Atlanta, GA 30333.

To save this questionnaire to complete later, click here SAVE

[When you have time to finish the questionnaire, just go to my e-mail to you, click on the website, and your partially completed questionnaire will appear.]

United States Department of Health and Human Services
Centers for Disease Control and Prevention
Office of the Director

APPENDIX B

FOUR E-MAIL MESSAGES TO SURVEY SAMPLE

PRE-NOTIFICATION
INITIAL TRANSMITTAL OF SURVEY
FIRST REMINDER
SECOND REMINDER

PRE-NOTIFICATION

-----Original Message-----
From: Robert H. Hill Jr. (OD)
Sent: Friday, November 14, 2003 2:29 PM
Subject: CPR/AED Training-Employee Survey

The purpose of this e-mail is to alert you to a very important survey coming to you in the next few days through the e-mail system. The purpose of the survey is to gather information that can be used to help prepare employees in CPR (Cardio-Pulmonary Resuscitation) and AED (Automated External Defibrillation) to handle possible emergency situations to save lives. It is timely to the events of 9/11 and worksite preparedness and emergency response. This survey is being sent to a sample of CDC employees, making your insights through your answers to this survey even more important.

The survey is being conducted by Priscilla Holman who is both a fellow CDC employee and a doctoral candidate at the University of Georgia (UGA). She is conducting this research as her dissertation study in collaboration with the CDC Office of Health and Safety (Atlanta) and colleagues at UGA. The research has received IRB approvals from both CDC and UGA.

Your participation in the survey is entirely voluntary, but I hope you will choose to complete the questionnaire when you receive it. The survey will take less than 10 minutes to complete. I assure you the information you provide will be very helpful to us in developing programs for you and your fellow employees at CDC.

Thank you.
Robert H. Hill, Jr., Ph.D.
Acting Director, CDC Office of Health and Safety

INITIAL TRANSMITTAL OF SURVEY

-----Original Message-----
From: Priscilla Holman
Sent: Tuesday, November 18, 2003 1:27 PM
Subject: CPR/AED Training-Employee Survey

Several days ago you received an e-mail from Dr. Robert Hill, Acting Director of CDC's Office of Health and Safety, notifying you of this survey. You are being asked to complete this survey questionnaire because you are one of a limited number of employees who has taken a CPR (Cardio-Pulmonary Resuscitation) and AED (Automated External Defibrillation)) combined training course offered through the Office of Health and Safety (OHS). Therefore your response is very important. Your answers will help CDC and other worksites better understand employees who are helpful, assist CDC in designing recruitment programs for employee volunteers, and contribute to worksite preparedness.

I am the CDC employee as well as doctoral candidate at the University of Georgia conducting this survey which is an essential part of my dissertation study. I have permission from both CDC and the University of Georgia to conduct the study, but the success of this study depends on you for filling out and submitting the survey questionnaire.

Your participation is entirely voluntary. There are no foreseeable risks to you for participating; all information you provide is confidential. Neither any supervisors nor I will be able to connect a questionnaire or any information to you. All questionnaires will have been renumbered and disconnected from the e-mail system when I receive them.

I expect to share the collective, analyzed results as my dissertation, in a scientific journal article, and with CDC and its employees.

If you have any questions, you may contact me through the e-mail system (pbh2@cdc.gov) or telephone (770-488-8222), or without using your name, you may send me a note (Priscilla Holman, Mailstop K-73) with just a return address.

To consent and participate in this study, please click at this site (http://aod-xdv-web/Cpraed/Source/CSurvey.asp) and complete the survey or print it out and mail it anonymously to Priscilla Holman at CDC, Mailstop K-73. You may receive up to two reminders to participate. Please do not delete this e-mail with the web site address in case you need to get back to the questionnaire.

Thank you for helping CDC/OHS, our fellow employees, and me.

