

EMERGENCY STRESS: THE IMPACT OF CONNECTEDNESS ON PERCEIVED
STRESS LEVEL IN PUBLIC SAFETY PROFESSIONALS

A Dissertation by

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The following faculty members have examined the final copy of this dissertation for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Doctor of Philosophy with a major in Psychology.

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DEDICATION

I would like to dedicate this dissertation to my family and dearest friends. Without your love and support, this would not have been possible. I am grateful for the opportunity you have afforded me through your support and the kind words of encouragement you have given me over the years.

I would also like to thank the members of my committee and other professors who have helped me in this project. I would like to give a special thanks to Dr. Burdsal, for letting me do my own thing and teaching me how to do that.

Dance. Sometimes you have to do it in high heels and backwards, but just get in there and enjoy the music.

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I would like to thank the people in the public safety agencies who gave me an incredible amount of support and help with this study and the pilot study. Without your help and advice this would not have been possible. I continue to learn more about this subject thanks to your willingness to teach me. I hope that one day it will make a difference.

ABSTRACT

Stress related illness is one of the most critical health issues facing public safety professionals today. Much of the research has focused on interventions such as critical incident stress management and the provision of clinical and peer support to public safety professionals after a problem has been identified. The current study focused on identifying environmental factors that would increase resiliency to the harmful effects of working in a highly stressful profession. It was hypothesized that a higher reported sense of connectedness to and a sense of feeling needed and valued by community, friends/family, and co-workers would predict lower perceived stress levels in public safety professionals. Law enforcement officers, firefighters, detention personnel, and civilian support staff (n=218) from four agencies in a large mid-western city participated in an internet based questionnaire to determine participants stress levels using the Perceived Stress Scale (PSS-10) and levels of connectedness on nine predictors. The model accounted for more than one third of the variance in participants' perceived stress levels. The participants' connectedness to family/friends and community as well as a sense of being needed and valued by co-workers accounted for the most variance in the model.

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CHAPTER 1

INTRODUCTION

Public safety professionals, including law enforcement officers, firefighters, detention personnel, and civilian support staff are the core elements of first responding agencies that are charged with the duty of aiding people in the most dangerous and stressful circumstances. When facing a crisis situation they step in and bring order and calm into a stressful situation. They deal with dangerous prisoners and often deal with a less than appreciative public. Yet, the service they provide exacts a high toll on their own health and well-being. While much attention has been focused on this issue and vast improvements have been made in dealing with the stress faced by public safety professionals, stress related health issues continue to plague the first responder community. Much of the research and intervention regarding this issue has focused on risk factors and pathogenic causes of stress related health issues in this population. The purpose of the current study was to develop a greater knowledge of environment protective factors in stress resiliency. Specifically this study addressed the relationship of social connectedness to family, co-workers, and the community to reduced levels of perceived stress.

Literature Review

Over the past decades, researchers have shifted their focus from simply treating illness to identifying environmental factors associated with illness. As a part of a preventative approach to health and illness, health researchers have focused on stress as a key factor in preventable mental and physical pathology. Stress is defined as, “a negative emotional experience accompanied by predictable biochemical, physiological,

and behavioral changes that are directed toward adaptation either by manipulating the situation to alter the stressor or by accommodating its effects (Baum, A., 1990).

Stress has been linked to disease through two major pathways; physiological and behavioral. When an individual experiences stress, the sympathetic nervous system is stimulated. This stimulation causes several physiological responses such as increased hormone production and increased heart-rate. This is a normal biological response to environmental stressors that allows an organism to respond to environmental threats. Once an organism has responded to the stressor, hormone production and other biological responses return to normal. The process by which an organism responds behaviorally and physiologically to environmental stressors and then returns to normal once the stressor has been dealt with is called allostasis. Occasional exposure to stressors does not have a negative effect on the health of an organism. However, repeated or constant exposure to stressors results in an increase in the allostatic load of an organism. Allostatic load is the cumulative negative health effects or “wear and tear” as a result of the body’s response to stress. An increase in allostatic load is associated with an increase in cardiovascular disease and decreased immunity. In addition to the physiological effects of stress there are also behavioral effects. Chronic exposure to stress is associated with poor health habits, such as smoking, alcohol and drug use, and poor sleeping habits. Research also indicates a correlation between high stress levels and a decrease in health promoting behaviors such as proper eating, exercise and help-seeking behaviors (Baum, A., 1990, Ohman, Bergdahl, Nyberg, & Nilsson, 2007., Sun, Wang, Zhang, & Li, 2007, & Taylor, 2006).

There is a substantial body of research the negative impacts of stress on public safety professionals. Police officers, firefighters, and detention staff suffer higher rates of stress related illnesses than the general public (Franke, & Anderson, 1994, Maguire et al. 2002, & Violanti, 1996). In 2007, 52 of the 118 deaths of firefighters in the United States were attributed to heart attacks (U.S. Firefighters Administration, 2008 & Kales et al., 2007). Public safety professionals also experience higher rates of divorce, mental illness, alcohol and substance abuse, and suicide than the general public (Regehr, 2005). These statistics indicate that more needs to be done to address the issue of stress in public safety professionals.

The range of psychological intervention services offered to public safety professionals has improved over the past decades. There have been vast improvements in training and pre-employment screening procedures. Yet, there are several weaknesses in the services available to public safety professionals. First, many services are only interventions after a problem or significant risk factor has been identified. Second, organizational culture prevents these services from being fully utilized in many cases. Finally, these services do not fully address the types of occupational stress experience by emergency service personnel (Amaranto, 2003 & Bartol, 1996).

A variety of programs have been implemented to address the incredible stress levels faced by public safety professionals. In order to address Post-Traumatic Stress Disorder, there has been a vast improvement in the way public safety professionals are debriefed after critical incidents and clinical services for public safety professionals have been increased (Mitchell & Everly, 1997). Following the attacks on the World Trade

Center in 2001, Critical Incident Stress Debriefing (CISD) has become a standard approach to providing public safety professionals with psychological care following critical events (Newbold, Lohr, & Gist, 2008). CISD is an intervention technique developed by Mitchell that was designed to reduce the negative psychological effects of trauma exposure. The foundations of this intervention are early intervention, a cathartic debriefing of the incident and evaluation for further clinical intervention (Mitchell & Everly, 1997). Typically, following a critical event, public safety professionals take part in group debriefing sessions where they are asked to discuss their emotional responses to the event with their peers (Newbold et al., 2008).

