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Commonly Identified Symptoms of Stress Among Dispatchers: A Descriptive Assessment of Emotional, Mental, and Physical Health Consequences

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Commonly Identified Symptoms of Stress Among Dispatchers:

A Descriptive Assessment of Emotional, Mental, and Physical Health Consequences

by

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Abstract

All 911 call centers are staffed 24 hours a day, 365 days a year with police and fire dispatchers. Dispatchers are devoted professionals who are the lifeline for police and fire personnel who respond to emergencies. Multiple studies have found that dispatchers report having significant emotional, mental, and physical stress symptoms as the result of their work. The purpose of this assessment is to identify the most common symptoms of stress identified among dispatchers at a Midwest 911 call center, in addition to specifically examining the following: 1) Whether self-reported work days are more stressful than non-work days 2) How many symptoms of stress dispatchers identify on work and non-work days 3) Whether dispatchers are negatively affected by the stress of their job, and finally gathered 4) Self-reported negative health consequences associated with job related stress? The findings associated with this research may inform readers about the types and magnitude of emotional, mental, and physical symptoms of stress dispatchers may feel during and after a work shift, identify subsequent negative health-related consequences, and may help to inform the development of new programs designed to address stress and related consequences among dispatchers.

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Chapter I: Introduction

Dispatchers rely on their inquisitive skills to assess an incident, secure the emergency scene, and send appropriate help, all within minutes of answering a call for assistance and service. The dispatcher's ability to remain calm and suppress emotional reactions is crucial to the successful processing of emergency calls. Despite the high-stress work environment, very little is known about the emotional, mental, and physical health of dispatchers. It is not uncommon for dispatchers to encounter extremely distressed callers and/or aversive details of traumatic events. Given these details, the emotional, mental, and physical distress surrounding this work may be greater than that experienced by those employed within other professions (Pierce & Lily, 2012).

The responsibilities of emergency dispatchers include customer service and public service, which differ in highly subtle ways, yet account for many routine tensions. A mixture of emotions throughout a work shift is normal as every incoming call may bring on different emotions which include sadness, helplessness, and irritation. Emergency dispatcher emotions must remain in check during phone calls as they receive phone calls from emotionally charged callers. Over time, the routine of bottling personal emotions may lead to stress and eventually burnout (Tracy & Tracy, 1998).

Rigden (2009) explained, stress is a routine, normal part of our day and is good when it is controlled (p. 2). People deal with it, they learn from it, recover from it and may grow from it. Emotional stress may include cumulative stress, which builds up over time and creates compassion fatigue, which is known to slowly erode the ability to feel empathy. Identifying and taking action to reduce the signs and symptoms of stress, will minimize its effect on the body. If stress-inducing events are not recognized and dealt with, the negative effects of stress may appear in the form of physical and mental ailments (Rigden, 2009). It is not uncommon for

dispatchers to experience negative emotions as a stress symptom of their job. Over time, negative emotions may take a toll on dispatchers and their level of sympathy for callers may decrease, resulting in compassion fatigue.

There are currently few stress management options provided to dispatchers regarding the negative emotional, mental, and physical symptoms of stress that come with the job. This research asks to assess symptoms of stress and related consequences. This may help to inform the future planning and implementation of stress management training and/or policies to aid in the prevention and treatment of negative health consequences for dispatchers. There is currently not a detailed assessment of the experiences of dispatchers and this project will provide a descriptive assessment that will help shed light on some of the common issues faced by this problem. This study builds on previous descriptive assessments by adding two components, individual analysis and extending the analysis across time.

Research Questions and Hypothesis

The research to date on dispatcher well-being has focused exclusively on the assessment of several participants in a brief span of time; this study aims to offer a related assessment in which fewer dispatchers are studied in a more intimate fashion. In doing so, this study will help to elucidate issues of daily fluctuations in stress that will complement the work done by others in this area. This thesis is a descriptive assessment of daily stress as it relates to different experiences in call types in dispatchers. This study may reveal that work days are more stressful than non-work days by asking the following questions: 1) Whether self-reported work days are more stressful than non-work days 2) How many symptoms of stress dispatchers identify on work and non-work days 3) Whether dispatchers are negatively affected by the stress of their job, and whether 4) self-reported negative health consequences associated with job related stress.

Chapter II: Literature Review

Occupational stress on 911 emergency dispatchers is a topic that has rarely been studied. Coping processes and psychological distress of workers who handle calls involving disasters, death, and violence are often overlooked by workers who are physically on the scene of emergencies. All 911 emergency dispatchers serve as the first point of contact with emergency victims and must provide a strong commitment to help others. They are often faced with unpredictable demands and must be able to think and work quickly under time constraints and must be proficient at completing demanding tasks under pressure.

Effects of Stress

A study of the effects of stress on 911 call takers and police dispatchers was conducted at the San Jose Police Department in 2015. Turner (2015) examined the physiological and psychological outcomes related to the relationship between perceived stress and work-life balance, fairness at work, support at home, and work control. Data was collected via surveys from eighty-nine 911 call takers and police dispatchers of the San Jose Police Department Communications Division. Stress was measured using a scale that asked questions related to the respondent's perceived stress concerning job functioning and personal life. Using a hierarchical regression analysis, the researcher found that those who enjoy a balance between work and personal life experience less stress. In addition, greater stress was associated with more physiological and psychological problems. The study found that additional research specific to 911 call takers and police dispatchers is needed to further understand the relationship of perceived stress with these work classifications (Turner, 2015).

Tracy and Tracy (1998) engaged in a 10-month case study and theoretical critique regarding emotional labor at 911 centers at the City West Emergency Communication Center in

a western United States city. The researchers examined different ways human feeling is understood, expressed and managed in the emotionally-charged atmosphere of an emergency 911 communications center, and further examined the emotional landscape at 911, the organization's emotion rules, and the communicative devices call takers use to manage their emotion. Primary data included field notes from approximately 100 hours of participant observation at City West Center. Dispatchers who worked nights and weekends, especially heavy times for emergency calls, were observed more despite observation spanning all 24 hours of the day. In conjunction with dispatcher observations, informal interviews were conducted with dispatch trainers and the police captain, observed a day-long stress workshop for dispatchers, went for ride-alongs with ambulance and police, and visited four other emergency communication centers within the United States. The study found employee peer pressure to be one of the most negatively reported emotional effects within the 911 center. During the study, the researchers observed negative "employee talk" that consisted of dispatchers talking condescendingly about colleagues behind their and to their faces. Negative actions from co-workers increases the stress level within the 911 center and hinders an already emotionally-charged atmosphere (Tracy & Tracy, 1998).

Most Stressful Call Types

A research study was conducted to assess duty-related exposure to potentially traumatic calls among dispatchers. Participants were recruited via letters and advertisements sent to randomly selected agencies in the Midwest, professional association lists, and online forums and social media outlets (i.e., Facebook). A survey was distributed to 171 dispatchers from 24 different states and included a yes or no question for each type of call which assesses whether participants experience helplessness, intense fear, or horror in reaction to the specific call. Call types included suicide, domestic violence, motor vehicle accident with severe injury or fatality,

armed robbery, child sexual assault, homicide, natural disaster, unexpected death or injury of a child, other disaster or disturbing event, calls involving friends and/or family, officer involved shooting, unexpected death of an adult, battery and assault, and adult sexual assault. The results of the study found that participants experienced fear, helplessness, and horror in reaction to 32% of the different types of calls experienced. The most common worst call participants identified was the unexpected injury or death of a child, with suicidal callers next, followed by officer involved shootings and calls involving the unexpected death of an adult (Pierce & Lilly, 2012).