Priscilla B. Holman

Confidentiality: All information you provide is confidential. I have never seen the e -mail addressees being sent this e-mail and questionnaire. All lists have been managed by OHS and the CDC/OD IRM Coordinator (Computer Programmer). By their nature, Internet communications are insecure and there is a limit to confidentiality that can be guaranteed because of the technology itself. However, established confidentiality procedures are in place. All information gathered via the e-mail/URL communications' computer programmer is entirely confidential. The survey is also secured by the CDC web firewall. Even if you contact me directly, I will never be able to connect you to any information you provide because I do not have access to the communication system or have computer technology expertise.

FIRST REMINDER

-----Original Message-----
From: Priscilla Holman
Sent: Tuesday, November 25, 2003 10:43 AM
Subject: CPR/AED Training-Employee Survey

Last week you received an e-mail from me asking for you to participate in a survey whose results will be used to help prepare employees to assist in possible medical emergencies. This is a reminder to ask you to please complete the questionnaire.

Your response will not only help me with my dissertation research, but will help CDC and other worksites better understand employees who are helpful, will assist CDC and other worksites in designing recruitment programs for employee volunteers, and will contribute to worksite preparedness for emergencies. Let me state again that your participation is entirely voluntary and all information collected is confidential.

Please press this web site, to complete the questionnaire (http://aod-xdv-web/Cpraed/Source/CSurvey.asp) or print it out and mail it anonymously to Priscilla Holman at CDC, Mailstop K-73, Atlanta, GA 30333. You may also choose to print it out, fill it out by hand, and mail it anonymously to Priscilla Holman at CDC, Mailstop K-73, Atlanta, GA 30333. Please do not delete this e-mail with the web site address in case you need to get back to the questionnaire before you have completed it. Also, I apologize to any respondent who has already completed the survey and mailed it in, but still receives this reminder. The computer program was unable to block this reminder to persons who mailed the survey instead of submitting it electronically. Also, I apologize to any respondent who has already completed the survey and mailed it in, but still receives this reminder. The computer program was unable to block this reminder to persons who mailed the survey instead of submitting it electronically.
THANK YOU.

Priscilla B. Holman

By their nature, Internet communications are insecure and there is a limit to confidentiality that can be guaranteed because of the technology itself. However, established confidentiality procedures are in place. The surveys are also secured by the CDC firewall. I, the researcher, will never be able to connect you to a survey or to any information you provide.

SECOND REMINDER

-----Original Message-----
From: Priscilla Holman
Sent: Tuesday, December 02, 2003 1:40 PM
Subject: CPR/AED Training-Employee Survey

This is my last reminder to you, but I really need your help with this research survey related to my dissertation. The results of this study will be used to help recruit and prepare employees to assist in possible medical emergencies. As stated earlier, a random sample of employees is being sent the questionnaire, thus making your participation extremely important to the success of the study. Your answers will help CDC and other worksites in designing recruitment programs for employee volunteers and environments that support helpfulness among employees. Let me state again that your participation is entirely voluntary, and all information collected is confidential.

The survey will remain on line via this e-mail through Friday, Dec. 12, but this is the last reminder. I am getting feedback that the electronic survey takes less than 7 minutes to complete, so I hope you will take the few minutes to complete it now. Please press this web site, and complete the questionnaire (http://aod-xdv-web/Cpraed/Source/CSurvey.asp) or print it out and mail it anonymously to Priscilla Holman at CDC, Mailstop K-73, Atlanta, GA 30333. You may also choose to print it out, fill it out by hand, and mail it anonymously to Priscilla Holman at CDC, Mailstop K-73, Atlanta, GA 30333. **I would truly appreciate your completing the questionnaire. Thank you in advance for your participation.**

Please do not delete this e-mail with the web site address in case you need to get back to the questionnaire before you have completed it.

Priscilla B. Holman

By their nature, internet communications are insecure and there is a limit to confidentiality than can be guaranteed because of the technology itself. However, established confidentially procedures are in place. The surveys are also secured by the CDC web firewall. I, the researcher, will never be able to connect you to a survey or to any information you provide.

