An Examination of the Conditions Affecting Forensic Scientists' Workplace Productivity and Occupational Stress

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Executive Summary

As the criminal justice system increasingly utilizes forensic evidence collection and scientific analyses in support of investigations and prosecutions, there has been a concurrent rise in the demands placed on forensic scientists and crime laboratories. There is, however, evidence that laboratories are understaffed and have limited budgets for training, equipment, and personnel. These factors slow the processing of evidence and reduce scientist productivity, leading to case backlogs and potentially strained relationships with police and prosecutors. The negative working conditions produced by such an environment may directly affect the experiences of scientists by decreasing productivity and job satisfaction while increasing worker stress and fatigue.

There has been generally little research exploring the occupational experiences of forensic scientists, limiting our knowledge of the sources of stress within the field and their general influence on employee productivity. Such lines of inquiry have substantive value for supervisors and managers in order to identify the sources of stress within their agency and develop policies and guidelines that reduce their influence on employees. Studies of criminal justice system employees in law enforcement and correctional agencies indicate that individuals who report high levels of work stress have generally poor work performance, are less productive, and report negative physical and emotional symptoms due to their experiences. High stress also corresponds to low levels of job satisfaction that reduces their organizational commitment and attitude toward their position as a whole.

In light of the lack of research on the occupational experiences of forensic scientists, this study attempted to assess these issues through a quantitative analysis of survey responses collected from 899 forensic scientists working in public and private laboratories at the local, state, and federal level across the United States.

Data collection took place in two waves, beginning with an initial electronic survey distributed in November 2012. The research team worked in conjunction with ASCLD-LAB to distribute an email to all currently certified laboratory directors detailing the project along with informed consent for the study, and an electronic link to the survey instrument. Directors were then asked to forward this message to all scientists working in their laboratories in order to complete the survey. This solicitation method yielded 568 responses from 31 states, with responses from scientists primarily working in state and local police agencies. The second wave of data collection utilized a paper survey distributed to 84 agencies in 25 states in May 2013. These agencies were specifically targeted to increase the response rate from under-represented agencies and generally expand the overall population of scientists included in the study. The paper survey method generated 331 responses from 20 states with most respondents from state and local agencies. The final purposive sample of 899 respondents provided a range of scientific disciplines engaging in evidence handling and collection, and represented most every state in the U.S.

The majority of this sample of respondents (62.8%) were female and white (90.7%). Most respondents were married and had at least a four year college degree. The average age of respondents was 39.15 years, and sample members had worked in the field of forensic science for an average of 3.71 years. In addition to demographics, respondents were asked about their involvement with the court system in their area. About 90 percent of scientists received at least

one subpoena during the last year, and just over 80 percent testified in court during the same period. Although 41.6 percent of respondents agreed that they often have to report for court with little notice, 62.6 percent indicated they find it easy to deal with court schedules in their jurisdictions.

The primary goal of this study was to measure levels of work stress and job satisfaction. Four items were used to measure work stress using Likert-scale responses, and approximately 60 percent of scientists agreed that they were emotionally drained by their work. In addition, 57.1 percent felt frustrated by their jobs, while over 60 percent indicated they were under a lot of pressure and were tense or uptight at work. Overall, respondents experienced a moderate amount of work stress which is in keeping with research on various criminal justice system employees and helping professions generally. The scientists sampled also indicated moderate levels of job satisfaction based on responses to five Likert-scale measures. Specifically, 85.6 percent of sample members reported being either somewhat satisfied or very satisfied with their jobs, and 64.1 percent would take the same job again without hesitation. Also, about half of the sample would keep their current jobs regardless of other occupational opportunities or strongly recommend their job to a good friend.

A range of survey items were designed to measure possible sources of work stress and job satisfaction, including relationships with prosecutors and courts, supervisory and top management support, feelings about the work performed, and perceptions of work environments. Additionally respondents were asked about the physical and emotional outcomes they experience as a result of work stress, and the coping strategies they employ to deal with occupational stressors when not at work. Below are key findings regarding these measures:

- Very few respondents felt as though prosecutors doubted their competence.

- Almost 95 percent of respondents felt that judges respected them professionally.
- More than half of the scientists agreed that they are regularly pressured by police or prosecutors to rush to produce scientific results.
- More than half of respondents agreed that prosecutors do not understand why it takes time to complete the analyses they request.
- Most scientists indicated that prosecutors do not understand that they work very hard on a case even though they end up finding no evidence to support the charges brought against a defendant.
- Respondents reported high levels of supervisory support, with 75.9 percent agreeing or strongly agreeing that their immediate supervisors supported them.
- More than three quarters of scientists felt that their immediate supervisors gave them clear instructions, and had clear expectations of them.
- Over half agreed that supervisors would encourage their co-workers if they did their jobs well, that disputes between coworkers and supervisors were usually handled in a friendly way, and that top managers are responsive to their thoughts and suggestions.
- More than three quarters indicated that their colleagues usually agree on the best way to accomplish something at work and their coworkers listen to what they have to say.
- More than 80 percent of respondents felt their agency's operational guidelines and procedures were clear, though 53.3 percent believed their agency was inconsistent in the application of new rules and policies.

