

**UTILIZATION OF THE PARAMEDIC CERTIFICATION AMONG EMERGENCY  
MEDICINE UNDERGRADUATE STUDENTS**

by

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University of Pittsburgh, 2011

Submitted to the Faculty of  
the University Honors College in partial fulfillment  
of the requirements for the degree of  
Bachelor of Philosophy

University of Pittsburgh

2011

UNIVERSITY OF PITTSBURGH  
SCHOOL OF HEALTH AND REHABILITATION SCIENCES

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# UTILIZATION OF THE PARAMEDIC CERTIFICATION AMONG EMERGENCY MEDICINE UNDERGRADUATE STUDENTS

Jessica L. Borrell

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**Background:** Recruitment and retention are significant issues in EMS, both in the classroom and the workforce. It appears that some students in the senior class of the Emergency Medicine majors are choosing not to test for their paramedic certification or work in EMS at all. The purpose of this research was to understand why a portion of the students are choosing to undergo the rigorous paramedic training program during their junior years, and then are not using the training during their senior years and beyond.

**Methods:** A survey was administered to the senior class of Emergency Medicine degree seeking students.

**Results:** Significant differences were found between students with more than and less than one year of prior experience in their confidence in BLS skills, their likeliness to remain in the field in 5 years, and their likeliness to remain in the field in 10 years. Significant differences were also found between students with and without the intent to attend graduate school in their certification levels, their likeliness to remain in the field in 5 years, and their likeliness to remain in the field in 10 years.

**Conclusions:** Factors that could be causing this phenomenon include scheduling conflicts, wage, lack of advancement opportunities, and intent to attend graduate school.

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## 1.0 INTRODUCTION

In 2006, the U.S. Bureau of Labor Statistics estimated that there were approximately 192,000 people working full-time as paramedics and emergency medical technicians in the United States (Becker, 2007). At that time, the population of the United States was nearly 300 million (U.S. Census Bureau, 2009); the Emergency Medical Services (EMS) workers represented a safety net that was responsible for the out-of-hospital emergency transport of a population that was more than 1,500 times larger than the workforce.

In addition to the sheer numerical difficulties created by this employee/consumer ratio, EMS struggles with recruitment and retention in its workforce (Patterson et al., 2010). Freeman neatly summarized the problem in her article on this topic:

EMS work is physically and emotionally stressful, the hours and schedules can be undesirable, injury and disease exposure are an ever-present risk, compensation and benefits are unexceptional, and training and continuing education requirements are extensive. These realities of the EMS profession can deter new recruits and lead to high levels of burnout among emergency response personnel. (Freeman, Slifkin, & Patterson, 2009)

This paper presents the results of a survey of undergraduate students seeking a degree in Emergency Medicine with an emphasis relative to their perceptions of EMS.

## **1.1 EMS TRAINING**

### **1.1.1 Paramedic Training**

EMS workers have varying levels of emergency medical technician (EMT) certification across the United States. Two of the main levels are EMT-Basic (referred to as EMTs) and EMT-Paramedic (referred to as paramedics). EMTs and paramedics differ in their training requirements and scopes of practice. EMT's operate within a skill set called 'basic life support' (BLS), which includes skills such as chest compressions, bandaging, and the measurement of vital signs. In addition to BLS skills, paramedics can also perform 'advanced life support' skills (ALS), which include electrical therapy, intubation (in some states), initiation of intravenous lines, and administration of medication. In Pennsylvania, EMTs must complete 140 hours of training (Council, 2008). Nationally, paramedics receive an average of 1000 hours of training beyond their EMT certification. The majority of paramedics are trained through certification programs that last less than 1 year. In 2005, less than 1% of paramedic graduates were from a bachelor degree-granting program (Administration, 2008).

### **1.1.2 University of Pittsburgh Emergency Medicine Degree**

Emergency Medicine is one of six undergraduate majors offered by the School of Health and Rehabilitation Sciences (SHRS) at the University of Pittsburgh (Pittsburgh, 2011b). It is a 60-credit major that is to be completed during the students' third and fourth years in college. Students must complete the SHRS general education requirements, as well as

the EMT course, prior to enrollment (Pittsburgh, 2011a). During the third year, students complete a paramedic certification program that includes 1120 hours of clinical, laboratory and classroom education in approximately 38 weeks (Center for Emergency Medicine, 2011). At the end of this year, they are eligible to test for their national and state paramedic certifications. Their fourth year is composed of two 12-credit semesters that provide advanced education on the health care system and on EMS as an industry.

## **1.2 PILOT STUDY**

In March 2011, a survey was administered to the seniors in the Emergency Medicine major. The goal of this survey was to examine gender disparities in EMS by studying this cohort of paramedic students.

### **1.2.1 Survey**

Approval for an Institutional Review Board Exemption for the survey was received on February 18, 2011, and the survey was administered via SurveyMonkey. The 10 questions are listed in Appendix A. The results were analyzed by comparing means. The significance was analyzed using analysis of variance (ANOVA). The survey was distributed to 31 students, and 17 responded; the response rate was 55%.

Although the primary purpose of this research was to examine a cohort of paramedic students to see if a gender disparity existed, data was collected that is relevant to research on the usage of the paramedic degree in paramedic students.

### **1.2.2 Relevant results and discussion**

This class of students completed their paramedic training in May 2010 and the survey was administered in March 2011. Although 10 months had passed since they became eligible for the paramedic certification exam, 12% of the students still were not certified paramedics. Of the 17 respondents, 14 were currently employed; of the 14, 11 were working on ambulances as paramedics.

The design of the fourth year of Emergency Medicine classes easily allows students to balance class and work as a paramedic; there were 12 credits of classes that met 2 days per week. It was surprising to find that 35% of the respondents were not working as paramedics at the time of the survey.

Questions about satisfaction were rated on a scale from 'very satisfied' (4) to 'very dissatisfied' (1). The average response was 3.0 for current EMS assignment, which corresponded to 'satisfied.' The average response was 2.8 for the EMS profession, which corresponds to an answer between 'satisfied' and 'dissatisfied.'

Questions about confidence were rated on a scale from 'very confident' (4) to 'very insecure' (1). The average response was 2.8 for paramedic skills, which corresponded to a response between 'confident' and 'insecure.' The average response was 3.4 for the EMT-B skills, which corresponded to a response between 'very confident' and 'confident.'

Respondents were asked to rate the likelihood that they would be working as a paramedic in 1, 5 and 15 years. Fifteen years was chosen in order to indicate respondents who intended to be 'career paramedics.' All 17 participants answered this question. The responses were rated on a scale from 'very likely' (4) to 'very unlikely'

(1). The average response was 2.9 for 1 year, which corresponds to a response between ‘unlikely’ and ‘likely.’ The average response was 2.3 for 5 years, which corresponds to a response between ‘unlikely’ and ‘likely.’ The average response was 1.8 for 15 years, which corresponds to a response between ‘very unlikely’ and ‘unlikely.’

The results from this survey prompted the research that is presented in this thesis. The focus was shifted from possible gender disparities among paramedic students to the usage of the paramedic training in both genders.