APPENDIX C

QUESTIONS USED TO PILOT TEST SURVEY QUESTIONNAIRE

Questionnaire Pretest
Paper and Pencil

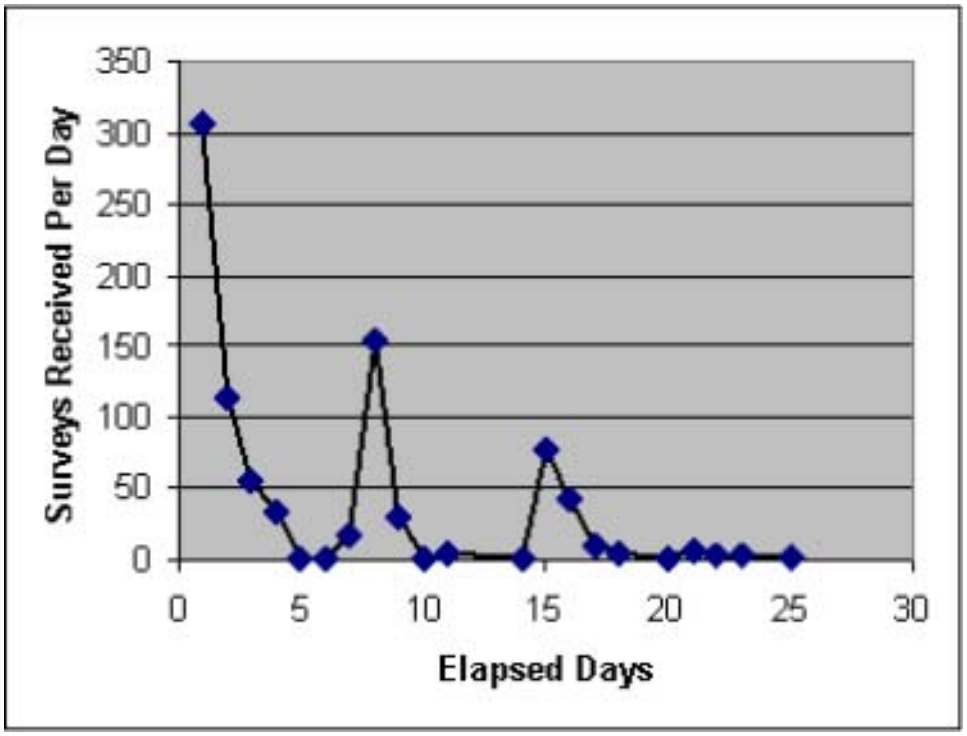
1. Time to complete ____minutes.
2. Did you have any difficulty understanding the questions generally? Yes O No O
3. Did you have any difficulty understanding the instructions for completing the questionnaire? Yes O No O
4. Did any particular question cause you difficulty in understanding. (Go through the questions)? Yes O No O
Provide question number(s)
5. Were you reluctant to answer any question? Yes O No O Which one(ones)?
6. Did you get tired when you were answering the questionnaire? Yes O No O
7. If yes, do you remember at which question you became tired? Provide question number.
8. Do you typically answer e-mail surveys? Yes O No O

When this questionnaire is converted to the e-mail system, will you pilot test the system?
Thank you.

APPENDIX D

RESPONSES BY NUMBER OF DAYS AFTER E-MAIL SURVEY TRANSMISSIONS ON NOVEMBER 18, 2003 NOVEMBER 25, 2003 AND DECEMBER 2, 2003

Responses by Number of Days After E-mail Survey Transmissions on
November 18, 2003
November 25, 2003
and
December 2, 2003



Note: Based on 882 records; 18 of the 64 manually entered records did not have a submission date.