- About half of respondents at least slightly agreed that they received assignments without the manpower to complete them.
- The majority of respondents believed that it took too long to hire replacements when someone leaves the agency.
- Most respondents were satisfied with the cleanliness of their workplaces, felt their lab space contained efficient lighting and tools to prevent eye strain, considered their space comfortable enough to work in without getting tired, and were satisfied with the privacy in their workspace.
- More than 86 percent of individuals indicated that they could often, mostly, or always complete their daily tasks easily due to the overall environment at work.
- More than 80 percent of scientists indicated that they were unable to control the temperature or airflow in their lab space, and 56.7 percent said the overall temperature in their lab spaces through the year is somewhat uncomfortable or very uncomfortable.
- Approximately 80 percent of the scientists reported that unfavorable environmental conditions (noise, temperature, etc.) decreases their productivity.
- Scientists reported that the most common physical and psychological responses associated with work stress were difficulty falling or staying asleep, a constant feeling of alertness, and feelings of detachment or emotional numbness.
- Fewer respondents reported experiencing feelings of mistrust or betrayal, difficulty concentrating, irritability or outbursts of anger, being easily startled, physical aches and pains with no apparent cause, or nightmares.

- The findings of bivariate correlation analyses indicated that scientists who reported any negative physical or emotional symptoms due to stress were more likely to experience all negative outcomes.
- There was a significant relationship ($p<.05$) observed between reporting higher levels of work stress and reporting more negative physical outcomes. Those with greater levels of job satisfaction were less likely to experience these symptoms ($p<.05$).
- Scientists most frequently reported employing positive coping mechanisms to manage occupational stressors when not at work, including trying to forget about work, finding an activity to take their mind off things, or talking things over with friends, a spouse or significant other.
- Less than five percent indicated they would engage in negative coping strategies including: taking a tranquilizer, some other form of medicine, or smoking more often.
- 44.4 percent of the scientists said they would at least sometimes have a drink to help them cope.
- Less than 10 percent reported sometimes or more frequently seeking professional help from counselors or therapists.
- Bivariate correlation analyses indicated that individuals with higher levels of work stress were more likely than others to engage in various coping mechanisms ($p<.05$) outside of the workplace.

Two linear regression models were also created to assess the effects of the demographic characteristics of respondents along with work-related variables on job stress and satisfaction

respectively. The models regressing the independent variables on work stress indicate that sex was the only significant individual characteristic with females reporting more stress than males. Multiple work-related variables were associated with increased stress, including working more hours per week, poor relationships with prosecutors and courts, less supervisory support, little support from top managers, and high levels of role conflict. The regression model for job satisfaction found no significant demographic characteristics associated with higher satisfaction. Multiple work-related variables were significantly associated with satisfaction, including working fewer hours per week, high levels of support from both supervisors and top management, low levels of role conflict, and general positive feelings about the job.

As a whole, the findings of this study indicate that forensic scientists have many of the same occupational experiences as employees of the larger criminal justice system, and helping professions such as ambulance crews. The findings of the regression analyses for stress and satisfaction suggest that laboratory management can directly affect the working conditions of scientists through policies and programs in order to improve the day-to-day experiences of their employees, and reduce levels of burnout, absenteeism, poor job performance, turnover, and possibly even physical and mental health problems. The significant relationship between the number of hours worked and higher levels of stress indicates the need to develop flexible scheduling policies and distribute overtime equitably across all scientists to ensure that individuals are not working an excessive number of hours each week.

Second, the relationship between scientists' work reactions and their perceptions of support from supervisors and management indicate the need for policies that promote open communication between scientists and management generally. Establishing a direct mechanism for scientists to discuss concerns and voice their needs to their superiors may increase trust and

reduce stress. Third, the creation of clear staffing plans that reduce redundant positions and define accepted practices and procedures for all phases of evidence handling, analysis, and report creation can decrease work stress by promoting clear policies to all scientists. Similarly, providing clear expectations and metrics for employee performance can lower stress and increase satisfaction by communicating standards for work that can be evaluated and achieved on a regular basis.

Fourth, laboratory directors and management must give careful consideration to the physical environments that their scientists work within on a day-to-day basis. Though working environments were not significant predictors of stress or satisfaction, 80 percent of scientists indicated that unfavorable conditions, such as noise and temperature, reduce their productivity. In order to obtain the highest levels of productivity, regardless of the facility, management should find ways to minimize noise distractions when possible, provide adequate storage of laboratory equipment, and provide breaks to scientists working with particularly noisy equipment or instrumentations in order to provide optimal working conditions for both safety and productivity.

Fifth, laboratory directors and management should promote awareness of negative signs of physical or emotional stress among the scientists in their laboratories. A number of respondents indicated that they experienced some physical symptoms of trauma as a result of their work, such as nightmares, irritability, feelings of alertness, or difficulty sleeping. The presence of these symptoms was correlated with higher levels of job stress, and reduced when individuals report higher levels of work satisfaction. As many of these behaviors can directly reduce the productivity and general well-being of scientists, laboratory managers should encourage clear communication of behavioral changes or concerns about physical health. Such

measures could foster trust between co-workers and a more open working environment. Management should also ensure that scientists are aware of the available mental health services, whether counselors or therapists, should they feel the need to speak with a professional to express their concerns. Communicating the value of access to these resources, when necessary, may have beneficial impacts on both stress and satisfaction, and improve the overall working environment of the laboratory.