911 Call Center Atmosphere

Bond (2015) noted that when citizens call 911, they are often panicking because they are involved in an emergency-situation and are in immediate need for emergency personnel service. The 911 call taker is trained to stay calm and speak in a clear tone, get the address and nature of the call, and make an immediate decision so he or she can electronically code the call into the computer-aided dispatch system (CAD). The pace of a communication center is nonstop, and breaks in calls are seldom. Regardless of length of employment and resilience, all dispatchers are faced with overwhelming stress (Bond, 2015).

First responders are the vital link ensuring clear communication between all responders, affecting the safety of both the citizen in need and the police, fire and emergency medical personnel responding. Based on their training and actions, dispatchers help save lives, protect property, and assist the public in their time of need. Stress is becoming an epidemic in 911 centers. Not normal stress but the kind associated with listening to someone else's worst day, every day, as a routine part of the job. This kind of stress builds up over time and may take away the ability to feel empathetic towards callers. Barriers may be put up as stress increases to protect the call taker or dispatcher from the "cost of caring". Frustration of taking calls may lead to

blaming the caller, co-worker or a boss for what is happening during calls, in the center, or from management (Rigden, 2009).

Greatest Stressors for Dispatchers

Flanagan (2013) conducted a research study to examine what types of stress exist within the emergency communications field with the intent of the research broadening the knowledge base for future studies about this topic that is often overlooked. Participants included 278 dispatchers and call takers from seventy-two different communication centers throughout the country who completed a survey. Demographic questions asked included age, gender, work experience, and organizational experience. The final survey was solicited from Association of Public Communications Officials (APCO) open forum through a single-entry solicitation. APCO is the world's largest organization of public safety professionals, it provides professional development, technical assistance, advocacy and outreach to its members. Results of the study showed the highest stressors for dispatchers were fatigue, staff shortages, inconsistent leadership styles, dealing with co-workers, and the feeling that different rules apply to different people (Flanagan, 2013).

Results from the research studies examined suggest that more data is needed to develop stress-management programs and treatment for dispatchers. Numerous types of stressors exist within the job-related duties of 911 dispatchers and may manifest themselves in several areas including emotional, mental, and physical health consequences. With better knowledge of commonly identified types of stress of dispatchers, attrition levels may be reduced due to more appropriate stress management training, treatments, or changes to job practices themselves. Based on prior research, stressors from within dispatch centers should be closely studied, as co-workers, leadership styles, and peer pressure may relate to additional job related stress.

Dispatchers may experience the negative consequences of job related stress within their occupational roles and personal lives. To combat dispatcher stress, every part of a dispatcher needs to be studied. Dispatcher stress has proven itself to be in many 911 centers across the United States, regardless of size or location. Despite previous research exploring the topic of dispatcher stress, questions remain as the what kind of stress dispatchers experience.

There is currently a lack of assessments that detail stressful work experiences of dispatchers. This research will provide a descriptive assessment that will help shed light on some of the common issues faced by this problem and builds on previous descriptive assessments by adding two components, individual analysis and extending the analysis across time. The researcher hypothesized that work days should be more stressful than non-work days. Research questions examined in this study include, 1) How many symptoms of stress do dispatchers identify while working within the course of 14 days? 2) Are there differences in stress levels on work days versus non-work days? 3) Are dispatchers negatively affected by the stress of their job on a personal level as well as a professional level? and 4) What negative health consequences do dispatchers identify because of job related stress?

Chapter III: Methods

Research Questions and Hypothesis

The researcher hypothesized the work days should be more stressful than non-work days and asked the following research questions, 1) How many symptoms of stress do dispatchers identify while working within the course of 14 days? 2) Are there differences in stress levels on work days versus non-work days? 3) Are dispatchers negatively affected by the stress of their job on a personal level as well as a professional level? And 4) What negative health consequences do dispatchers identify because of job related stress?

Participants

Participants included nine 911 dispatchers employed at a call center in the Midwest United States. While data on participant characteristics (i.e., age, gender, years of service) were collected, this information is withheld due to the possibility of participant identification, in accordance with St. Cloud State University Institutional Review Board policies. Participant two (P2) was removed from the assessment due to the fact they answered the same survey questions as two different subjects.

Materials

Three Qualtrics surveys were developed to provide daily descriptive assessments.

Daily Assessment. The Daily Assessment (DA) first asked participants to rate their daily stress on a scale of 0 to 10 with 0 being not at all stressed to 10 being maximally stressed. Next, the DA asked participants to record if they did or did not work that day. If the participant did not work, they were asked to indicate when the last date they worked was and then the survey was complete. If the participant indicated they worked that day, they were asked to supply a list of current symptoms of stress from a list of 29 options (Tables 1 and 2 provide the complete list).

Health related concerns were assessed to recording the symptoms of stress each participant identified. Following this, participants were provided with a list of 16 potential call types (Table 3 provides call types) and were asked to select those they received that day. Finally, each call type received was presented individually and the participant was asked to rate the call in terms of how stressful it was on a scale of 0 (not at all stressed) to 10 (maximally stressed). Due to a coding error, the Sex Assault call type was removed from the final analysis.

Intake Assessment. The Intake Assessment (IA) was identical to the DA, except that prior to completing the DA portion, participants were asked for demographic information.

Exit Assessment. The Exit Assessment (EA) was identical to the DA, except that after completing the final stress rating, the participant was asked four additional questions. The first question asked "If you lack stress, why do you think that is?" The second, "In what ways do you think this job has negatively impacted your life?" The third, "In what ways do you think this job has positively influenced your life?" And finally, "What do you think in this profession can help with job-related stress?" In the final question, six options were included: 1) access to professional counselors, 2) access to professional therapists, 3) peer counselor unknown to employee, 4) peer counselors known to employee, 5) quiet rooms within workplace, and 6) other (fill in).

Procedures

After receiving IRB approval, an invitation to participate was distributed to 911 dispatchers through the dispatch center's communication manager. The invitation contained three links; one to the IA, one to the DA, and one to the EA. In the IA, participants were asked to create a unique participant identification code, which remained unknown to the researcher, and was used throughout the 14-day study. Each day, the communication manager sent out a

reminder to all dispatchers, regardless of participation status, to complete the DA and EA when appropriate. This reminder was sent out at approximately 7:00PM, around the time when a shift change occurred. Participants were free to complete the study at their convenience each day.

Chapter IV: Results

Given the dependent nature of the data coupled with the small sample size, use of inferential statistics was eschewed in favor of the more appropriate analysis in single-subject, or small-*n* research, visual analysis and effect size calculations. Visual analysis has enjoyed a rich history in behavioral sciences, favoring assessments and interventions that reveal and produce large differences. Indeed, across numerous analyses, visual inspection has been found to be superior to, and less biased, than inferential analysis (Normand, 2016, Witts, Rzeszutek, & Dahlberg, 2016 & Lane & Gast, 2014). The point with visual analysis is that it permits the assessment of repeated observations or reports while respecting idiosyncratic differences rather than the mass analysis of aggregated and/or summarized data. Analyses based on these within-subject data are best described in an *alternating treatments design*, in which the two treatments (work day and non-work day) are alternated between data collection points (Barlow, Nock, & Hersen, 2009).