While this model is widely used in various formats, there is much controversy as to the effectiveness of this approach. Often these interventions are evaluated through satisfaction surveys and anecdotal reports of facilitators or administrators. These surveys are generally given immediately following or shortly after the intervention. Often these evaluations are administered directly by the facilitators (Regehr, 2005). In a study conducted with firefighters regarding the effectiveness of critical incident debriefing, the majority of participants reported that the intervention was beneficial to them personally (86%) and reduced their stress level (77%). The participants were also administered the Beck's Depression Inventory (BDI) and the Impact of Events Scale (IES). While there was no significant difference in the scores on the BDI, the group who had not participated in the debriefing had significantly higher scores on the IES. In this case, there was no evidence that the debriefing was helpful contrary to the participant's initial evaluations. Other studies show mixed results (Regehr, 2005 & Regehr, 2001). While some public safety professionals may be helped by this process, many are not.

Most emergency service agencies also offer extensive clinical psychological and peer support services to their employees. Generally, these services are offered when a first responder has been exposed to an extreme critical event when there are indicators of stress related problems. In 2000, the Employee Assistance Program of the FBI released the "Supervisory Assistance Handbook" to give supervisors guidance in recognizing potential problems in officers. This handbook lists work related behaviors that may indicate that an officer is experiencing difficulties. Some of the indicators are poor work productivity, lack of judgment while on duty, lack of attention or concentration, and an excessive number of accidents or injuries. The handbook also mentions several changes in behavior that may indicate a problem such as irritability, unwillingness to cooperate, tardiness or absenteeism, and inappropriate emotional displays. In such cases it is recommended that the supervisor note and document the behavior. This is an important step in identifying officer who may need counseling, but it is not a comprehensive or adequate approach (Rehger, 2005).

Many public safety professionals, who are experiencing difficulties, fail to be identified or referred to services. This can partly be attributed to the culture of their working environment. Public safety professionals are trained to monitor their behaviors and may not exhibit obvious problems while on duty. They are trained to be in control and manage chaotic situations. However, this does not mean that they are not experiencing distress or strong emotions. There is a strong organizational culture in emergency service organizations. Displaying or focusing on emotions is often viewed as a weakness. In addition, public safety professionals are reluctant to seek professional help for fear of being taken off of active duty. A co-worker or supervisor

may be reluctant to point out signs of a problem as it goes against the organizational culture and may be viewed as being disloyal (Ellison, 2004 & Regehr, 2005, & Woody, 2005).

While, it is widely recognized that public safety professionals are exposed to high levels of traumatic stress and may be at risk for PTSD, depression, or other anxiety disorders as a result of trauma exposure, there are other types of stress in emergency service organizations that contribute to the overall stress levels of public safety professionals. The literature makes a distinction between operational stressors and organizational stressors. Operational stressors are those stressors that are experienced in the field such as exposure to death or severe injury, high level conflict situations, high speed car chases, and dealing with the public under difficult circumstances. Organizational stressors are those stressors that are found in the organizational environment such as conflict with co-workers, lack of promotion, and lack of support from supervisors and administrative staff. Research indicates that organizational and operational stressors are predictive of job satisfaction and psychological strain in public safety professionals (Brough, 2005) Research indicates that organizational stressors are more closely associated with mental health issues and high degrees of distress in emergency service personnel (Regehr, 2005).

Recognizing that an intervention based approach is not adequate to address the cost of high levels of stress in public safety professionals, a number of primary prevention interventions have been developed. The main goal of the majority of these programs is to develop resiliency to stress in public safety professionals. Many these programs are educational programs designed to provide information on the impact of

stress on health and well-being. Other programs include teaching stress management techniques and overall health promotion. The core of the programs is to foster stress resiliency in the individual first responder (Regehr, 2005).

The concept of stress resiliency is based on the knowledge that some individuals cope with stress better than others. Much research has been done focusing on personality traits as mediating factors in coping to stressful situations. Antonovsky's salutogenesis model of health focuses on the factors that support health and well-being instead of focusing on pathogenic factors. His work is founded on Engel's biopsychosocial model of health. This model attributes health and illness to an interaction between psychological and social, as well as biological factors. Some public safety professionals may have biological factors, such as a family history of heart disease, that contribute to stress related health issues. Others may have psychological factors, such as an overly conscientious personality, that would contribute to stress related health issues. Yet, they may not develop stress related health issues. The biopsychosocial model of health and illness allows social factors to be considered in understanding the nature of stress related illness (Engel, 1977 & Antonovsky, 1987).

In order to have a complete understanding of the social factors that may be relevant to perceived stress, it is important to consider a complete ecological perspective of the public safety professionals life. Based on Bronfenbrenner's ecological model of development, Voydanoff developed a model that incorporates community into a model of understanding the interaction between work and family. Limited research has been done on the role of community in work. The majority of this research focuses on community from structural factors and social networking rather

than as social support or connectedness resources (Bronfenbrenner & Crouter, 1982 & Voydanoff, 2001).

Social connectedness is an important part of psychological well-being. Connectedness can be defined as “when a person is actively involved with a person, object, group or environment and that involvement promotes a sense of comfort, well-being, and anxiety-reduction” (Hagerty et al., 1993). Although social connectedness is correlated with other social involvement variables, such as social support, it is a distinct concept (Williams & Galliher, 2006). Research indicates that a lack of social connection is correlated with higher levels of depression, anxiety, and other psychological problems. Individuals who report low social connectivity often appraise their environments as hostile and report a lack of social support. Research indicates that a sense of connectedness with a person or group is correlated with positive health benefits even when that group or person does not provide social support to the individual (Steptoe et al., 2008 & Lee, Keough, & Sexton, 2002, & Lee & Robbins, 1995).

From a health promotion perspective, research indicates that perceived social support and social connectivity are correlated with an increased ability to cope with the stress of traumatic experiences. A study looking into the mediators of stress resiliency in Vietnam veterans indicated that both the social support structure and the functionality of that support system were strong mediators for the development of Post-Traumatic Shock Disorder (PTSD) (King et al., 1998). Those participants who had strong functioning social support systems were much less likely to develop PTSD. Many public

safety professionals limit social interactions to those within the agency in which they work and many do not discuss critical events with family members.

Hypothesis

While typically researchers focus on public safety professionals who offer direct first response services, law enforcement officers and firefighting personnel. The current study included all public safety personnel working in first responding agencies. Specifically, four service categories were included in the study; law enforcement officers, firefighters, detention staff, and civilian support staff. The inclusion of participants from the four service categories allows for job specific comparisons. In the current study it was hypothesized that a higher reported sense of connectedness to and a sense of feeling needed and valued by community, friends/family, and co-workers would predict lower perceived stress levels in public safety professionals. Based on the results of the pilot study, it was also predicted that connectedness to friends/family and community would contribute more to the prediction model than connectedness to co-workers.