### **1.3 PURPOSE OF THE STUDY**

Although the entire Emergency Medicine degree at the University of Pittsburgh is centered on the field of EMS, particularly ‘paramedicine,’ it appears that several students in the class are choosing not to test for their paramedic certification or work in EMS at all. Why are a portion of the students choosing to undergo the rigorous paramedic training program and then not using the training? This research tries to further quantify this phenomenon and begin to understand the reasons for it.

### **1.4 RESEARCH QUESTIONS**

The authors expected to find that under-utilization of the paramedic training was associated with less previous experience as an EMT, and that it was also associated with the student being on a pre-professional track (such as pre-medical school or pre-physician

assistant studies). Based on the pilot study, it was expected to see that the proportion of female students that are working in EMS as paramedics would be lower than male students. Based on these hypotheses, the research questions include:

1. What percentage of the class is certified as a paramedic?
2. What percentage of the class is working as a paramedic?
3. How satisfied are the students with EMS and, if applicable, their jobs?
4. What is the likelihood that the students will remain in EMS?
5. Is there a relationship between the amount of EMS experience that students had prior to their paramedic training and utilization of the paramedic degree? Is this associated with satisfaction, confidence, and likeliness to remain in the field?
6. Is there a relationship between intent to attend professional school and utilization of the paramedic degree? Is this associated with satisfaction, confidence, and likeliness to remain in the field?
7. Is there a relationship between the gender of the students and their utilization of the paramedic degree? Is this associated with satisfaction, confidence, and likeliness to remain in the field?

In the fifth, sixth, and seventh questions, utilization of the paramedic degree was measured by two questions: national registration level (paramedic certification) and current employment in EMS.

## **2.0 LITERATURE REVIEW**

Five relevant databases were searched for articles relating to recruitment, retention, job satisfaction, and career mobility in EMS. Fifteen databases were initially searched for keywords related to this research; the five databases with the most hits were selected. These databases included Medline, Cinahl, PsycINFO, Embase and Scopus. Medline and Embase cover biomedical information, Cinahl encompasses nursing and allied health, PsycINFO hosts literature on psychology, and Scopus contains a variety of literature topics. The literature review focused on studying theoretical models of recruitment and retention, examining specific recruitment/retention factors that relate directly to EMS, and researching existing surveys that have addressed this topic.

Recruitment and retention can be examined in the context of ‘job embeddedness,’ or the level of solid commitment that an employee feels towards their career and employer (Loan-Clarke, Arnold, Coomb, & Hartley, 2010). This theory examines the motivation that an employee has to remain in their current position (both internal and external to the workforce). Problems with recruitment and retention can be organized into three aspects: individual, organizational and external factors (Patterson, Moore, Sanddal, Wingrove, & LaCroix, 2009). At the individual level, turnover could be influenced by factors including employment-related stress and injury. Organizational topics include the

employees' wages, especially in comparison to those of similar careers. External factors take into account the national economy (e.g. trends of national unemployment).

Another theory states that factors contributing to turnover can be arranged into two categories: organizational commitment and occupational commitment (Alexander, Weiss, Braude, Ernst, & Fullteron-Gleason, 2009). Organizational commitment refers to the specific agency; occupational commitment refers to EMS as an industry. Within each of these categories, researchers can examine the employee's affective, normative, and continuance commitment. These are defined in the following quotation:

Affective commitment refers to the emotional attachment that an individual feels for his/her employer or occupation. Normative commitment refers to a feeling of obligation to one's organization or occupation. Continuance commitment refers to one's perceptions of the perceived costs of leaving the organization or occupation (Alexander, et al., 2009).

Surveys can be designed that address each of these components in order to understand the factors contributing to turnover and retention in the industry.

Patterson, et al. found that approximately 1 in 10 positions in EMS will have turnover each year (Patterson, et al., 2010). They estimated that each of these turnovers will cost their agency approximately \$7,000. In a separate article, Patterson listed several factors that contribute to turnover in EMS:

Barriers to recruitment and retention identified by the U.S. Fire Administration include inadequate emotional support after a critical incident, scheduling conflicts, family commitments, fear of disease spread, and excessive training requirements. Perceived patient abuse of the EMS system has also been identified as a contributor to low retention of EMTs. (2005)

Surveys can be designed that address each of these components, as well. The survey administered in this research includes scheduling conflicts and fear of illness/injury.

### **2.1.1 Career Mobility**

In the educational model described in section 1.1.1, the paramedic position was the apex of the career ladder in EMS. Other than continuing education programs or certifications, such as critical care courses, paramedics cannot advance beyond their current level while remaining in traditional EMS. Patterson suggested that improved integration with EMS, fire-services and police departments could help to reduce turnover (2007). This would occur by creating advanced positions in a larger organization.

Interestingly, employees in EMS believed that these educational limits negatively affected their relationship with other allied health professionals (Patterson, et al., 2005). This could be due to the paramedics' feelings of inferiority when they observe the advanced education of other allied health professionals. In a separate survey of agencies that were struggling with recruitment, approximately one fourth of the agencies cited 'Lack of advancement opportunities' as a factor (Freeman, et al., 2009).

Unfortunately, increased education may not be the panacea for EMS. Increased levels of education have been correlated to a decrease in paramedics' commitment to their agency and their occupation (Alexander, et al., 2009). This may be due to the paucity of jobs in EMS that require an advanced degree, or the relatively uncompetitive wage.

### **2.1.2 Wage**

The median wage for EMTs and paramedics was \$14.10 per hour in 2008 (Bureau of Labor Statistics, 2010c). In comparison, the median wage for registered nurses was

\$31.10 in 2010 (Bureau of Labor Statistics, 2010b) and \$21.76 for firefighters (Bureau of Labor Statistics, 2010a). These differences in hourly wage may be negatively impacting the recruitment and retentions of EMTs and paramedics.

### **2.1.3 Job Stress**

Job-related stress in EMS is attributable to several factors, including work-schedules, physical strain, and the unpredictable nature of the work. Freeman, et al. reported that work-schedules were the largest contributor to EMS turnover (2009). In her survey of agencies that were struggling with recruitment, more than two thirds of the agencies cited 'Time or scheduling conflicts' as a factor (Freeman, et al., 2009). Additionally, long shifts may result in adverse physical health effects (such as increased risk for cardiovascular disease and increased susceptibility for disease) and sleep deprivation (which can lead to obesity and overuse of caffeine or alcohol) (Hulst, 2003). Shift-work has also been associated with negative health effects, probably due to interference with the body's normal sleep rhythms (Spurgeon, Harrington, & Cooper, 1997).

The nature of the job centers on response to emergency situations, meaning that the workers must be capable of coping with urgent situations on a regular basis. A study in the United Kingdom reported that 22% of paramedics and EMT's had diagnosable symptoms for post-traumatic stress disorder (Bennett, Williams, Page, Hood, & Woollard, 2004). Freeman found that more than one third of the struggling agencies felt that their turnover was due to 'Burnout' or 'Job too stressful' (2009). Consistent operation under stress can have negative mental and physical effects, such as sleep deprivation, burnout, and depression (Okada, Ishii, Nakata, & Nakayama, 2005).