Research Questions and Hypothesis

The researcher hypothesized that work days should be more stressful than non-work days. Recorded participant data showed this is correct, work days are more stressful than non-work days. It should be noted that no two participants had the same results in terms of daily stress ratings and fluctuations occurred based on individual participant data.

A research question was asked regarding how many symptoms of stress dispatchers identify while working within the course of 14 days. P9, who worked a total of 9 out of 14 days, had the highest recorded number of symptoms of stress with a total number of 86. P1, who worked a total of 7 out of 14 days, had the lowest recorded number of symptoms of stress with a total number of 15. Other participants worked anywhere from 5 to 9 out of 14 days and had

varying numbers of symptoms of stress that fell between the lowest recorded number of 15 and the highest recorded number of 86.

The second research question asked whether there were differences in stress levels on work days versus non-work days. The answer is yes, recorded data shows differences, some minor and some major, among all participants. Table 4 shows the difference in stress levels on work days and non-work days and how results vary wildly per participant.

The third research question asked if dispatchers are negatively affected by the stress of their job on a personal level as well as a professional level. Some participants of the study are negatively affected on a personal level. Negative aspects include but are not limited to social isolation, lack of sleep, and limited time for friends and family. (Table 8 provides in-depth responses).

The fourth research question asked what negative health consequences dispatchers identify because of job related stress. All 29 symptoms of stress associated with this study are negative health consequences. Physical health consequences include but are not limited to headaches, constipation or diarrhea, chest pain, palpitations, rapid pulse, and neckache, backache, muscle spasms. Mental and emotional health consequences include but are not limited to feeling overwhelmed, excessive defensiveness, and increased anger or hostility. (Table 2 provides the entire list of symptoms of stress).

Daily Stress Ratings

An important research question asked referred to whether work days are distinct from non-work days in terms of reported stress. Failure to find any difference on this question renders any other current or future analysis moot. In this light, daily stress ratings were subjected to three different analyses to determine the quality and degree of difference between these two contexts.

Visual analysis. Visual inspection suggests differences in daily stress ratings for P3, P4, P5, and P9 (Figure 1 provides complete alternating treatments design graphs). The degree of difference is difficult to gauge from these data, but suggest that, at least for some, there are significant stressors correlated with work days. Minor differences are suggested for P7 and P8. No differences were detected in P1, P6, and P10. Given the variability between data sets and the difficulty in identifying clear differences, two statistical analyses were used to further understand the data, and these two follow next.

Adjusted percentage of non-overlapping data points. We created an adjusted percentage of non-overlapping data points (APND) procedure to test the alternating treatments data from reported daily stress to compare days at work to days off from work. Typical percentage of non-overlapping data points compare baseline to treatment scores (Scruggs & Mastropieri, 1998 and Olive & Franco, 2008), but the alternating nature of these data prevent this analysis. Thus, we compared the percentage of non-overlapping data points between each data stream (work days and days off) to give two metrics (one for each stream) and between streams (a total non-overlapping score).

To calculate the APND, the highest data point from a non-work day was used as a cutoff for calculating the percentage of non-overlapping data points for reported stress level on days working. The lowest data point for work days was used to calculate the percentage of non-overlapping data points of reported stress level on days off. The reason for selecting these criteria was because we hypothesized that stress level should be higher on work days, and vice versa, an a priori assumption. Finally, data points that lied outside of these combined overlapping ranges were calculated for a total score of non-overlapping data points. Data are interpreted with an adjusted rating scale in which scores between 0% and 50% suggested no difference, scores

between 50% and 70% suggest questionable differences, scores between 70% and 90% suggest a difference, and scores greater than 90% suggesting a great difference (Scruggs & Mastropieri, 1998).

Table 4 displays results for APND in days off, work days, and total non-overlapping data points, though only the latter is presented here. Results showed that that P1, P6, P7, P8, and P10 had no difference in total APND. P9 produced scores that suggested a questionable difference between stress rating on days working and days not working. Finally, P3, P4, and P5 produced scores that suggested a difference. No participant produced a difference in any of the three analysis that suggested a great difference between scores.

Combined with visual inspection, P1, P6, P7, P8, and P10, who produced no difference in total APND, all reported generally low ratings of daily stress. P9's data suggested moderate stress for non-work days (range = 1-5) compared to greater stress (range = 4-9). P3, P4, and P5 all produced low stress ratings on days off compared to moderate stress ratings on work days (Figure 1 provides daily stress ratings).

However, APND data only tell us that a difference exists, but not the degree of that difference. To better account for the degree of difference, scores were next subjected to a standard mean difference analysis to give the effect size (Scruggs & Mastropieri, 1998).

Standard mean difference. To capture the effect size between work and non-work days in terms of reported stress, data were subjected to a standard mean difference (SMD) analysis. Specifically, we used a SMD_{All} analysis, in which all baseline (non-work days) data points were included in the analysis (Olive & Franco, 2008).

Cohen's *d* calculations can be found in Table 5. P3, P4, P5, P7, P8, and P9 all produced data that suggested a large difference between non-work days and work days in terms of reported

stress levels. P6 produced data suggesting a medium effect, while P10 produced no usable data due to a standard deviation of 0.00; however, differences are likely small as their daily stress reports for non-working days (M = 2.00) did not differ much from working days (M = 2.63).

Thus, taken together these three analyses suggest that for many participants there was a meaningful difference between work and non-work days in terms of reported stress. Having established an effect exists between days, we next turn to a descriptive analysis of reported stress levels and stress symptoms.

Stress Level as a Function of Call Type

Figure 2 shows the average stress rating per call type as well as the aggregate number of calls received for each type across all participants. Generally, Robbery, Drowning, Falls, and Not Breathing produced the highest stress ratings, though they had wide standard deviations and relatively few calls of that type during this study. Figure 3 shows the same data as Figure 2, except for each individual participant.

Given the difficult nature of extracting trends from the bar graphs in Figures 2 and 3, data were transformed into ratings of stress severity and stress severity stability (Table 6 provides complete results). Stress ratings were designated as Low if they averaged 0 to 3 for a particular call type, Moderate if they averaged 4 to 7, and High for any average above 7. Stability is a measure of the variability of the ratings, which was classified in the following manner: a difference in the range of scores of 0 to 3 resulted in a stability rating of Stable, 4 to 7 as Unstable, and 8 and above as Volatile. If there was only one data point, a stability rating of "N/A" was recorded. It should be noted that these ratings were created a priori, and thus do not reflect any data-fishing practices.

Data show that differences in ratings and stability between participants and call types was relatively idiosyncratic. A trend analysis in lieu of statistical analysis (e.g., regression analysis) was conducted due to the low number of data points. Data suggest that some categories (e.g., Psych) produce generally low and stable ratings and other categories (e.g., Not Breathing) are capable of producing higher and stable rating. Generally, trends in stability were of greater difference when analyzing between participants instead of across call types, suggesting some participants might be more susceptible to individual calls within a call type whereas others are more stable in their ratings.