CHAPTER 2

METHODOLOGY

Participants

Participants (N=219) were recruited from four first responding agencies in a Midwest metropolitan city. The sample included 88 (40.2%) law enforcement officers, 60 (27.4%) firefighters, 40(18.3) detention personnel, and 31 (14.2%) civilian support personnel. Of the participants 53 (24.2%) participants were female and 166 (75.8%) were male. The ages of the participants ranged from 23 years to 68 years with a mean age of 42.03 (SD= 9.645). The sample was comprised of 182 (83.1%) white/non-Hispanic, 11(5.0%) black, 10 (4.6%) Hispanic, 1 (.5%) Asian participants, 7 (3.2%) Pacific Islander/Native American, and 9 (4.1) of mixed race or other. With regard to marital status, 176 (80.4%) participants were either married or living with a partner; 20 (9.1%) of participants were single, 19 (8.7%) were divorced, 3 (1.4%) were separated, and 1(.5%) was widowed. The participants were asked the level of educational attainment; (high school graduate 16 (7.3%), trade/technical school 6 (2.7%), some college 95 (43.4%), college graduate 87 (39.7%), and graduate degree 15 (6.8%). The length of time participants had worked for an agency providing first responder services ranged from one month to 46 years (SD= 9. 354).

Procedure

The agencies were contacted and permission was obtained to request participants to complete an online survey. Two of the agencies were able to send direct e-mails to all participants. The other two agencies do not maintain individual e-mail addresses for all employees. These agencies provided the link to the survey via agency

wide intranet services and handouts explaining the study and the link to the study. To protect the privacy of the participants e-mailed invitations and reminders were sent administrators within each agency. The invitation to participate in the study included a link to the survey and an agency code to provide information on the agency where they were employed. The participants were able to directly access the survey via internet at their convenience.

Measures

The following measures were used; Perceived Stress Scale (PSS), Community Connectedness Scale, Family Connectedness Scale, Work Connectedness Scale, and six additional questions were asked to identify each participant's level of interaction and opportunity to interact with their family, co-workers, and the community at large.

The PSS is a widely used psychometric scale which is used to measure of the degree to which situations in one's life are appraised as stressful (Cohen et al., 1983). In a large probability sample the mean score was 13.02. There are three versions of the PSS: PSS-14, PSS-10, and PSS-4. The 10 item version has been found to have the highest internal validity of the three versions (Cohen & Williamson, 1988). The measure consists of six negatively framed questions, such as, "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?", and four positively framed questions such as, "In the last month, how often have you felt that you were on top of things?" Items are scored on a 5-point likert scale; responses range from 0 (Never) to 4 (Very Often). The positive questions are reverse scored. Responses are added to obtain an aggregate perceived stress score.

Reliability coefficients, using Cronbach's alpha, ranged from .86 to .92. A test-retest correlation for two days is .85. After six weeks, the test-retest correlation dropped to .55 indicating that the measure is sensitive to variable perceptions of individual stress rather than individual personality differences. The measure has been found to be negatively correlated with utilization of health services and positive health behaviors (Cohen et al., 1983 & Glaser et al., 1999). The Cronbach's alpha for the sample in the current study was .89.

The three connectedness scales are graphical representations of one's connectivity to family, work, and community based on Aron's Inclusion of Others in Self Scale. The Inclusion of Community in Self Scale (ICSS) is a measure of one's perceived level of connectedness to one's community (Aron & Aron, 1986, Mashek, D., Cannaday, L. & Tangney, J., 2007). The participant is asked to select from six graphical representations which representation is most applicable to his or her situation. Each response consists of two circles that represent "Self" and "Community". The responses are arranged so that the circles are gradually placed closer together. The level of connectedness is determined by how close the circles are positioned (See Illustration 1.1). The Inclusion of Community in Self scale has been validated in two studies and has been shown to have a high test retest reliability ($r=.74$) and has been shown to be highly correlated with other measures of community connectedness. The family connectedness scale and the co-worker scales have not been validated as they were designed for this study. They are, however, based on the same visual scale as the community scale. The three connectedness scales are basically identical. Each scale uses the same graphical representations of connectedness. The only difference is the

object of connectedness; community at large, family, and co-workers. The community scale, for example, asks the participant to choose the graphical representation that describes their relationship to the community at large (see Illustration 1, 2, and 3).

FIGURE 1

FRIEND/FAMILY CONNECTEDNESS SCALE (CFAM)

Please select the picture that best describes your relationship with your closest freinds and family (S= Self and C= Close Friends and Family).


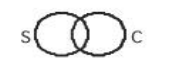




<input type="radio"/> 	<input type="radio"/> 	<input type="radio"/> 
<input type="radio"/> 	<input type="radio"/> 	<input type="radio"/> 

FIGURE 2

COMMUNITY CONNECTEDNESS SCALE (CCOM)

Please select the picture that best describes your relationship with the community at large (S= Self and C= Community at Large).


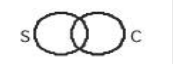




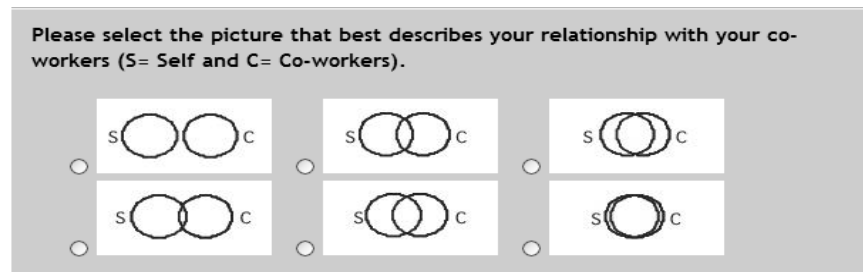
<input type="radio"/> 	<input type="radio"/> 	<input type="radio"/> 
<input type="radio"/> 	<input type="radio"/> 	<input type="radio"/> 

FIGURE 2

CO_WORKER CONNECTEDNESS SCALE (CWORK)



In order to evaluate viability of using the PSS-10 and the community connectedness scales to evaluate the relationship between connectedness to family, community, and co-workers and perceived stress levels, a pilot study was conducted in a small Midwestern city. The participants were from three public safety agencies. The pilot study (n=44) supported the use of the measures. In the pilot study a significant correlations were found between the level of connectedness and perceived stress levels for connectedness to family and community. However, there was no significant correlation between connectedness to co-workers and perceived stress levels.