APPENDIX E

INTER-ITEM CORRELATION MATRICES FOR SCALED VARIABLES

HELPFULNESS Subscales: Personal Distress/Effectiveness; Self-reported Altruism
JOB AUTONOMY
JOB IMPACT
DISTRIBUTIVE JUSTICE
PROCEDURAL JUSTICE
JOB SELF-EFFICACY

INTER-ITEM CORRELATION MATRICES FOR SCALED VARIABLES:

1. Inter-item Correlation Matrix for Helpfulness Scale

Pearson Correlation Coefficients, N=790, composite variable **Helpfulness:** Qs. 30-32 for Personal Distress subscale and Self-reported Altruism subscale Qs.33-37

	effective	control	pieces	helped	ahead	borrow	looked	offered
effective	1							
control	0.66	1						
	<.0001							
pieces	.53	0.63	1					
	<.0001	<.0001						
helped	-0.07	-0.04	-0.11	1				
	<.0490	0.3198	0.0013					
ahead	-.02	0.00	-0.00	0.48	1			
	0.4952	0.9354	0.9019	<.0001				
borrow	-0.01	-0.01	-0.04	0.45	0.46	1		
	0.7486	0.7846	0.2540	<.0001	<.0001			
looked	-0.07	-0.03	-0.04	0.37	0.38	0.44	1	
	0.0637	0.3331	0.2562	<.0001	<.0001	<.0001		
offered	-0.09	-0.05	-0.09	0.52	0.44	0.47	0.41	1
	0.0085	0.1411	0.0129	<.0001	<.0001	<.0001	<.0001	

2. Inter-item Correlation Matrix for Job Autonomy

Pearson Correlation Coefficients, N=790, composite variable **Job Autonomy Scale** Qs. 10-12

	decide	Independent	denies
decide	1		
independent	0.78	1	
	<.0001		
denies	0.24	0.28	1
	<.0001	< .0001	

3. Inter-item Correlation Matrix for Job Impact

Pearson Correlation Coefficients, N=790, composite variable **Job Impact Scale** Qs. 17-19

	impact	control	Influence
Impact	1		
control	0.66742	1	
	<.0001		
influence	0.66541	0.82266	1
	<.0001	<.0001	

4. Inter-item Correlation Matrix for Distributive Justice

Pearson Correlation Coefficients, N=790, composite variable **Distributive Justice Scale** Qs. 20-23

	responsibilities	stresses	effort	work
responsibilities	1			
stresses	0.83	1		
	< .0001			
effort	0.85	0.83	1	
	<.0001	<.0001		
work	0.81	0.78	.83	1
	<.0001	<.0001	<.0001	

5. Inter-item Correlation Matrix for Procedural Justice

Pearson Correlation Coefficients, N=790, composite variable **Procedural Justice Scale** Qs. 24-29

	Appeal	all sides	guidelines	hear	feedback	Clarification
appeal	1					
all sides	0.77	1				
	<.0001					
guidelines	0.66	0.70	1			
	<.0001	<.0001				
hear	0.68	0.72	0.71	1		
	<.0001	<.0001	<.0001			
feedback	0.62	0.70	0.70	0.73	1	
	<.0001	<.0001	<.0001	<.0001		
clarification	0.62	0.66	0.65	0.77	0.77	1
	<.0001	<.0001	<.0001	<.0001	<.0001	

6. Inter-item Correlation Matrix for Job Self-efficacy

Pearson Correlation Coefficients, N=790,
composite variable **Job Self-efficacy Scale**
Qs. 14-16

	confident	assured	Skills
confident	1		
assured	0.72	1	
	<.0001		
skills	0.50	0.54	1
	<.0001	<.0001	

APPENDIX F

EXPLORATORY FACTOR ANALYSIS—FACTOR CORRELATION MATRIX

Explanatory Factor Analysis--Factor Correlation Matrix

	Factors						
Factors	Proc. Justice	Self-Reported Altruism	Impact	Distr. Justice	Self-Efficacy	Autonomy	Personal Dis. (Effectiveness)
Proc. Justice	1.0						
Self-Reported Altruism	.066	1.0					
Impact	-.370	-.138	1.0				
Distr. Justice	.608	.007	-.365	1.0			
Self-Efficacy	-.106	-.194	.343	-.079	1.0		
Autonomy	.300	.058	-.487	.360	-.237	1.0	
Personal Dis./Effectiveness	.086	-.094	.126	.117	.254	-.058	1.0