Symptoms of Stress on Workdays

Table 1 shows the cumulative number of times each participant reported a specific symptom of stress on work days. The individual with the most reported symptoms was P9 with a total number of 86 stress symptoms on days worked. The individual with the lowest reported total number of symptoms was P1 with a total report number of 15 stress symptoms on days worked. No discernable patterns are detectable across stress symptoms, save that some symptoms (e.g., chest pain, palpitations, rapid pulse and frequent sighing were experienced by nearly all participants). In addition, Table 1 includes the total number of days participants worked. These totals give a better understanding of just how much the number of symptoms differ per participant.

Table 2 shows the total number of symptoms of stress on workdays aggregated across all participants. The symptom of stress reported the most on a workday was feeling overwhelmed with a total number of 35 instances, followed by headaches with a total number of 31, and frequent sighing with a total number of 28. The symptom of stress reported the least on a workday was lightheadedness, faintness, dizziness and rash, itching, hives, both with a total

number of 1 (Table 2 provides complete results). The median reported symptoms of stress on workdays were tied across a) chest pain, palpitations, rapid pulse, b) constipation or diarrhea, and c) stuttering or stammering with a total number of 10 instances each.

Exit Survey

As an exploratory measure, participants were asked four questions during the EA. The first question, *if you lack stress, why do you think that is*, participants noted that when they did lack stress, it was because of their tuning it out (P1, P10), failure to see "the bad things that occur in life," (P3), having numbness (P4), when they leave work (P5, P9), or because they are too busy to experience it at work (P9). Several participants noted they did experience stress (P7, P8; see Table 7 for a complete list of responses).

The second question asked, *in what ways do you think this job has negatively impacted your life?* Participants noted that their job as a 911 dispatcher has resulted in a lessened ability to empathize or show emotion (P1, P3, P8), an increased focus on negative aspects of life (P3, P10), and general increases in stress and anxiety (P4, P5, P7, P9; see Table 8 for detailed responses).

Third, participants were asked, *in what ways do you think this job has positively impacted your life?* Participants responded by saying they were more appreciative of family (P1), have a sense of purpose or duty (P3, P9, P10), gain greater awareness of social and interpersonal issues (P4, P5, P8; see Table 9 for detailed responses).

Fourth, participants were asked, *what do you think in this profession can help with job-related stress?* Participants responded by nominating peer counselors (P1, P5, P7), professional counselors (P3, P4, P7, P8), stress workshops (P1, P5, P8, P10), quiet rooms (P3, P4, P5, P7, P8, P10), routine psychological examination (P3), more staff (P9; Table 10 provides full responses).

Discussion

This semi-longitudinal study corrects for a potential reporting bias in studies assessing 911 dispatcher stress at one point in time; namely, individuals might be more or less inclined to complete the study dependent on the stress experienced that day. For example, it is possible that in the past, research participants only completed the survey when they had downtime, perhaps the result of a stress-free day. Alternatively, participants might only complete the study when motivated to do so, like wanting to relate to others how stressful their job is (completing it on a stressful day). This study eliminated this concern by requiring responses across many days, including non-work days, helping to account for fluctuations in daily stress level, should that be found to be a confound in data collection.

The most important finding, at least in terms of justifying exploratory analyses in this study (call types, frequencies, and related stress symptoms) and investing time and effort in subsequent analyses is that there are indeed meaningful differences between work and non-work days in terms of reported stress level. Specifically, most participants reported higher stress levels on work days as compared to non-work days, and these conclusions are backed by visual and statistical analysis.

Exploratory descriptive analyses were conducted on call type frequency, stress ratings per call type, and stress symptoms experienced. At this point the only conclusion to be drawn is that these data produce idiosyncratic patterns which will require research constructed to directly answer questions regarding their relations to each other. However, this project justifies their continued exploration in future research.

This study is not without its limitations, however. For example, Scruggs and Mastropieri (1998) suggest that percentage of non-overlapping data points might be misleading, though we at

least partially corrected for this with our calculation of the standard mean difference. Further, the sample size limits the ability to better correlate data on call type frequency, stress ratings, and stress symptoms, and a more longitudinal study will be needed to properly explore these data. Finally, while exit surveys suggest possible avenues for future research, the data suggest the job produces stress, and the call types and stress relations are idiosyncratic, at best these data are correlational in nature and thus outside interference (e.g., personal issues) cannot yet be ruled out. However, despite these limitations, the results seem to suggest that more detailed investigations into 911 dispatchers and the effects of work on stress and daily functioning are warranted.

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Appendix A: IRB Approval Form

ST. CLOUD STATE UNIVERSITY
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, USA

Email: hael1303@stcloudstate.edu

IRB PROTOCOL DETERMINATION: Exempt Review

Project Title: Commonly identified symptoms of stress among dispatchers

Advisor Dr. Lindsey Vigesaa

The Institutional Review Board has reviewed your protocol to conduct research involving human subjects. Your project has been: **APPROVED**

Please note the following important information concerning IRB projects:

- The principal investigator assumes the responsibilities for the protection of participants in this project. Any adverse events must be reported to the IRB as soon as possible (ex. research related injuries, harmful outcomes, significant withdrawal of subject population, etc.).

- For expedited or full board review, the principal investigator must submit a Continuing Review/Final Report form in advance of the expiration date indicated on this letter to report conclusion of the research or request an extension.

-Exempt review only requires the submission of a Continuing Review/Final Report form in advance of the expiration date indicated in this letter if an extension of time is needed.

- Approved consent forms display the official IRB stamp which documents approval and expiration dates. If a renewal is requested and approved, new consent forms will be officially stamped and reflect the new approval and expiration dates.

- The principal investigator must seek approval for any changes to the study (ex. research design, consent process, survey/interview instruments, funding source, etc.). The IRB reserves the right to review the research at any time.

If we can be of further assistance, feel free to contact the IRB at 320-308-3290 or email ri@stcloudstate.edu and please reference the SCSU IRB number when corresponding.

IRB Institutional Official:

Latha Ramakrishnan

Dr. Latha Ramakrishnan
Interim Associate Provost for Research
Dean of Graduate Studies

OFFICE USE ONLY

SCSU IRB# 1677 - 2092	**Type:** Exempt Review	**Today's Date:** 1/31/2017
1st Year Approval Date: 1/28/2017	**2nd Year Approval Date:**	**3rd Year Approval Date:**
1st Year Expiration Date:	**2nd Year Expiration Date:**	**3rd Year Expiration Date:**

Appendix B: Implied Consent Form

An examination of commonly identified symptoms of stress among dispatchers at a Midwest Public Safety Answering Point (PSAP)

Informed Consent

You are invited to participate in a research study of an examination of commonly identified symptoms of stress among dispatchers. This research project is being conducted by Elizabeth Hayes to satisfy the requirements of a Master's Degree in Criminal Justice Studies at St. Cloud State University.

Background Information and Purpose

A research study will be conducted to identify what symptoms of stress among dispatchers are most commonly identified within a public service answering point (PSAP). Data will be collected during the Spring of 2017 in the form of a questionnaire. Demographic questions including years of service, age, and gender will be asked, in addition to what call types dispatchers handled throughout their shift that are specific to their PSAP. Participants will than identify the symptoms of stress they experienced within a 24-hour period due to their stress.