In order to capture additional facets of connectedness, six additional questions were added to the questionnaire. Participants were asked to identify their level of agreement with the statements “I am needed and valued by my close friends and family” (Nfam), “I am needed and valued by my community” (Ncom), “I am needed and valued by my co-workers” (Nwork) on a six point likert scale ranging from “agree very strongly” to “disagree very strongly” (See Appendix). In order to assess the contribution of actual time spent with family/friends, community, and co-workers, participants were asked to report the number of hours spent with family/friends (Tfam), community (Tcom), and co-workers (Twork) outside of working hours in an average week.

CHAPTER 3

RESULTS

The questionnaire was completed by 219 participants. The sample was analyzed for possible outliers. Using the $p < .001$ criterion for Mahalanobis Distances, four cases were identified. Three of the four cases had extreme values on two or more variables. Those cases were examined individually to ascertain if they were outliers, but on further examination, there was no further justification for removal. One case, contained extreme responses on nearly all variables and the responses to demographic questions were implausible considering the overall demographics of the sample. This case was not included in the analysis. Of the remaining 219 participants, 193 had completed all nine of the measures.

Demographics

Bivariate correlations were performed between the demographic variables (gender, age, marital status, race, education level, career length, and service) and perceived stress. Perceived stress was weakly correlated with gender, ($r = .12$, $p < .05$) and Service ($r = .18$, $p < .01$). Bivariate correlations were performed between the demographic variables (gender, age, marital status, race, education level, career length, and service) and the nine predictor variables (See Table 1).

TABLE 1

CORRELATIONS: PREDICTOR VARIABLES WITH DEMOGRAPHIC VARIABLES

	Gender	Race	Marital	Education	Age	Service
Cfam	0.070	-0.009	0.006	0.039	-0.052	-0.050
Ccom	-0.148*	0.061	0.042	0.152*	0.058	-0.134*
Cwork	-0.178**	0.021	0.016	0.050	-0.121*	-0.222**
Nfam	0.163*	-0.186**	0.074	0.056	0.070	-0.056
Ncom	-0.087	-0.100	0.083	0.142*	0.179**	-0.200**
Nwork	-0.081	-0.113	0.079	0.003	0.062	-0.163*
Tfam	-0.086	0.055	0.058	0.045	0.039	-0.084
Tcom	0.078	0.136*	0.122	-0.006	0.011	0.012
Twork	-0.077	0.062	0.006	0.042	0.097	-0.101

**Correlation is significant at the 0.01 level (1-tailed).

*Correlation is significant at the 0.05 level (1-tailed).

The variable, Service, which represents the type of service participants provide within the agency they are working (Law Enforcement (LEO), Fire, Detention, and Civilian Support) was significantly correlated with PSS, Ccom, Cwork, Ncom, and Nwork. A one-way ANOVA revealed significant differences in all four of the correlated predictor variables. See Table 2 for means and stand deviations and Table 3 for F statistics.

TABLE 2
 MEANS AND STANDARD DEVIATIONS TYPE OF SERVICE BY SIGNIFICANT
 PREDICTOR VARIABLES

Service		PSS	Cfam	Ccom	Cwork	Nfam	Ncom	Nwork	Tfam	Tcom	Twork
LEO	N	88	88	88	88	72	72	72	88	88	88
	M	13.06	4.95	3.73	4.30	5.03	4.24	4.51	36.99	4.48	2.00
	SD	6.61	1.16	1.37	1.22	0.99	0.90	0.89	26.22	4.52	5.61
Fire	N	60	60	60	60	60	60	60	60	60	60
	M	13.43	4.88	4.00	4.37	4.75	4.22	4.20	35.65	4.90	3.13
	SD	6.36	1.14	1.31	1.09	0.88	0.72	0.90	30.09	4.90	6.15
Detention	N	40	40	40	40	37	37	37	40	40	40
	M	17.90	4.88	2.85	3.55	4.68	3.49	4.05	37.40	4.58	1.23
	SD	6.82	1.09	1.70	1.47	0.82	1.15	0.91	31.18	7.52	2.12
Civilian Support	N	31	31	31	31	24	24	24	31	31	31
	M	14.71	4.77	3.52	3.65	5.04	4.00	4.21	27.48	4.71	0.61
	SD	6.20	1.33	1.43	1.33	1.04	0.78	0.72	23.92	7.74	1.20

TABLE 3

ONE WAY ANOVA FOR TYPE OF SERVICE AND SIGNIFICANT PREDICTORS

One-way ANOVA for Service			
	df	F	Sig.
PSS	3, 215	5.516	0.001
Ccom	3, 215	5.487	0.001
Cwork	3, 215	5.547	0.001
Ncom	3, 189	6.775	0.000
Nwork	3, 189	2.736	0.045

Post hoc comparisons using the Tukey HSD test indicated that the mean score for detention personnel was significantly higher than other service categories for Ccom, Cwork, and Ncom at the .05 level of significance. The mean score for Cwork was significantly higher at the .05 level of significance for law enforcement and firefighters than it was for detention personnel and civilian support staff.

Predictors

Descriptive statistics and bi-variate correlations of the predictor variables and perceived stress were conducted. See table X for means and standard deviations. Many of the predicting variables were moderately correlated with each other. None of the correlations exceeded a level that would cause concern of multi-collinearity (Tabachnick, 2007). See Table 4 and Table 5 for means, standards deviations, and correlations.

TABLE 4

MEANS, RANGES AND STANDARD DEVIATIONS OF ALL NINE PREDICTORS

Means, Ranges and Standard Deviations				
	N	Range	Mean	Std. Dev.
PSS	219	36	14.28	6.72
Connected to Family/Friends	219	4	4.89	1.16
Connected to Community	219	5	3.61	1.47
Connected to Co-workers	219	5	4.09	1.29
Needed & Valued by Family/Friends	193	3	4.88	0.94
Needed & Valued by Community	193	5	4.06	0.93
Needed & Valued by Co-workers	193	5	4.29	0.89
Time with Family/Friends	219	125	35.35	27.98
Time with Community	219	40	4.64	5.75
Time with Co-workers	219	50	1.97	4.95

TABLE 5
PREDICTORS: BI-VARIATE CORRELATIONS

Predictor Correlations										
Variables	PSS	CFAM	CCOM	CWORK	NFAM	NCOM	NWORK	TFAM	TCOM	
PSS	—									
Connected to Family/Friends	-0.45***	—								
Connected to Community	-0.38***	0.33***	—							
Connected to Co-workers	-0.30***	0.35***	0.42***	—						
Needed & Valued by Family/Friends	-0.40***	0.59***	0.30***	0.22**	—					
Needed & Valued by Community	-0.38***	0.22**	0.45***	0.29***	0.42***	—				
Needed & Valued by Co-workers	-0.39***	0.31***	0.19**	0.31***	0.48***	0.44	—			
Time with Family/Friends	-0.22***	0.22***	0.14*	0.06	0.25***	0.08	0.04	—		
Time with Community	-0.11	0.05	-0.25***	-0.06	0.16*	0.14*	-0.06	-0.26**	—	
Time with Co-workers	-0.08	-0.14*	-0.19**	-0.16**	-0.14*	-0.11	-0.18**	-0.11	0.17	

** Correlation is significant at the 0.001 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

The continuous variable perceived stress, used to measure the perceived stress levels of participants, was analyzed for normality and found to be within acceptable limits of normality. The continuous variables Tfam, Tcom, and Twork also analyzed for normality. The variable Tfam was substantially positively skewed due to several extreme responses of time spent with family. As the extreme responses were found to be within reasonable limits and there was no justification to deem these cases as outliers on other variables. Both Tcom and Twork were skewed to do a high frequency of “zero” responses to the questions of how much off-duty time was spent with community activities (24.2%) or co-workers (55.3%). Transformations of the variables failed to create normal distributions so the variables were not transformed.