Additional physical strain may result from the frequent injuries that are experienced by paramedics. European studies of paramedics indicated that they were more likely to suffer from musculoskeletal injuries, especially back problems, than the general population (Sterud, Ekeberg, & Hem, 2006). Although studies on the direct effects of stress on paramedics were not found, there was confirmation that job stress is related to a decrease in job satisfaction among nurses (Patterson, et al., 2005).

Additionally, EMS requires close proximity with other staff. For example, two paramedics that are partners for a 24 hour shift will have to work together on each of their patient calls. On a busy shift, they may spend little time apart. In a survey of agencies that were struggling with recruitment, approximately one fifth of the agencies cited ‘dissatisfaction with other staff’ as a factor (Freeman, et al., 2009).

Finally, an additional source of stress may occur from workplace violence. A study in 1998 showed that approximately 90% of employees reported experiencing violence (verbal/physical) at some point during their work in EMS (Brough, 2005). Paula Brough, from the School of Psychology in Griffith University, stated “exposure to workplace violence was significantly associated with high levels of occupational stress and anxiety and diminished levels of work-well being” (Brough, 2005). Her research suggested that verbal violence can actually have more of a negative impact on paramedics than physical violence. This may be due to the increased frequency of verbal violence (Brough, 2005)

#### **2.1.4 Existing Models**

Some previous research has been directed at studying turnover in entire EMS agencies, instead of the perspectives of individual employees (Freeman, et al., 2009; Patterson, et al., 2010). However, other studies have examined the motivations of the individual employees through methods including focus group interviews (Patterson, et al., 2005) and surveys (Alexander, et al., 2009; Blau & Chapman, 2011; Perkins, DeTienne, Fitzgerald, Hill, & Harwell, 2009). Studies also exist that measure job satisfaction and stress among paramedics through surveys (Okada, et al., 2005; Sterud, Hem, Lau, & Ekeberg, 2011). Additionally, broader studies about allied health professionals that conduct surveys addressing recruitment and retention may be a helpful model (Loan-Clarke, et al., 2010).

#### **2.1.5 Non-EMS Theoretical Support**

Research in this field of EMS is limited in quantity and authorship; five of my references are from one author. In order to support the relatively small field of EMS research, the literature review was bolstered by searching for information on recruitment, retention, and turnover outside of the industry.

One major focus of research from the nursing field about turnover focuses on ‘role stress,’ or the mismatch between the perception and reality of the job (Lambert & Lambert, 2001). Lambert and Lambert found that there are several factors that contribute to this, including patient mortality, shift work, and poor relationships and/or support from coworkers (2001). These factors confirm several of the suggested factors from the

literature review that are causing job stress in paramedics (e.g., dissatisfaction with other staff, scheduling conflicts, etc).

Since the senior students have recently completed their paramedic training, it seems relevant to research other recently graduated/certified students. For example, one study researched turnover among recently graduated nurses (Laschinger & Grau, 2011). This study attributed a tumultuous, unsupportive entrance into the field for newly graduated nurses to high rates of absenteeism. It also mentioned another type of workplace violence: antagonism or bullying of the new nurses by the older ones. This type of workplace violence was shown to decrease the new employees' feelings of workplace fit, presumably leading to turnover. This is consistent with the research presented earlier on the detrimental effects of verbal violence on paramedics.

In the broad research of recruitment and retention theory, researchers have emphasized personal and situational factors. Although the personal factors were not discussed in the EMS research found in the literature review, this is an interesting aspect of the theory. For example, burnout among new nurses can be influenced by the optimism of the nurses (Laschinger & Grau, 2011). This psychological factor could be used to predict nursing students' future success in the field.

Recruitment, retention and turnover can also be addressed from the perspective of industry, instead of individual employees. For example, it is important to consider the impact of the local economy when recruitment is addressed in an industry (Atchley, 1996). If the local economy is booming and the businesses are expanding, there will probably be more positions available than there are workers. In this scenario, the companies will be less selective in their hiring, which may lead to changes in the overall

working environment. Additionally, the new employees may be less likely to remain in their positions, causing increased turnover. Conversely, if the local economy is suffering, employers will have fewer job openings (with more applicants) and will be able to be more selective in their hiring. Due to the decreased number of jobs, the employees may be hesitant about leaving their current positions. In this scenario, turnover rates would decrease. This theoretical research supports the idea that ‘external factors’ can affect recruitment and retention, as was mentioned earlier in the literature review pertaining directly to EMS (Patterson, et al., 2009).

Theoretical research on job satisfaction and turnover has identified several factors that can affect job satisfaction and organizational commitment (Currivan, 1999). Positive influences include autonomy, increasing wages, and a supportive social environment. Conversely, job stress has a detrimental impact on job satisfaction and organizational commitment. The relevancy of the earlier information from the literature review on organizational commitment, wage, and job stress that pertained directly to EMS is supported by this theoretical model.

### **2.1.6 Orientation to the Present Study**

The literature review was focused on factors that affect recruitment, retention and turnover in EMS. Additionally, it included a brief section of theoretical support on these topics external to the EMS industry. This information was synthesized into survey questions that were relevant to the cohort of paramedic students.

This cohort of Emergency Medicine students offers a unique insight into studying recruitment and retention among paramedics. Ordinarily, it would be difficult to contact

people that completed paramedic training but then decided to not test for their paramedic certification or work in EMS; they would not be registered through the National Registry or their employer. However, this survey included students in this precise circumstance due to their enrollment in the senior year classes. Additionally, the research allowed this group of students to be compared to the students that did chose to become certified and work in the industry.

Although this cohort may have contained slight differences from the typical paramedic samples in the literature review, similar factors on recruitment and retention were applicable to the present study and prior research on EMS. Additional questions were created that were specific to this cohort; for example, students were asked about their intent to attend graduate school.

## **3.0 METHODOLOGY**

### **3.1.1 Introduction**

Emergency Medical Services is a demanding profession that requires a significant commitment on the part of the provider from an educational standpoint, as well as from a practice standpoint. Researchers have shown that there are a number of factors that can influence recruitment, retention, and turnover in this industry. The purpose of this research was to gain insight into why a significant number of students choose to undergo a rigorous 36 credit paramedic training program, but do not currently or intend to use this knowledge and skill in the future

### **3.1.2 Research Design**

This research project used a 10 question survey to assess the demographic patterns, opinions, and employment statuses of the students.

### **3.1.3 Participants**

Students enrolled in the University of Pittsburgh undergraduate program in Emergency Medicine were recruited to participate in the study. A faculty mentor provided a description of the study, allowed for questions and answers and solicited participation.

### **3.1.4 Demographics**

A total of 26 subjects enrolled in the study. They were recruited without regard to race, gender or ethnic background. Exclusion criteria were age less than 18 years of age, transfer students who did not complete the University of Pittsburgh paramedic training program, and students in the online degree program. The University of Pittsburgh IRB reviewed this protocol and determined the study to be exempt. A total of 15 males and 11 females enrolled in the study.