The findings of this study may broaden the knowledge base for future studies. With better knowledge of what types of stress are commonly identified in communication centers, positive changes to job practices and/or enhanced stress management may occur.

Procedures

If you decide to participate, you will be asked to respond to a multiple-choice questionnaire asking what types of stress are most commonly identified within different aspects of PSAP's

Risks

There are no risks for completing the survey.

Benefits

There are no benefits for completing the survey.

Confidentiality

The city or county of your PSAP will not be identified. Demographic information including years of service, age, and gender will be made public.

Research Results

At your request, 1 am happy to provide a summary of the research results when the study is completed.

Contact Information

If you have questions right now, please ask. If you have additional questions later, you may contact me at hael1303@stcloudstate.edu or my adviser. Dr. Lindsey Vigesaa at levigesaa@stcloudstate.edu. You will be given a copy of this form for your records.

Voluntary Participation/Withdrawal

Participation is voluntary. Your decision whether or not to participate will not affect your current or future relations with St. Cloud State University, the researcher, or name any cooperating professor or organization/group. If you decide to participate, you are free to withdraw at any time without penalty.

Acceptance to Participate

Your completion of the scenario and/or questionnaire indicates that you are at least 18 years of age and your consent to participation in the study. If you are interested in learning the results of the survey, feel free to contact haell303@stcloudstate.edu. Thank you.

Appendix C: Dispatcher Intake Questionnaire

Enter your participation code here _____

How long have you been employed as a dispatcher? _____

What is your gender?

□ Male

□ Female

What is your age? _____

How stressed are you today?

Mild			Moderate			Severe			Extreme	
0	1	2	3	4	5	6	7	8	9	10

Did you work today? _____

If no, when was your last day you worked? _____

If yes, what are your current symptoms of stress?

(Check all that apply)

□□ Chest pain, palpitations, rapid pulse

□□ Cold sweaty feet or hands

□□ Constipation or diarrhea

□□ Depression, frequent or wild mood swings

□□ Frequent sighing

□□ Difficulty in making decisions

□□ Excessive defensiveness

□□ Excessive anxiety, worry, guilt, nervousness

□□ Feeling overwhelmed

□□ Forgetfulness, disorganization, confusion

□□ Frequent sweating

□□ Headaches

□□ Heartburn, stomach pain, nausea

□□ Increased frustration, irritability, edginess

□□ Increased or decreased appetite

□□ Increased anger or hostility

□□ Insomnia, nightmares, disturbing dreams

□□ Lightheadedness, faintness, dizziness

□□ Jaw clenching or grinding teeth

□□ Neckache, backache, muscle spasms

□□ Nervous habits, fidgeting, feet tapping

□□ Obsessive or compulsive behavior

□□ Rapid, mumbled speech

□□ Rash, itching, hives

□□ Reduced work efficacy, productivity

□□ Social isolation, withdrawal

□□ Stuttering or stammering

□□ Tiredness, weakness, fatigue

Which of the following call types did you receive today?

(Check all that apply)

□□ Assault

□□ Domestic

□□ Robbery

□□ Weapons

□□ Family Offense

□□ Rape

□□ Sex Assault

□□ Psych Hold

□□ Suicide

□□ Bleeding

□□ Difficulty Breathing

□□ Drowning

□□ Fall

□□ Heart

□□ Miscellaneous Medical

□□ Not Breathing

Appendix D: Daily Life of a Dispatcher Questionnaire

Enter your participation code _____

How stressed are you today?

Mild			Moderate			Severe			Extreme	
0	1	2	3	4	5	6	7	8	9	10

Did you work today? _____

If no, when was the last day you worked? _____

If yes, what are your current symptoms of stress?

(Check all that apply)

□□ Chest pain, palpitations, rapid pulse

□□ Cold sweaty feet or hands

□□ Constipation or diarrhea

□□ Depression, frequent or wild mood swings

□□ Frequent sighing

□□ Difficulty in making decisions

□□ Excessive defensiveness

□□ Excessive anxiety, worry, guilt, nervousness

□□ Feeling overwhelmed

□□ Forgetfulness, disorganization, confusion

□□ Frequent sweating

□□ Headaches

□□ Heartburn, stomach pain, nausea

□□ Increased frustration, irritability, edginess

□□ Increased or decreased appetite

□□ Increased anger or hostility

□□ Insomnia, nightmares, disturbing dreams

□□ Lightheadedness, faintness, dizziness

□□ Jaw clenching or grinding teeth

□□ Neckache, backache, muscle spasms

□□ Nervous habits, fidgeting, feet tapping

□□ Obsessive or compulsive behavior

□□ Rapid, mumbled speech

□□ Rash, itching, hives

□□ Reduced work efficacy, productivity

□□ Social isolation, withdrawal

□□ Stuttering or stammering

□□ Tiredness, weakness, fatigue

Which of the following call types did you receive today?

(Check all that apply?

□□ Assault

□□ Domestic

□□ Robbery

□□ Weapons

□□ Family Offense

□□ Rape

□□ Sex Assault

□□ Psych Hold

□□ Suicide

□□ Bleeding

□□ Difficulty Breathing

□□ Drowning

□□ Fall

□□ Heart

□□ Miscellaneous Medical

□□ Not Breathing

Appendix E: Dispatcher Exit Questionnaire

Enter your participation code here _____

How stressed are you today?

Mild			Moderate			Severe			Extreme	
0	1	2	3	4	5	6	7	8	9	10

Did you work today? _____

If no, when was your last day you worked? _____

If yes, what your current symptoms of stress?

(Check all that apply)

□□ Chest pain, palpitations, rapid pulse

□□ Cold sweaty feet or hands

□□ Constipation or diarrhea

□□ Depression, frequent or wild moods swings

□□ Frequent sighing

□□ Difficulty in making decisions

□□ Excessive defensiveness

□□ Excessive anxiety, worry, guilt, nervousness

□□ Feeling overwhelmed

□□ Forgetfulness, disorganization, confusion

□□ Frequent sweating

□□ Headaches

□□ Heartburn, stomach pain, nausea

□□ Increased frustration, irritability, edginess

□□ Increased or decreased appetite

□□ Increased anger or hostility

□□ Insomnia, nightmares, disturbing dreams

□□ Lightheadedness, faintness, dizziness

□□ Jaw clenching or grinding teeth

□□ Neckache, backache, muscle spasms

□□ Nervous habits, fidgeting, feet tapping

□□ Obsessive or compulsive behavior

□□ Rapid, mumbled speech

□□ Rash, itching, hives

□□ Reduced work efficacy, productivity

□□ Social isolation, withdrawal

□□ Stuttering or stammering

□□ Tiredness, weakness, fatigue

Which of the following call types did you receive today?

(Check all that apply)

□□ Assault

□□ Domestic

□□ Robbery

□□ Weapons

□□ Family Offense

□□ Rape

□□ Sex Assault

□□ Psych Hold

□□ Suicide

□□ Bleeding

□□ Difficulty Breathing

□□ Drowning

□□ Fall

□□ Heart

□□ Miscellaneous Medical

□□ Not Breathing

If you lack stress, why do you think that is?