A standard multiple regression was performed between the nine measures of connectedness(Cfam, Ccom, Cwork, Nfam, Ncom, Nwork, TFam, TCom, and TWork) and the perceived stress score, to examine the extent connectedness, a sense of being needed and valued, and time spent with family/friends/ community, and co-workers predicted perceived stress levels in the participants. The analysis was performed using SPSS REGRESSION and SPSS EXPLORE for evaluation of assumptions.

The prediction model using the nine predictor variables accounted for more than one-third of the sample variance ($R^2 = .353$, adjusted $R^2 = .321$) and was highly significant, ($F_{9, 183} = 11.106$, $p < 0.001$). Three predictors were significant in the model Ccom, Cfam, and Nwork. A summary of the coefficient statistics can be seen in Table 6.

TABLE 6

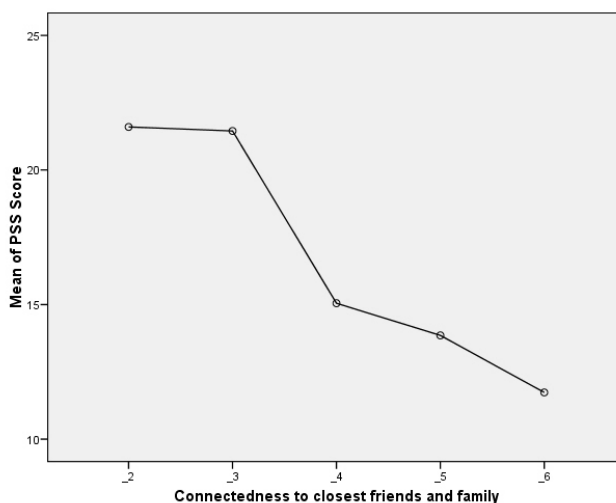
COEFFICIENT MATRIX FOR MULTIPLE REGRESSION USING PSS AS
DEPENDENT VARIABLE WITH NINE PREDICOTR VARIABLES.

Coefficients						
Predictor	B	SE	β	Zero-order	t	p
(Constant)	37.23	2.58			14.41	0.00
CFAM	-1.56	0.46	-0.27	-0.45	-3.42	0.00
CCOM	-0.77	0.34	-0.17	-0.38	-2.27	0.02
CWORK	-0.16	0.37	-0.03	-0.30	-0.44	0.66
NFAM	0.10	0.61	0.01	-0.40	0.16	0.87
NCOM	-1.04	0.54	-0.14	-0.38	-1.91	0.06
NWORK	-1.68	0.56	-0.22	-0.39	-2.98	0.00
TFAM	-0.03	0.02	-0.12	-0.22	-1.85	0.07
TCOM	-0.03	0.08	-0.02	-0.11	-0.35	0.72
TWORK	0.09	0.08	0.06	-0.08	1.02	0.31

Post hoc comparisons using Tukey HSD were performed on the significant predictor variables to assess the interactions of the different levels of the predictor variables. The range of responses in the sample to Cfam was 2 to 6. The predictor variable Cfam showed significant increases in mean differences for each level of Cfam starting at the third level. This most significant effect took place between the third and the fourth level of the predictor.

FIGURE 4

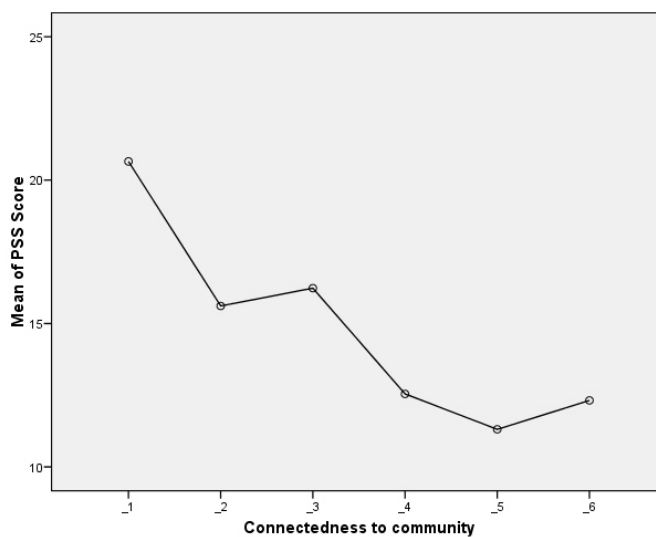
MEANS PLOT PSS BY CONNECTEDNESS TO FAMILY/FRIENDS



The predictor variable Ccom showed significant increases in mean differences between level one and two and between level three and four. The means for Ccom appear to level off after level four. There was no significant difference between levels four and five and levels five and six.

FIGURE 5

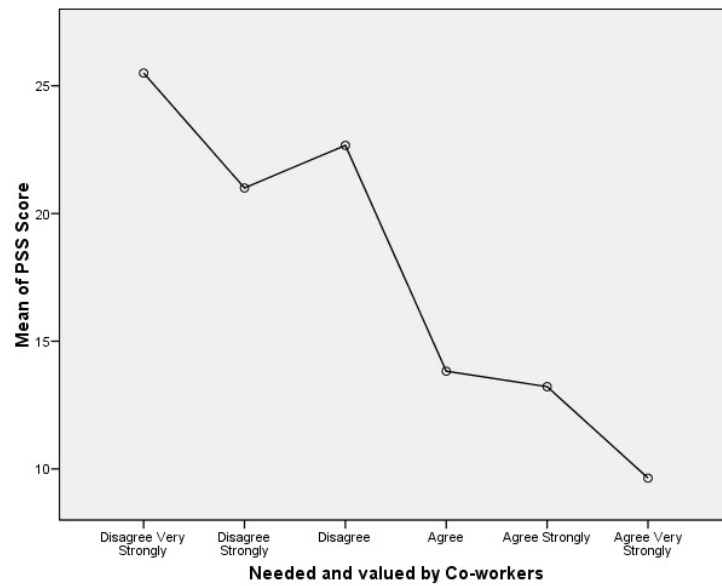
MEANS PLOT PSS BY CONNECTEDNESS TO COMMUNITY



While the predictor variable Nwork showed a decrease in mean perceived stress scores at each level, the only significant decrease between any two adjacent levels was between “Disagree” and “Agree”. See Figure 6.