### **3.1.5 Instruments**

A survey was developed using questions from the pilot study. Additionally, many of the questions from the survey were drawn from a survey given to EMT's in Montana (Perkins, et al., 2009) and a study titled "Longitudinal Emergency Medical Technician Attribute and Demographic Study" (Brown, Dickison, Misselbeck, & Levine, 2002; Russ-Eft, Dickison, & Levine, 2008). The entire survey is reproduced in Appendix B.

### **3.1.6 Procedures**

Following development and testing of the survey instrument, students enrolled in the undergraduate Emergency Medicine degree at the University of Pittsburgh were given an orientation to the survey by the faculty mentor. As this study was determined to be exempt by the University of Pittsburgh IRB, no consent forms were required.

Students who agreed to participate were administered a ‘pencil and paper’ survey. This was done due to low response rates in the pilot survey, which was administered online. Subjects were given 30 minutes to complete the survey and it was collected by the faculty mentor.

### **3.1.7 Data Tabulation**

Data from the survey instrument was coded and entered into SPSS 18.0 (SPSS, Inc. Chicago, IL). Accuracy of data entry was verified by the faculty mentor.

### **3.1.8 Data Analysis**

Data were analyzed using descriptive and frequency statistics, comparison of means, and independent sample t-tests to determine statistical significance.

## 4.0 RESULTS

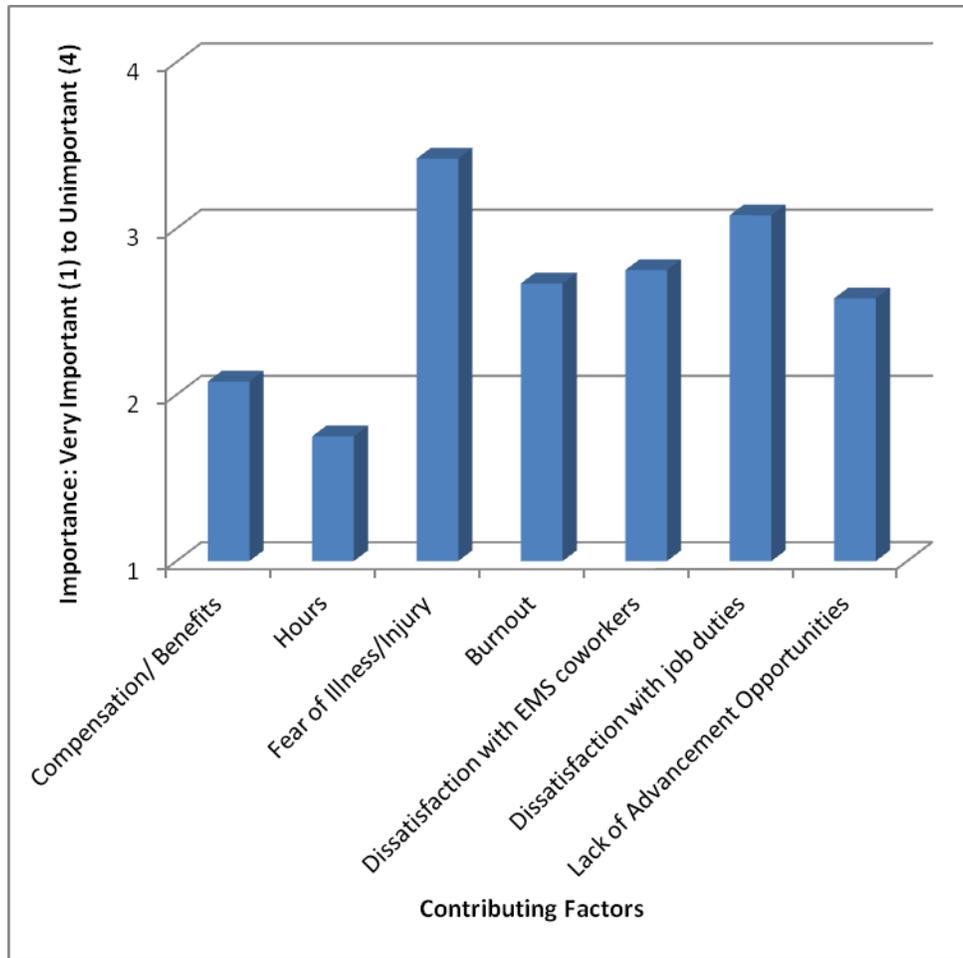
The survey was administered in a required class for the Emergency Medicine seniors; there were 31 students in the class and 26 surveys were returned. This is a response rate of 83.9%. The frequencies of the responses will be provided in the order that they appear in the survey. Then, more information will be given on these questions by comparing different groups within the students.

Nineteen of the respondents were certified as paramedics and seven were EMT's. Before their paramedic training, 18 of the students had less than 1 year of experience in EMS; 7 had 1 to 3 years, and 1 had more than 3 years of experience. There were 15 male respondents and 11 females. There were 15 respondents that were currently employed in EMS and 11 that were not.

Of the 15 respondents, 13 were currently employed in EMS and answered the following questions. Their satisfaction rate in their current position averaged 1.92, which corresponds to an answer that is between 'very satisfied' and 'satisfied.' All 13 worked on a ground EMS service (i.e. on an ambulance). Their average hourly wage was \$13.16. The majority (11 of the 13 employed students in EMS) was working at an ALS skill level; the other 2 were working in BLS.

Although 11 students claimed that they were not currently employed in EMS, 13 students answered the questions that pertained to this category. Of the 13 students, 7 said

that they worked in a non-EMS position; the other 6 were unemployed. Additionally, 7 of the 13 anticipated working as paramedics in the future; 6 of the 13 did not. These students were asked to rate several factors on how they contributed to their decision to not work as paramedics; 12 of the students answered these questions. The answers were ranked: very important (1), important (2), unimportant (3) and very unimportant (4). The students ranked compensation/benefits as 2.08, which corresponds to a response between 'important' and 'unimportant.' Hours (time/scheduling conflicts) were ranked 1.75, which corresponds to an answer between 'very important' and 'important.' Fear of illness and injury was ranked 3.42, which corresponds to an answer between 'unimportant' and 'very unimportant.' Burnout was ranked 2.67, which corresponds to an answer between 'important' and 'unimportant.' Dissatisfaction with other EMS coworkers was ranked 2.75, which corresponds to an answer between 'important' and 'unimportant.' Dissatisfaction with job duties was ranked 3.08, which corresponds to an answer between 'unimportant' and 'very unimportant.' Lack of advancement opportunities was ranked 2.58, which corresponds to an answer between 'important' and 'unimportant.' These answers are illustrated in Figure 1.