In what ways, do you think this job has negatively impacted your life?

In what ways, do you think this job has positively impacted your life?

What do you think in this profession can help with job-related stress?

(Check all that apply)

□□ Access to professional counselors

□□ Access to professional therapists

□□ Peer counselors unknown to employees

□□ Peer counselors known to employees

□□ Quiet rooms within workplace

□□ Required stress workshop for all employees

□□ Other

Appendix F: Table 1

Symptom	Participant Number								
	P1	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**
Chest Pain, Palpitations, Rapid Pulse	1	1	2	0	2	2	0	3	1
Cold Sweaty Feet or Hands	0	0	0	0	0	0	3	0	0
Constipation or Diarrhea	0	1	3	0	1	1	0	4	0
Depression, Frequent or Wild Mood Swings	1	0	0	1	0	0	0	0	0
Frequent Sighing	1	3	4	0	4	3	7	10	3
Difficulty in Making Decisions	0	0	2	2	0	2	2	1	0
Difficulty Concentrating, Racing Thoughts	0	1	0	1	0	1	0	4	4
Excessive Defensiveness	0	0	4	0	3	1	3	3	1
Excessive Anxiety, Worry, Guilt, Nervousness	0	0	2	1	0	0	2	1	1
Feeling Overwhelmed	2	3	3	1	2	6	5	8	5
Forgetfulness, Disorganization, Confusion	0	0	0	3	0	1	1	1	0
Frequent Sweating	0	0	1	0	0	0	0	5	0
Headaches	7	0	5	0	0	5	8	1	3
Heartburn, Stomach Pain, Nausea	0	0	0	0	0	1	5	5	0
Increased Frustration, Irritability, Edginess	1	1	0	3	3	1	3	5	2
Increased or Decreased Appetite	0	0	2	2	0	0	2	1	0
Increased Anger or Hostility	0	1	0	2	3	1	0	5	0
Insomnia, Nightmares, Disturbing Dreams	0	2	0	0	0	0	0	0	0
Lightheadedness, Faintness, Dizziness	0	0	0	0	0	1	0	0	0
Jaw Clenching or Grinding Teeth	0	0	0	1	1	1	1	3	1
Neckache, Backache, Muscle Spasms	0	0	0	0	0	7	7	5	1
Nervous Habits, Fidgeting, Feet Taping	0	5	1	0	1	2	0	4	0
Obsessive or Compulsive Behavior	0	0	3	0	0	0	0	0	0
Rapid, Mumbled Speech	0	3	0	0	0	1	1	6	0
Rash, Itching, Hives	0	0	1	0	0	0	0	0	0
Reduced Work Efficacy, Productivity	0	0	0	1	2	3	0	1	0
Social Isolation, Withdrawal	0	1	1	1	0	0	0	0	0
Stuttering or Stammering	1	0	0	0	0	0	0	9	0
Tiredness, Weakness, Fatigue	1	4	2	4	2	5	0	1	4
Total Number of Days Worked	**7**	**5**	**8**	**5**	**6**	**9**	**8**	**9**	**8**

Appendix G: Table 2

Symptom	Total Number of Symptoms
Feeling Overwhelmed	35
Headaches	31
Frequent Sighing	28
Tiredness, Weakness, Fatigue	23
Neckache, Backache, Muscle Spasms	20
Increased Frustration, Irritability, Edginess	19
Excessive Defensiveness	15
Increased Anger or Hostility	12
Nervous Habits, Fidgeting, Feet Taping	12
Difficulty Concentrating, Racing Thoughts	11
Heartburn, Stomach Pain, Nausea	11
Rapid, Mumbled Speech	11
Chest Pain, Palpitations, Rapid Pulse	10
Constipation or Diarrhea	10
Stuttering or Stammering	10
Difficulty in Making Decisions	9
Jaw Clenching or Grinding Teeth	8
Increased or Decreased Appetite	7
Reduced Work Efficacy, Productivity	7
Forgetfulness, Disorganization, Confusion	6
Frequent Sweating	6
Excessive Anxiety, Worry, Guilt, Nervousness	5
Cold Sweaty Feet or Hands	3
Obsessive or Compulsive Behavior	3
Social Isolation, Withdrawal	3
Depression, Frequent or Wild Mood Swings	2
Insomnia, Nightmares, Disturbing Dreams	2
Lightheadedness, Faintness, Dizziness	1
Rash, Itching, Hives	1

Appendix H: Table 3

Call Types Recorded

Call Types
Assault
Bleeding
Breathing Difficulty
Domestic
Drown
Fall
Family
Heart
Miscellaneous
Not Breathing
Psych
Rape
Robbery
Suicide
Weapon

Appendix I: Table 4

Participant	Percentage of Day Off not Overlapping	Percentage of Work Day not Overlapping	Total Percentage not Overlapping	Rating for Total not Overlapping
P1	33.33%	0.00%	15.38%	No Difference
P3	85.71%	80.00%	83.33%	Difference
P4	75.00%	87.50%	83.33%	Difference
P5	75.00%	80.00%	77.78%	Difference
P6	28.57%	33.33%	30.77%	No Difference
P7	0.00%	44.44%	28.57%	No Difference
P8	60.00%	37.50%	46.15%	No Difference
P9	60.00%	66.67%	64.29%	Questionable Difference
P10	0.00%	62.50%	45.45%	No Difference

Note: 0% to 50% = No Difference; 50%-70% = Questionable Difference; 70%-90% = Difference; 90%-100% = Great Difference (adapted from Scruggs & Mastropieri, 1998).

Appendix J: Table 5

Participant	Cohen's *d*	Rating
P1	1.00	Large
P3	3.33	Large
P4	4.75	Large
P5	7.10	Large
P6	0.72	Medium
P7	2.92	Large
P8	1.84	Large
P9	2.29	Large
P10	N/A	None

Note: P10's Sd was 0.00, and *M* for work was 2.00 while *M* for day off was 2.63.

Appendix K: Table 6

		Assault	Domestic	Psych	Suicide	Breathing Difficulty	Heart	Misc.	Not Breathing
P1	Rating	Low	Low	Low	Low	Low	Low	Low	Low
	Stability	Stable	Stable	Stable	Unstable	Stable	Stable	N/A	N/A
P3	Rating	Low	Low	Low	Low	Low	Low	Low	Low
	Stability	N/A	Stable	Stable	Stable	Stable	Unstable	N/A	Stable
P4	Rating	Moderate	Moderate	Low	Moderate	Moderate	Moderate	Low	Moderate
	Stability	Stable	Stable	Stable	Stable	Stable	Stable	N/A	Stable
P5	Rating	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Moderate
	Stability	Stable	Stable	Stable	Stable	Stable	Stable	N/A	N/A
P6	Rating	Low	Low	Low	Low	Low	Low	Low	Low
	Stability	Unstable	Unstable	Stable	Stable	Stable	Stable	N/A	N/A
P7	Rating	Moderate	Moderate	Low	Moderate	Low	Moderate	Moderate	High
	Stability	Stable	Unstable	Stable	Unstable	Stable	Stable	Stable	Stable
P8	Rating	Low	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Moderate
	Stability	N/A	Stable	Stable	Stable	N/A	Stable	N/A	N/A
P9	Rating	Moderate	Moderate	Low	Moderate	Low	Low	High	High
	Stability	Unstable	Unstable	Stable	Unstable	Stable	Stable	Unstable	Stable
P10	Rating	Low	Low	Low	Low	Low	Low	Low	Low
	Stability	Stable	Stable	Stable	Stable	Stable	Stable	Stable	N/A