FIGURE 6

MEANS PLOT PSS BY CONNECTEDNESS TO CO-WORKERS



CHAPTER 4

DISCUSSION

The purpose of the present study was to examine the predictive value of several measures of social connectivity in predicting perceived stress levels in public safety personnel. Specifically, it was hypothesized that a higher sense of connectivity to family/friends, community, and co-workers would be related to lower perceived stress scores. The hypothesis was supported. A little more one-third of the total variance was accounted for by the nine predictors included in the regression model. In the model, connectedness to family/friends, connectedness to community, and a sense of feeling needed and valued by co-workers accounted for the largest part of the overall variance.

It was further hypothesized that connectedness to family/friends and community would be of greater value in predicting perceived stress scores. The second hypothesis was not fully supported. In the model, the predictor measuring a sense of being needed and valued by co-workers was an important part of the prediction. While the correlations between the need and connectedness predictors for family/friends and community were stronger than the correlations between the need and connectedness predictors for co-workers, the model indicates that a sense of feeling needed and valued by co-workers is an important part of predicting perceived stress levels in public safety professionals. While the findings for connectedness were consistent with the pilot study, the variables relating to being needed and valued were not part of the questionnaire in the pilot study.

Predictors

The predictor representing connectedness to family/friends (Cfam) contributed the most to the model. As participants rated their connection to family/friends higher, the perceived stress scores were lower. This indicates that connectedness to family and friends is related to perceived stress and should be considered a core element in understanding perceived stress levels in persons working in the public safety field. This is consistent with the literature concerning the effects of social support on perceived stress levels. Overall, participants tended to rate their connection to family/friends higher than their connections to the community or co-workers. This predictor was consistent across all service types and the other demographic variables.

The variable referring to the feeling of being needed and valued by family/friends contributed very little to the model. The zero-order correlations between this variable and perceived stress scores are very close and the variables are highly correlated with each other. It may be that feeling needed and valued by friends/family contributes to lower perceived stress levels in that it contributes to a sense of connectedness. This may also be due to a lack of range in participant responses. All of the participant responses to this question ranged from "Disagree" to "agree very strongly" and 93% of the participants agreed to some degree that they felt needed and valued by their friends/family. The fact that the variable was not significant in the model does not necessarily mean that it is unimportant. In this case, it means that in this sample something very positive is happening without intervention.

The predictor representing time spent with friends and family was not quite significant within the model. However, the fact that it is close to being significant and

that it is only moderately correlated with connectedness to family and a feeling of being needed and valued by family suggests that actual time spent with is still an important part of the equation. As a sense of connectedness to family and friends is the more closely related to perceived stress levels, it may be that feeling needed and valued and time spent with family/friends factors that contribute to a sense of connectedness.

The predictor representing connectedness to the community contributed significantly to the model. Those participants who perceived their connection with the community as being higher had generally lower perceived stress scores. While, from level one to level four, each level of increase in connectedness to community shows a significant mean decrease in perceived stress, the effect on perceived stress levels plateaus from the fourth to the sixth level. This suggests that, unlike connectedness to family/friends, more is not always better when it comes to connectedness with the community. It may be that a very high connection with one's community brings added stressors that diminish the added benefits of increased connectedness to ones community.

The predictor representing a feeling of being needed and valued by the community was close to being significant in the model. This may be related to the role and social environment of a public safety professional. The literature indicates that social identification with persons in one's work environment is related to perceived social support and lower stress levels (Haslam et al., 2005). The goal of these agencies is to protect the community. The community where a public safety professional works is an important part of his/her work environment. A public safety profession may in part define his/her occupational social identity by the level he or she

feels needed and valued by that community. He or she may also be more receptive to social support within the community if he or she feels needed and valued within that community.

Time spent with the community contributed very little to the model. In fact, 24% of the participants reported that they spent no time participating in community activities. This is not surprising as it was only moderately correlated with connectedness and feeling needed and valued in the community. While it may seem intuitive that time spent doing community activities would be directly related to connectedness to that community, one has to take into account that participants were asked how much time they spent outside of work participating in community activities. Much of a public safety professional's work time is spent interacting with the community. While a person who works in a cubical may need to participate in community activities outside of work, a public safety professional may not need to participate in additional activities to feel a connection to the community.

The predictor relating to a feeling of being needed and valued by co-workers was the only significant predictor in the model referring to co-workers. This finding is consistent with the literature. The literature indicates that public safety personnel tend to be highly action oriented, focus on performance standards, highly dedicated, and exhibit a great desire to be needed (Linton, 1995). If a public safety professional does not feel that his work performance is valued and does not feel that he/she is needed in the work place, it is logical that he/ she would find it frustrating. Frustration in the work environment regarding qualities that one values very higher is naturally a source of stress.

Results indicate that a higher level of perceived connection to family and community are related to lower levels of perceived stress; whereas a feeling of being needed and valued by co-workers is related to lower stress levels. Also, the connectedness scales and the need variables for family/friends and community are more strongly correlated to each other than the same variables for co-workers. This may indicate that the dimensions and contributions of connectedness and a sense of being needed and valued to the reduction in perceived stress may be domain specific. It may be that for public safety professionals the fulfillment of the desire to be connected and to be needed and valued are more linked together in their private lives and the desire to be needed valued is higher than the desire to be connected in the work place.

Time spent with co-workers contributed very little to the model. It is interesting to note that 55% of participants reported that they spent no time with co-workers outside of working hours. This may be related to the idea that connectedness to and feeling needed by co-workers is domain specific. The fact that the majority of participants do not spend any time with co-workers when they are off duty goes against the stereotype that public safety professionals primarily socialize with other public safety professionals. It may be that the culture within the agencies encourages a separation between private and professional lives.

Differences and Similarities by Service

Participants working in various capacities within the participating agencies were invited to participate, specifically law enforcement officers, firefighters, detention officers, and civilian support staff. There are many differences in the working environments of the public safety professionals working in the four service capacities.

These differences allowed for a more complete analysis of the variables and a better overall picture of stress levels and predicting variables across different capacities within each agency.