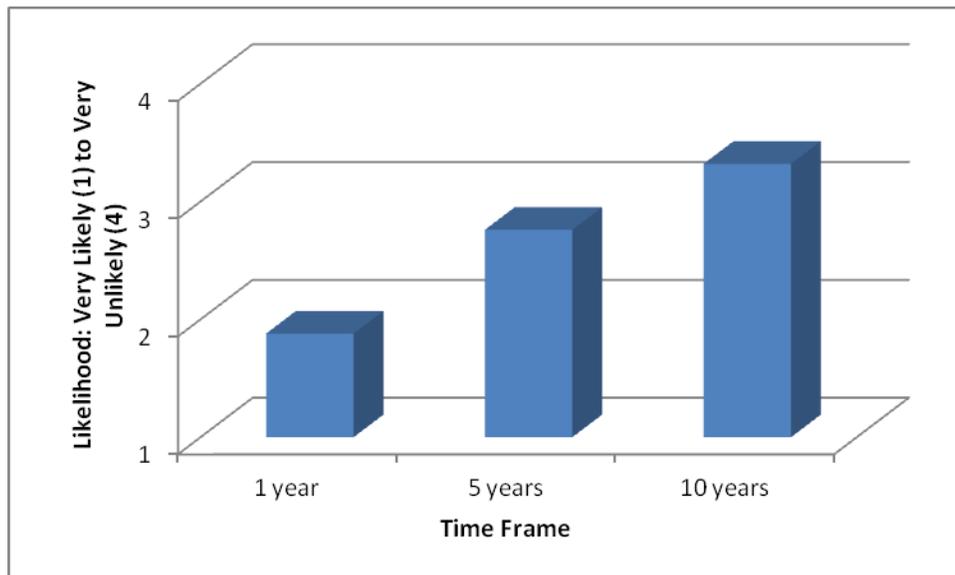
**Figure 1.** Importance of Contributing Factors

The students that were not employed in EMS were also asked to describe any additional factors that influenced their decisions to not work as paramedics. These answers included a lack of reliable transportation to get to/from work, other employment goals, ‘lack of respect,’ and lack of success at finding a job.

All of the students were asked the following questions. Eighteen said that they were planning on attending a graduate professional school within 2 years of graduation; 7 said they were not. When asked how well they fit in with their preceptors and coworkers from ‘very well’ (1) to ‘very poorly’ (4), their responses averaged 1.65, which corresponds to an answer between ‘very well’ and ‘well.’ They were asked to rate their

confidence with their BLS and ALS skills from ‘very confident’ (1) to ‘very insecure’ (4). Their responses averaged 1.50 for BLS skills, which corresponds to an answer between ‘very confident’ and ‘confident.’ Their confidence decreased slightly for ALS skills; they averaged 1.79, which also corresponds to an answer between ‘very confident’ and ‘confident.’

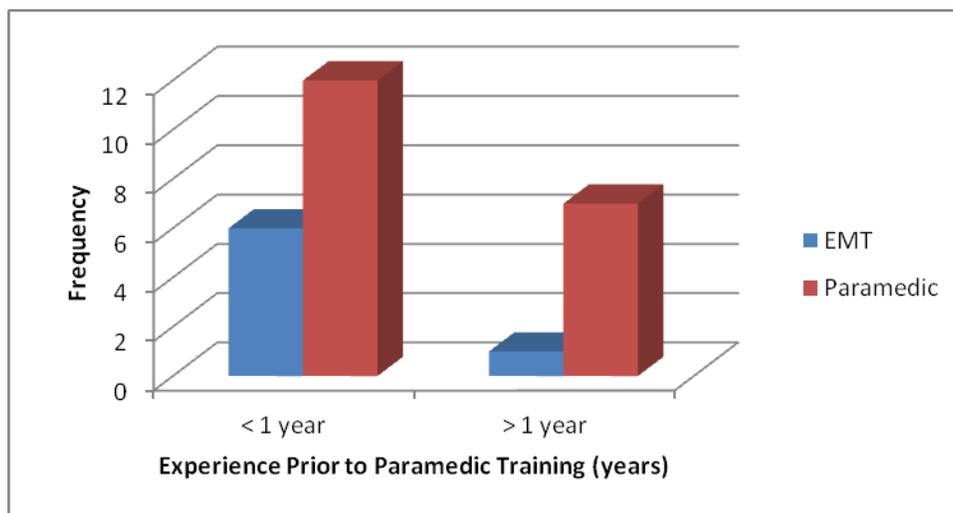
Finally, the students were asked to rate the likelihood that they would be working as a paramedic at various times in the future from ‘very likely’ (1) to ‘very unlikely’ (4). The majority (25 of the 26 students) responded on this question. For 1 year from now, their response averaged 1.88, which corresponds to an answer between ‘very likely’ and ‘likely.’ For 5 years from now, their response averaged 2.76, which corresponds to an answer between ‘likely’ and ‘unlikely.’ For 10 years from now, their response averaged 3.32, which corresponds to an answer between ‘unlikely’ and ‘very unlikely.’ This is displayed graphically in Figure 2.



**Figure 2.** Likelihood of Remaining in EMS in the Future

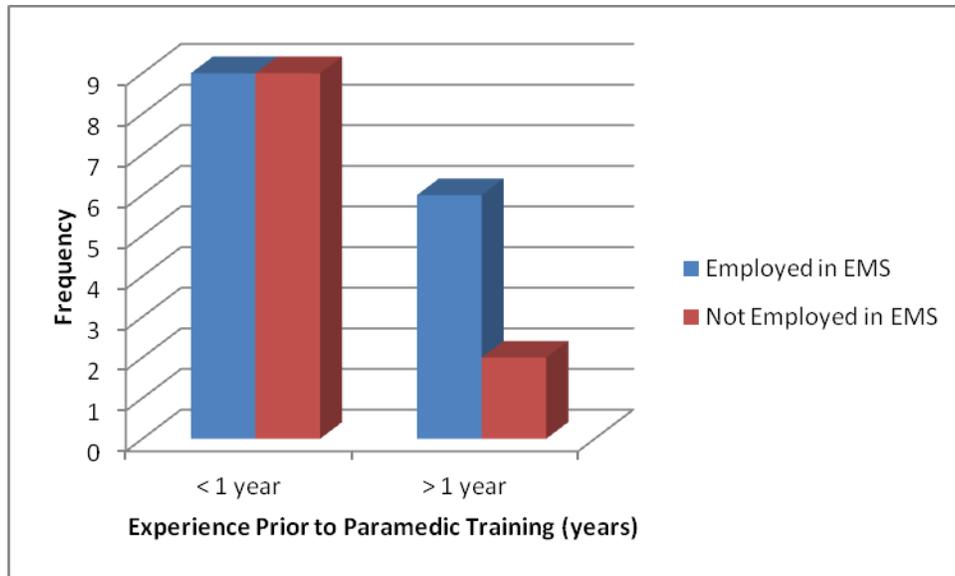
### 4.1.1 Analysis by Group: Years of Prior Experience in EMS

There were 18 (69.2%) students with less than 1 year of experience in EMS prior to paramedic training, 7 (26.9%) students with 1 to 3 years of experience, and 1 (3.8%) student with more than 3 years. These were grouped as '< 1 year' and '> 1 year' because there was only one individual in the '> 3 year' category. The percent of students that were nationally registered paramedics increased as the years of prior experience increased (see Figure 3); 67% of those with less than 1 year of experience were paramedics and 88% of those greater than 1 year of experience were paramedics.