Appendix L: Table 7

Participant	Question: If you lack stress, why do you think that is? Response
P1	Sometimes I tune it out; Once I hang up the phone, I block the call out
P3	Less responsibility for life and safety of others, dealing with negatively and not seeing the bad things that occur in life
P4	Numbness
P5	Away from the workplace interpersonal "drama"
P6	N/A
P7	I do not lack stress
P8	I do experience stress
P9	If I lack stress while working it is usually because it is too busy to feel any symptoms. I can feel the symptoms of stress when I leave work
P10	Conscious effort to not let things get to me; spiritual

Appendix M: Table 8

Participant	Question: In what ways do you think this job has negatively impacted your life? Response
P1	I do not show emotions too much
P3	I'm always looking for the worse-case scenario in every decision that I make. I rarely look for the positive outcomes first. My family has seen the largest change over my career with not wanting to be as socially active as I used to be and I can easily shut down emotionally if I don't like what is occurring. I am scared to lose my self-control because I'm afraid if I do I won't stop. It is difficult to not be able to vent to my family about some of the things that do occur. They either don't want to know or I think it's too hard to share
P4	No social life, high anxiety, lack of support, and schedule leaves no time for family
P5	Can effectively manage life/death situations on a constant basis but little patience for 'off the clock' petty problems or disagreements. Husband enjoys proving his point, that his side is right, I tune him out. Friends and family go into long drawn-out stories that make me want to scream "get to the point" while appearing interested
P6	N/A
P7	Not a lot of sleep, not a lot of extra time because of my schedule, and some days are too stressful
P8	My empathy for people, I don't know has gone from very high to zero. If I don't know you I don't care about your problems. That is truly a reality I deal with daily.
P9	Lack of sleep, difficult work hours, lack time for friends/family, much more stress now than before I was in this profession
P10	Time, negative situations most don’t encounter, personal sacrifices with odd hours and long days

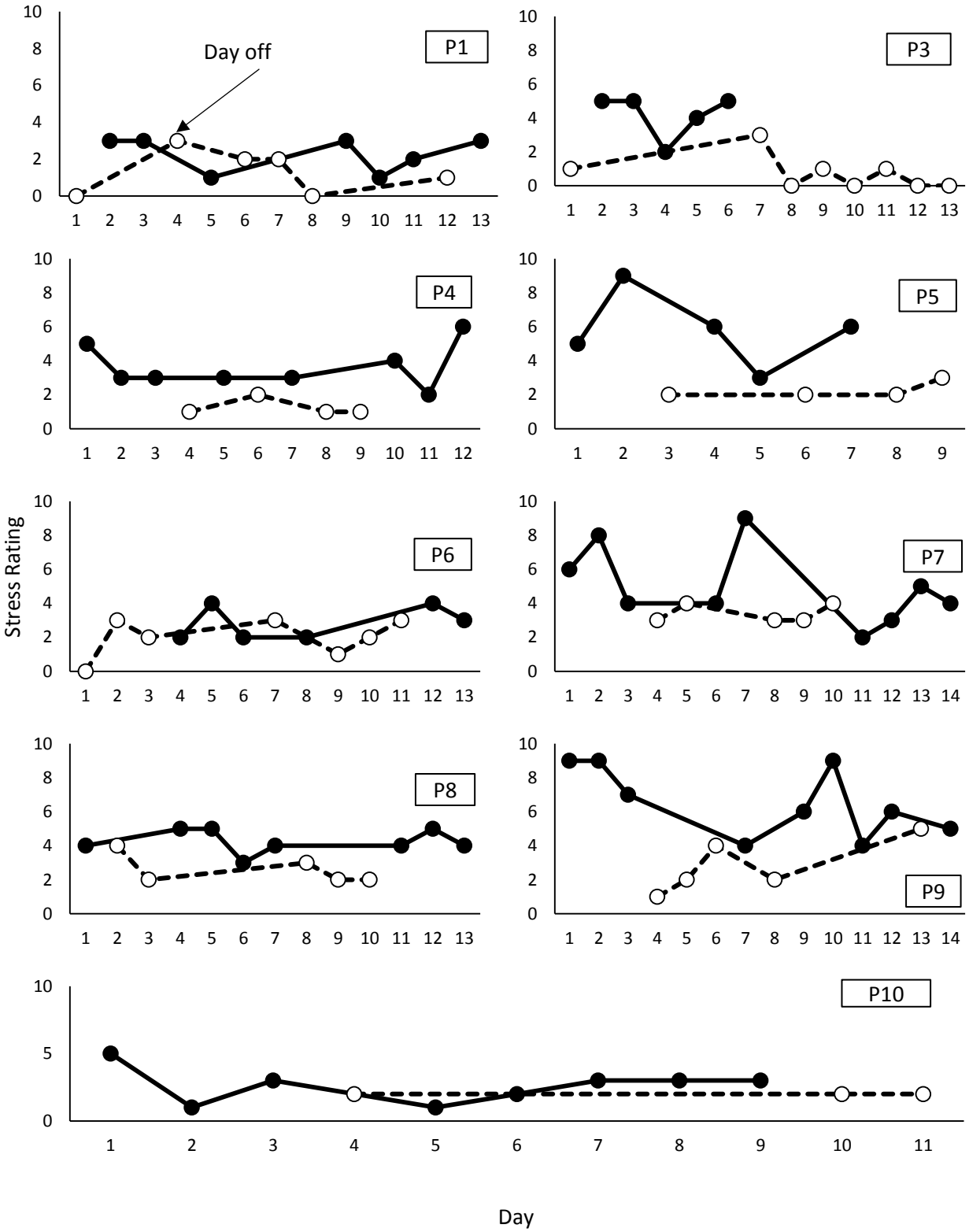
Appendix N: Table 9

Participant	Question: In what ways do you think this job has positively impacted your life? Response
P1	I have a better outlook on life and appreciate my family more
P3	It gives me a feeling of making a difference and helping to protect my family and neighbors that I care for
P4	Understanding of others social issues
P5	Ability to handle tragedy calmly-remember to tell people "I love you", role model for others and after 30 years I still love what I do, minus the office drama and power play games
P6	N/A
P7	It is easier to talk with people and handle emergency calls
P8	I have become my aware of myself and my behaviors and how they affect my surroundings. If I am angry it's easier to only see anger
P9	Great co-workers, more compassionate towards people, and learned a lot about law enforcement
P10	Purpose, great pay and benefits, a lot of vacations and days off, and great coworkers