There was almost no difference in perceived stress between law enforcement officers and firefighters and the perceived stress scores were only slightly higher in civilian support staff. The majority participating civilian support staff in this study were women (87.1%). Women generally score slightly higher on the perceived stress, so this difference may be attributable to gender. However, the perceived stress scores were much higher in detention personnel. The literature provides a multitude of explanations for high stress levels in persons working in correctional facilities. Among those explanations are dangerous working conditions, frequent negative contact with inmates, and detrimental agency policies (Cullen et al., 1985 & Paoline, Lambert, & Hogan, 2006).

Law enforcement and firefighting personnel reported higher levels of connectedness to community than either civilian support staff or detention personnel. The mean scores of detentions workers were significantly lower than the other service categories. Detention personnel also reported significantly lower levels of feeling needed and valued by the community than law enforcement or firefighting personnel.

The lower levels of connection to the community may be related to the nature of their occupation and the environment they work in. occupation. While a law enforcement officer or a firefighter is likely to experience very traumatic situations and negative reactions from the public, they also experience positive reactions from the public and are not constantly engaged in contact with criminals. Civilian support staff

members are much less likely to have extremely negative interactions with the public while working as they work within the safety of the agencies. A person working in a detention facility spends his or her day working around persons who are dangerous and absolutely do not appreciate what they are doing. Detention personnel are not typically publically recognized for their contributions to public safety as are law enforcement officers and firefighters. This may contribute to their perception of lack of connectedness to community.

While there has been little research on corrections staff and their connectedness or involvement in community settings, one study investigated several clinical symptoms of undercover officers, including several relating to relationships with others (Love, Vinson, Tolsma, & Kaufmann 2008). . While there are many differences in the two job functions, there are several commonalities. Undercover officers and detention personnel spend their working hours immersed in an environment where they must be constantly diligent in order to remain safe. The social environments where they work are marked by distrust and an anti-social climate. This study may offer at least some incite to this issue. In the study, officers reported symptoms such as drawing away from people, finding it hard to trust anyone, and feeling angry or frustrated. If the detention officers are feeling any of these symptoms, it is understandable that they would have more difficulty feeling connected to their community. While the two populations are too different to draw any conclusions, this study does provide direction for future research.

Detention personnel also reported lower levels of connectedness to co-workers than either law enforcement officers or firefighters. While not statistically significant, detention personnel also reported a lower sense of feeling needed and valued by co-

workers. Despite the fact that detention personnel are sworn deputies, there is clearly a different relationship with co-workers. This may in part be due to the isolation of their work environment compared to other staff. The fighters in this sample, who reported the highest level of connectedness to co-workers, basically live together in a home like environment while on duty sharing meals, sleeping quarters, and even sharing holidays while they are on duty with their families at the fire station. They also reported spending the most time with co-workers outside of work time. Law enforcement officers frequently work alone in normal circumstances. However, when more critical situations arise they are more likely to work in teams and participate in regular trainings and briefings as a unit. It may also be that they have more opportunity while on duty to have social interactions with each other in non-hostile environments.

Detention personnel also reported spending significantly more time with co-workers outside of work time. While detention personnel do attend trainings and briefings together, the majority of the time they spend with co-workers occurs in a hostile environment. Detention personnel also reported spending a significantly lower amount of time with co-workers outside of work. In fact, 67.5% reported spending no time with co-workers outside of work.

Implications

As mentioned earlier, there are many approaches to reducing stress in public safety personnel. While critical incident stress management, pre-employment screening, training, health education and promotion, and an increase in both professional and peer support mechanisms remain valuable tools for agencies to manage high stress levels, the social connectedness model in this study may offer a

radically different approach for these agencies. Many of the interventions dealing with stress in this population focus on stress related to critical incidents and overall stress management, the model in this study addresses resiliency. From a health perspective resiliency is preferable to post crises intervention or stress management.

One of the key factors in resiliency interventions is that the intervention must be focused on malleable factors. The current study proposes a model for understanding stress in public safety professionals that is for a large part determined by the environment. In fact, the results of the current indicate that the demographic variables included in the study contributed a negligible part to the variance of perceived stress scores. The model proposed in this study offers an approach to understanding stress that also offers the possibility of intervention.

While the model is based on all nine predictors of perceived stress, clearly three predictors were responsible for the largest part of the variance in the model, connectedness to family/friends, connectedness to community, and a sense of feeling needed and valued by co-workers. While the other predictors should not be ignored, the need for efficacy in agencies that are already utilizing both financial and time resources at a maximum level indicates that stress intervention should be focused on the predictors that contribute the most to lower stress levels.

As the predictor contributing the highest to the model, connectedness to family would be a key area to target an intervention. The culture and policies in a working environment can either promote or inhibit opportunities for connectedness to develop. For example shift-work can create conflicts in an individual's ability to spend time with family members during important events such as children's sports or other events. Yet

a sympathetic supervisor can be very helpful in resolving or at least reducing the conflicts (Root & Wooten, 2008). The level of connectedness with family/friends in this sample was generally rather high. It may be that there are very effective things happening in these agencies that are having a positive effect.

Connectedness to community was an important contributing factor in the model. The difference in the connectedness levels between the service categories clearly indicates that the work environment has at least some relationship to an individual's connectedness to his/her community. Developing a better understanding of these dynamics may provide clues to agencies about how they can improve this situation.

A sense of feeling needed and valued by co-workers was the one co-worker predictor that seemed to contribute to significantly lower stress levels in the sample. Understanding that a large part of the employees in an organization are focused on performance standards and have a great desire to be needed, can help organizations design policies that reward a larger range of positive behaviors so that these needs are met by more employees. A supervisor with this understanding can help create an atmosphere where the definition of success and contributing to the team is measured on a more inclusive scale. For example, a supervisor may have a person on his/her team that is not necessarily the first person to take down a suspect or be the first person to pull a person out of a burning building, but he/she is the one person who seems to be instrumental in coordinating details in a chaotic scene. That supervisor can organize his/her debriefings so that a wider range of positive qualities are highlighted to broaden the definition of success within that unit.

Limitations

This study gives many valuable insights to the relationship between social connectedness and perceived stress levels, yet some limitations of this study require further investigation. This study was limited to a single geographical area. Working conditions, scheduling, training, and support services vary from agency to agency. It is remarkable to note that the mean perceived stress score for the sample was 14.28. This is only moderately higher than the mean in the previous probability sample evaluation of the instrument which was given to the general public working in many different employment situations, $M=13.02$ (Cohen, 1983). The remarkable low perceived stress scores in this sample may be a reflection of training, employment selection criteria, or support services that may not be available in all agencies.