**Figure 3.** Certification Levels by Amount of Prior Experience

The percent of students that were employed in EMS at the time of the survey also increased as the years of prior experience increased (see Figure 4); 50% of those with less than 1 year of experience were currently employed in EMS, 71% of those with 1 to 3 years of experience were currently employed in EMS, and the one student with greater than 3 years of experience was currently employed in EMS. This is also grouped into '>1 year' and '< 1 year.'



**Figure 4.** Employment in EMS by Amount of Prior Experience

Of the 18 students with less than one year of experience, 11 (61%) were male and 7 (39%) were female. Four (50%) of the eight students with more than one year of experience were males and four (50%) were females.

Intent to attend graduate school also differed by amount of prior experience. Of the 18 students with less than one year of prior experience, 17 answered this question. Of these 17 students, 13 (76%) planned on attending graduate school. Five (63%) of the eight students with more than 1 year of prior experience planned on attending graduate school.

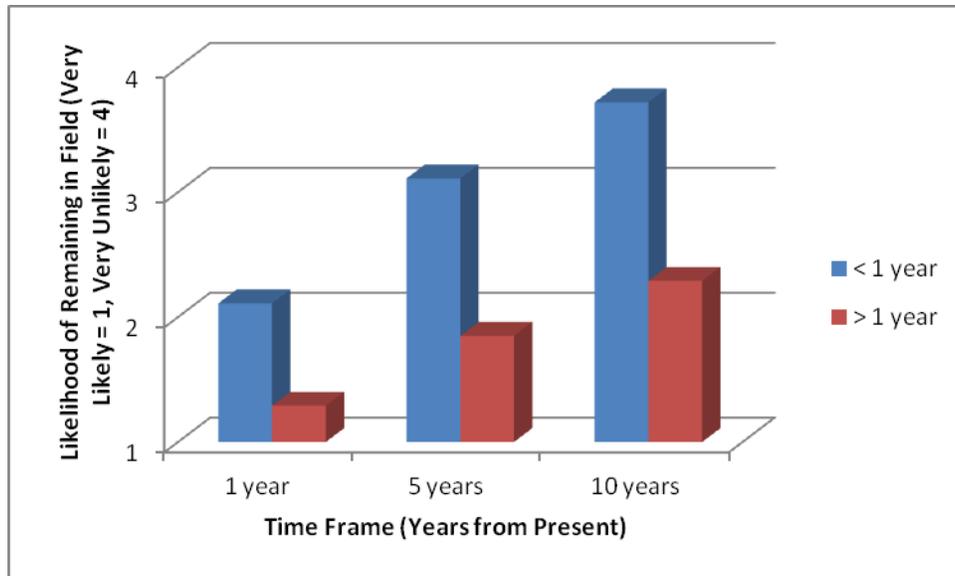
As prior years of experience increased, the students reported increased feelings of ‘fitting in’ with their preceptors and coworkers. Their self-reported fitness was ranked on a scale of ‘very well’ (1) to ‘very poorly’ (4). The average was 1.83 for those with less than 1 year of experience and 1.25 for those with greater than 1 year of experience.

As prior years of experience increased, the students reported increased feelings of satisfaction with EMS as a profession. Their satisfaction was ranked on a scale of ‘very satisfied’ (1) to ‘very dissatisfied’ (4). The average was 2.33 for those with less than 1 year of experience and 2.13 for those with greater than 1 year of experience.

As prior years of experience increased, the students reported slightly increased feelings of confidence with BLS skills. Their confidence was ranked on a scale of ‘very confident’ (1) to ‘very insecure’ (4). The average was 1.67 for those with less than 1 year of experience and 1.13 for those with greater than 1 year of experience.

As prior years of experience increased, the students reported slightly decreased feelings of confidence with ALS skills. Their confidence was ranked on a scale of ‘very confident’ (1) to ‘very insecure’ (4). The average was 1.78 for those with less than 1 year of experience and 1.81 for those with greater than 1 year of experience.

As prior years of experience increased, the students reported decreased likelihoods of remaining in the field of EMS (see Figure 5). Their likelihood of remaining was ranked on a scale of ‘very likely’ (1) to ‘very unlikely’ (4). In 1 year, the average was 2.11 for those with less than 1 year of experience and 1.29 for those with greater than 1 year of experience. In 5 years, the average was 3.11 for those with less than 1 year of experience and 1.85 for those with greater than 1 year of experience. In 10 years, the average was 3.72 for those with less than 1 year of experience and 2.29 for those with greater than 1 year of experience.



**Figure 5.** Likelihood of Remaining in EMS by Amount of Prior Experience

#### 4.1.2 Analysis by Group: Intent to Attend Professional School

Eighteen of the students reported intent to attend a graduate professional school within two years (seven said that they did not have this intention). The percent of students that were nationally registered paramedics was larger in the group that did not intend to attend professional school; 61% of the pre-professional students were paramedics and 100% of the non-pre-professional students were paramedics.

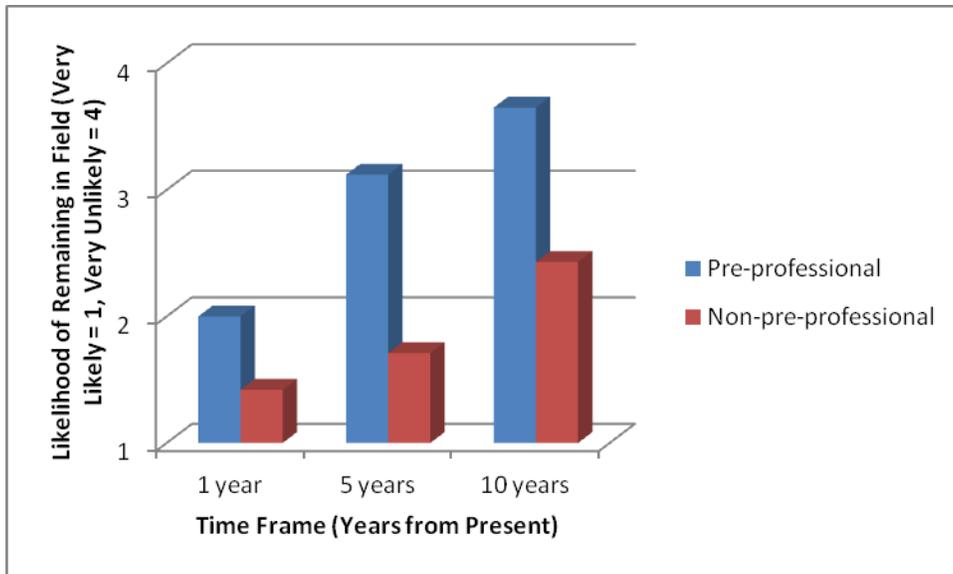
The percent of students that were employed in EMS at the time of the survey was also larger in the non-pre-professional group; 50% of the pre-professional students were employed in EMS and 86% of the non-pre-professional students were employed in EMS.

Of the 18 students that intended to attend graduate school, 11 (61%) were male and 7 (39%) were female. Of the seven that did not plan on attending graduate school, four (57%) were male and three (43%) were female.