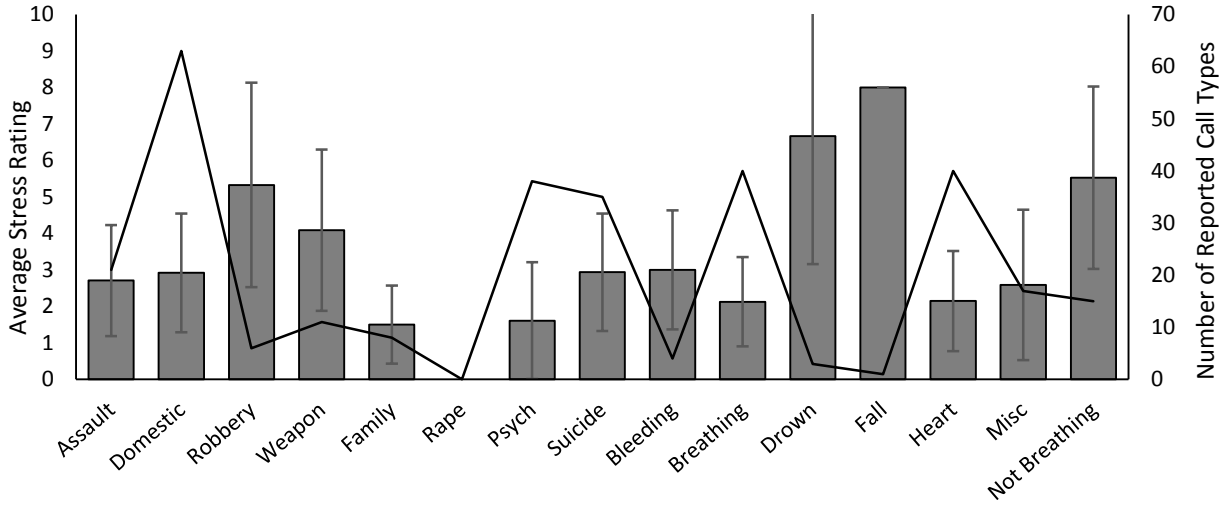
Appendix O: Table 10

Participant	Question: What do you think in this profession can help with job-related stress? Response
P1	Peer counselors known to employee, and required stress workshop for all employees
P3	Access to professional counselors, access to professional therapists, peer counselors who are unknown to employee, peer counselors known to employee, quiet rooms within workplace, and required stress workshop for all. Veteran dispatchers act like they are resistant to stress and the negativity that occur. I would like to see required counseling at regular intervals for PTSD, depression or other related psychological problems. It also doesn't help that there is no required retirement age. The way it is written now, to get full retirement with no penalties I would have to work until I reach Medicare age (65 years old). For me, that means a [removed] career in a high stress environment with no regards to our well-being.
P4	Access to professional counselors and quiet rooms within workplace
P5	Peer counselors who are unknown to employee, required stress workshop for all employees, and being able to take breaks without feeling you're making your partners run short, holding everyone accountable and don't show favoritism
P6	N/A
P7	Access to professional counselors, peer counselors who are unknown to employee, and quiet rooms within workplace
P8	Access to professional counselors, quiet rooms within workplace and required stress workshop for all employees
P9	More staffing will help. We are extremely understaffed and it puts a major strain on everyone, especially when sick calls happen and employees are not actually sick
P10	Quiet rooms within workplace and required stress workshop for all employees

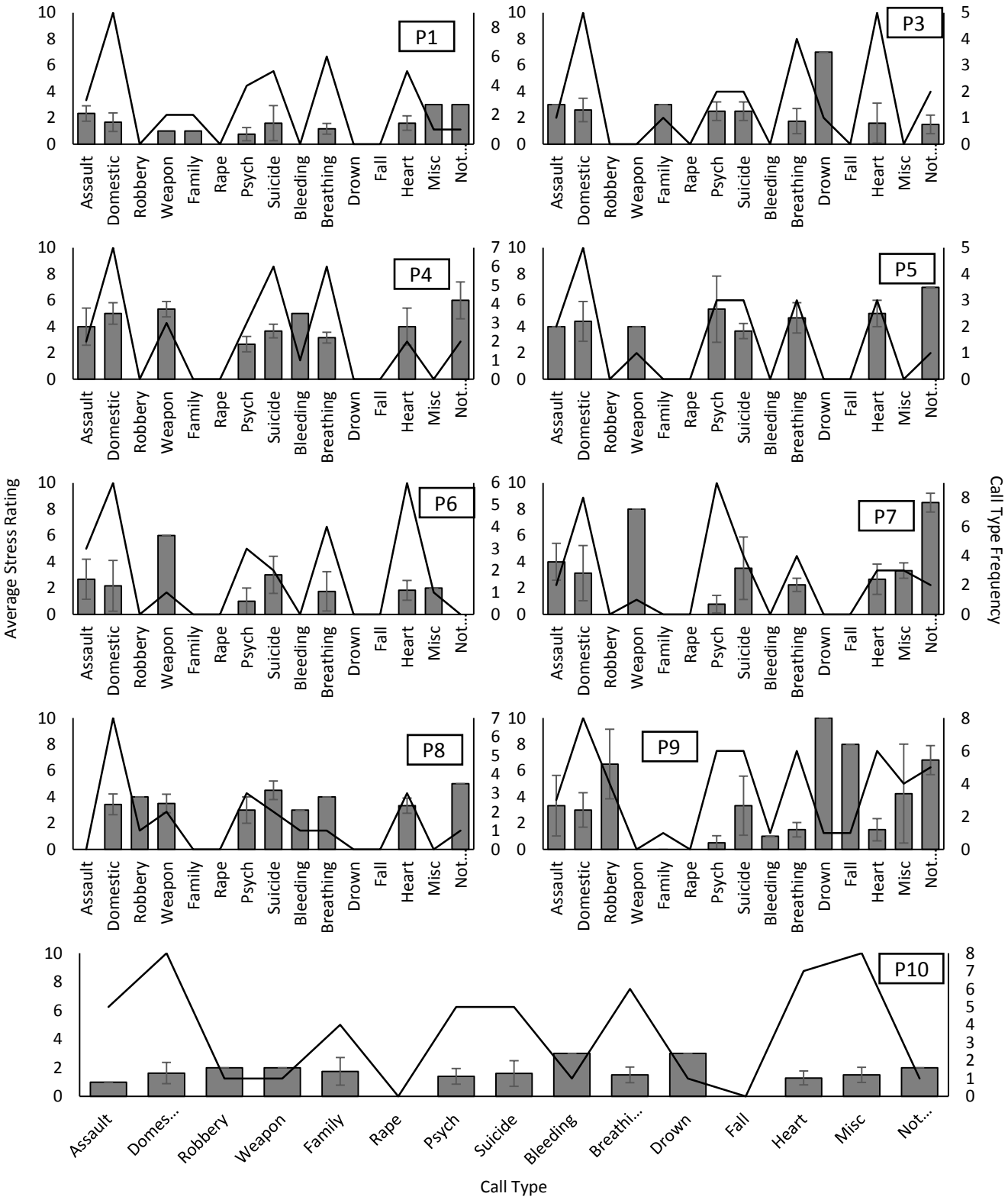
Appendix P: Figures 1-3



A. *Figure 1*. Daily stress, on a scale of 0 (not at all stressed) to 10 (maximally stressed) across days of participation for each participant. Closed circles are self-reported work days while open circles are days off.



B. *Figure 2.* Aggregate call type frequency (line) combined with average reported stress rating per call type (bars).



C. *Figure 3.* Individual call type frequency (line) combined with average reported stress rating per call type (bars) per participant.