Another area of weakness in this study is in the structure of some of the variables. The variable referring to a feeling of being needed and wanted by friends and family was structured to be a six-point likert scale. However, in the sample none of the participants chose the two lowest responses, making it a de facto four point scale. This created a restricted range issue when conducting a multiple regression. This problem may be a result of a social desirability effect. An internet based study provides unanimity for the participant, but that does not negate the effects social desirability. Rewording the question may increase the range of responses to this question.

The questions regarding time spent with family/friends, community, and co-workers, presented several statistical issues. While a measure of actual involvement is an important part of understanding connectedness, the contrast of the variable allowed for extreme responses and the high number of “zero” responses made collapsing of the

variable in a systematic process impossible. These questions should be revised for future research.

Conclusion and Future Direction

Public safety professionals are often studied from a pathogenic perspective. Countless are the articles citing negative behaviors such as chemical dependencies, violence, and burnout. While these problems certainly exist within this population, they are problems that exist in many other populations and are not unique to public safety professionals. The results of this study indicate that while a portion of this population, like many other populations, suffer from high stress levels, overall the mean stress level for the sample was only marginally higher than the mean of the normed sample. This would indicate that the majority of those professionals are coping quite well despite the fact that they are exposed to traumatic events on a regular basis, and they work in a field where there are also high levels of organizational level stressors.

Approaching the problem of stress in public safety professionals from a social connectedness perspective offers one of few primary prevention approaches to reducing the harmful effects of a highly stressful working environment. While pre-employment screening, training, and services offered by the agencies most likely account for part of the reason why the stress levels were so close to the general population, this research indicates that addressing social connectedness may be an effective tool in reducing stress levels in this population. In addition to being an effective tool, this model offers a practical tool that fits within the existing culture of the population. It appears that many of the participants are already utilizing social connections as a stress reducing mechanism, whether they are aware of it or not. It is

far easier to promote a behavior or attitude related to an intervention if that behavior or attitude already exists and is being modeled in the environment. Instead of trying to engineer a new culture one can focus on enhancing a particular part of the existing culture.

While this study gives some important theoretical insights to the relationship between social connectedness and perceived stress levels, it is really just a beginning. In order to more fully understand the model, more research should be done to understand the underlying factors in connectedness to family/friends, community, and co-workers in this population. Looking to those participants who are highly connected may give valuable insights that would provide the information necessary to make changes in the environment that would create environments that are supportive of stress resilient lifestyles and reduce the levels of perceived stress in this population.

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APPENDIX

APPENDIX

Online Survey

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.

In the last month, how often have you been upset because of something that happened unexpectedly?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

In the last month, how often have you felt that you were unable to control the important things in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

In the last month, how often have you felt nervous and "stressed"?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

In the last month, how often have you felt confident about your ability to handle your personal problems?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

In the last month, how often have you felt that things were going your way?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

In the last month, how often have you found that you could not cope with all the things that you had to do?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

In the last month, how often have you been able to control irritations in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

In the last month, how often have you felt that you were on top of things?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

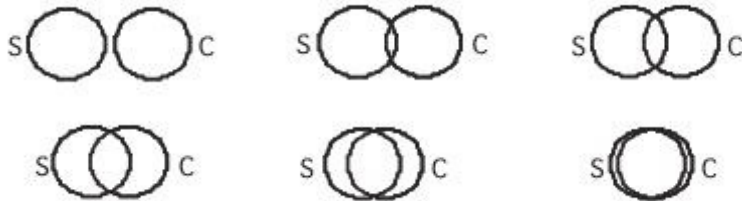
In the last month, how often have you been angered because of things that were outside of your control?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

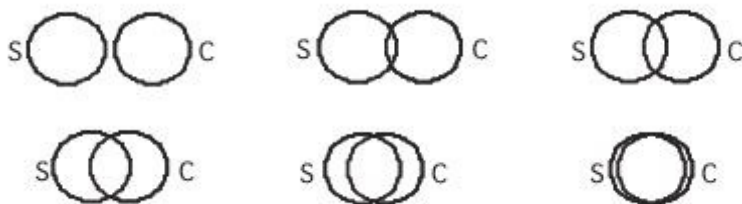
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

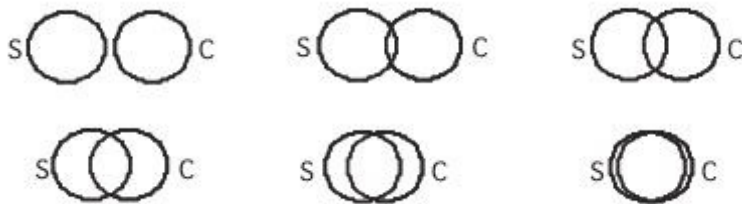
Please circle the picture that best describes your relationship with the community at large (S= Self and C= Community at Large).



Please circle the picture that best describes your relationship with your closest friends and family (S= Self and C= Close Friends and Family).



Please circle the picture that best describes your relationship with your co-workers (S= Self and C= Co-workers).



	Hours/Wk
On average, how many hours per week do you spend with family and close friends?	
On average, how many hours per week do you spend participating in community activities (including church activities, charitable organizations, local clubs, local sports, and any other activity that takes place in your community)?	
On average, how many hours per week do you spend with your co-workers outside of work?	

Please indicate the extent to which you agree with the following statements.

I am needed and valued by my close friends and family.

- Agree Very Strongly
- Agree Strongly
- Agree
- Disagree
- Disagree Strongly
- Disagree Very Strongly

I am needed and valued by my community.

- Agree Very Strongly
- Agree Strongly
- Agree
- Disagree
- Disagree Strongly
- Disagree Very Strongly

I am needed and valued by my co-workers.

- Agree Very Strongly
- Agree Strongly
- Agree
- Disagree
- Disagree Strongly
- Disagree Very Strongly

What is your gender?

- Male
- Female

What is your age?

What is your marital status?

- Single
- Married / Living with partner
- Divorced
- Separated
- Widowed

What level of education have you completed?

- Some high school
- High school graduate
- Trade/Technical school
- Some college
- College graduate
- Graduate Degree

What is your ethnic background?

- White/Caucasian
- Black/African-American
- Asian
- Hispanic
- Pacific Islander/Native American
- Mixed

Please select the type of service that best describes the service you provide within your agency.

- Law Enforcement
- Fire Services
- Emergency Medical Services
- Communications (911)
- Other :

Please select the answer that best describes the population size of the Town/City in which your agency provides services.

- 250,000 and Over
- 100,000 to 249,999
- 50,000 to 99,999
- 25,000 to 49,999
- 10,000 to 24,999
- Under 10,000

How many years have you worked as a first responder?

Years

Months

How long have you worked for the agency you are currently employed by?

Years

Months