Pre-professional students reported decreased feelings of ‘fitting in’ with their preceptors and coworkers. Their self-reported fitness was ranked on a scale of ‘very well’ (1) to ‘very poorly’ (4). The average was 1.61 for pre-professional students and 1.42 for non-pre-professional students.

Pre-professional students reported decreased feelings of satisfaction with EMS as a profession. Their satisfaction was ranked on a scale of ‘very satisfied’ (1) to ‘very dissatisfied’ (4). The average was 2.33 for pre-professional students and 2.00 for non-pre-professional students.

Pre-professional students reported decreased likelihoods of remaining in the field of EMS (see Figure 6). Their likelihood of remaining was ranked on a scale of ‘very likely’ (1) to ‘very unlikely’ (4). In 1 year, the average was 2.00 for pre-professional students and 1.43 for non-pre-professional students. In 5 years, the average was 3.12 for pre-professional students and 1.71 for non-pre-professional students. In 10 years, the average was 3.65 for pre-professional students and 2.43 for non-pre-professional students.



**Figure 6.** Likelihood of Remaining in EMS in the Future by Pre-Professional Intent

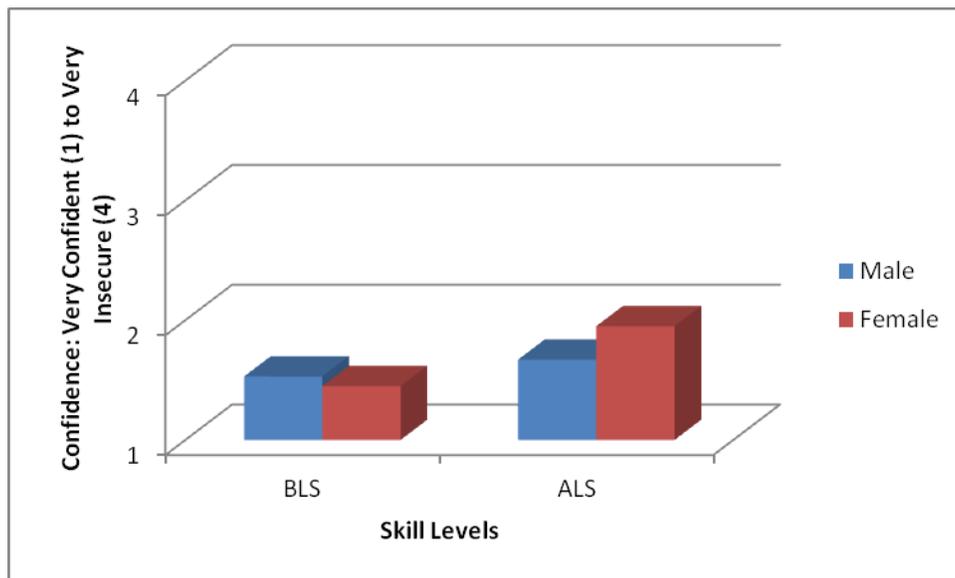
### 4.1.3 Analysis by Group: Gender

As reported earlier, 15 of the students were male and 11 were female. The percent of students that were nationally registered paramedics was larger in among males; 80% of the male students were paramedics and 64% of the female students were paramedics.

The percent of students that were employed in EMS at the time of the survey was slightly larger among males; 60% of the male students were employed in EMS and 55% of the female students were employed in EMS.

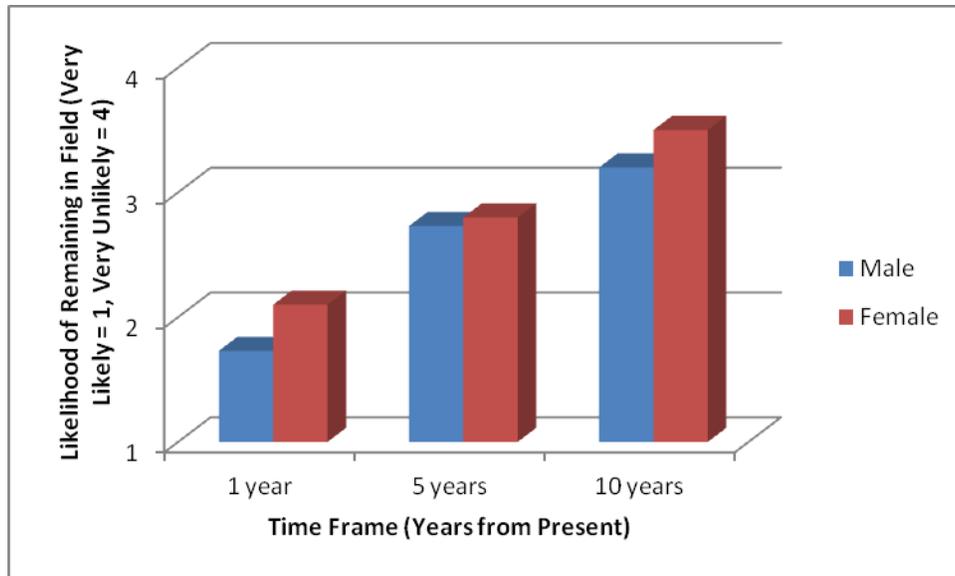
Male and female students reported similar feelings of ‘fitting in’ with their preceptors and coworkers. Their self-reported fitness was ranked on a scale of ‘very well’ (1) to ‘very poorly’ (4). The average was 1.67 for male students and 1.64 for female students.

The female students reported slightly higher feelings of confidence with BLS skills than the male students. Their confidence was ranked on a scale of ‘very confident’ (1) to ‘very insecure’ (4). The average was 1.53 for males and 1.45 for females. Conversely, the male students reported slightly higher feelings of confidence with ALS skills than the female students. The average was 1.67 for males and 1.95 for females. Figure 7 displays this graphically.



**Figure 7.** Confidence Levels by Gender

Female students were less likely than males to remain in the field in 1, 5 and 10 years (see Figure 8). Their likelihood of remaining was ranked on a scale of ‘very likely’ (1) to ‘very unlikely’ (4). In 1 year, the average was 1.73 for male students and 2.10 for female students. In 5 years, the average was 2.73 for male students and 2.80 for female students. In 10 years, the average was 3.20 for male students and 3.50 for female students.



**Figure 8.** Likelihood of Remaining in EMS in the Future by Gender

#### 4.1.4 Statistical Significance for Prior Years of Experience

An independent-samples t-test was conducted to compare prior years of experience with certification levels, current employment in EMS, fitness with their coworkers, satisfaction in the field, confidence in BLS and ALS skills, and likeliness of remaining in the field in 1, 5, and 10 years (see Table 1). Levene's test for equality of variances showed equal variances could be assumed for fitness, satisfaction, confidence in ALS skills, likeliness to remain in the field in 5 years and likeliness to remain in the field in 10 years. Equal variances were not assumed for certification level, current employment, confidence in BLS skills and likeliness to remain in the field in 1 year.

**Table 1: Independent Samples T-Test Results for Prior Levels of Experience**

<b>Test Variable</b>	<b>t</b>	<b>Degrees of Freedom</b>	<b>Significance (2-tailed)</b>
Certification Levels	-1.230	18.329	.234
Current Employment	1.227	14.942	.239
Fitness	1.797	24	.085
Satisfaction	.728	24	.473
Confidence BLS	3.198	18.329	<b>.005</b>
Confidence ALS	-.150	24	.882
Likeliness 1 year	1.988	18.632	.062
Likeliness 5 years	3.310	23	<b>.003</b>
Likeliness 10 years	3.747	23	<b>.001</b>

There was not a significant difference in certification levels for students with less than 1 year of experience (M=1.67, SD=0.49) and greater than 1 year of experience (M=1.88, SD=0.35);  $t(18.329)=-1.230$ ,  $p=.234$ . There was not a significant difference in current employment status for students with less than 1 year of experience (M=1.50, SD=0.51) and greater than 1 year of experience (M=1.25, SD=0.46);  $t(14.942)=1.227$ ,  $p=.239$ . There was not a significant difference in feelings of fitting in for students with less than 1 year of experience (M=1.83, SD=0.86) and greater than 1 year of experience (M=1.25, SD=0.46);  $t(24)=1.797$ ,  $p=.085$ . There was not a significant difference in satisfaction for students with less than 1 year of experience (M=2.33, SD=0.59) and greater than 1 year of experience (M=2.13, SD=0.83);  $t(24)=.728$ ,  $p=.473$ . There was not a significant difference in satisfaction for students with less than 1 year of experience (M=2.33, SD=0.59) and greater than 1 year of experience (M=2.13, SD=0.83);  $t(24)=.728$ ,  $p=.473$ . There was a significant difference in confidence in BLS skills for students with less than 1 year of experience (M=1.67, SD=0.49) and greater than 1 year of experience (M=1.13, SD=0.35);  $t(18.329)=3.198$ ,  $p=.005$ . There was not a significant difference in confidence

in ALS skills for students with less than 1 year of experience ( $M=1.78$ ,  $SD=0.55$ ) and greater than 1 year of experience ( $M=1.81$ ,  $SD=0.53$ );  $t(24) = -.150$ ,  $p=.882$ . There was not a significant difference in likeliness to remain in the field in 1 year for students with less than 1 year of experience ( $M=2.11$ ,  $SD=1.28$ ) and greater than 1 year of experience ( $M=1.29$ ,  $SD=0.76$ );  $t(18.632)=1.988$ ,  $p=.062$ . There was a significant difference in likeliness to remain in the field in 5 years for students with less than 1 year of experience ( $M=3.11$ ,  $SD=0.90$ ) and greater than 1 year of experience ( $M=1.86$ ,  $SD=0.69$ );  $t(23)=3.310$ ,  $p=.003$ . There was a significant difference in likeliness to remain in the field in 10 years for students with less than 1 year of experience ( $M=3.72$ ,  $SD=0.83$ ) and greater than 1 year of experience ( $M=2.29$ ,  $SD=0.95$ );  $t(23)=3.747$ ,  $p=.001$ .

#### **4.1.5 Statistical Significance for Intent to Attend Graduate School**

An independent-samples t-test was conducted to compare intent to attend graduate school with certification levels, current employment in EMS, fitness with their coworkers, satisfaction in the field, confidence in BLS and ALS skills, and likeliness of remaining in the field in 1, 5 and 10 years (see Table 2). Levene's test for equality of variances showed equal variances could be assumed for fitness, satisfaction in the field, confidence in BLS skills, confidence in ALS skills, likeliness to remain in the field in 1 year, likeliness to remain in the field in 5 years, and likeliness to remain in the field in 10 years. Equal variances were not assumed for certification level or current employment.

**Table 2: Independent Samples T-Test Results for Intent to Attend Graduate School**

<b>Test Variable</b>	<b>t</b>	<b>Degrees of Freedom</b>	<b>Significance (2-tailed)</b>
Certification Levels	3.289	17	<b>.004</b>
Current Employment	1.906	15.011	.076
Fitness	.622	23	.540
Satisfaction	1.135	23	.268
Confidence BLS	.309	23	.760
Confidence ALS	.628	23	.536
Likeliness 1 year	1.060	22	.301
Likeliness 5 years	4.035	22	<b>.001</b>
Likeliness 10 years	2.875	22	<b>.009</b>

There was a significant difference in certification levels for student with a positive intent to attend graduate school (M=1.61, SD=0.50) and negative intent to attend graduate school (M=2.00, SD=0.00);  $t(17)=-3.289$ ,  $p=.004$ . There was not a significant difference in current employment status for students with a positive intent to attend graduate school (M=1.50, SD=0.51) and negative intent to attend graduate school (M=1.14, SD=.38);  $t(15.011)=1.906$ ,  $p=.076$ . There was not a significant difference in feelings of fitting in for students with a positive intent to attend graduate school (M=1.61, SD=0.70) and negative intent to attend graduate school (M=1.43, SD=.53);  $t(23)=.622$ ,  $p=.540$ . There was not a significant difference in satisfaction in the field for students with a positive intent to attend graduate school (M=2.33, SD=0.59) and negative intent to attend graduate school (M=2.00, SD=.82);  $t(23)=1.135$ ,  $p=.268$ . There was not a significant difference in confidence with BLS skills for students with a positive intent to attend graduate school (M=1.50, SD=0.51) and negative intent to attend graduate school (M=1.43, SD=.53);  $t(23)=.309$ ,  $p=.760$ . There was not a significant difference in confidence in ALS skills for students with a positive intent to attend graduate school

( $M=1.86$ ,  $SD=0.54$ ) and negative intent to attend graduate school ( $M=1.71$ ,  $SD=.49$ );  $t(23)=.628$ ,  $p=.536$ . There was not a significant difference in likeliness to remain in the field in 1 year for students with a positive intent to attend graduate school ( $M=2.00$ ,  $SD=1.22$ ) and negative intent to attend graduate school ( $M=1.43$ ,  $SD=1.13$ );  $t(22)=1.060$ ,  $p=.301$ . There was a significant difference in likeliness to remain in the field in 5 years for students with a positive intent to attend graduate school ( $M=3.12$ ,  $SD=0.78$ ) and negative intent to attend graduate school ( $M=1.71$ ,  $SD=.76$ );  $t(22)=4.035$ ,  $p=.001$ . There was a significant difference in likeliness to remain in the field in 10 years for students with a positive intent to attend graduate school ( $M=3.65$ ,  $SD=0.79$ ) and negative intent to attend graduate school ( $M=2.43$ ,  $SD=.48$ );  $t(22)=2.875$ ,  $p=.009$ .

#### **4.1.6 Statistical Significance for Gender**

An independent-samples t-test was conducted to compare genders with certification levels, current employment in EMS, fitness with their coworkers, satisfaction in the field, confidence in BLS and ALS skills, and likeliness of remaining in the field in 1, 5, and 10 years (see Table 3). Levene's test for equality of variances showed equal variances could be assumed for all of the test variables.

**Table 3: Independent Samples T-Test Results for Gender**

<b>Test Variable</b>	<b>t</b>	<b>Degrees of Freedom</b>	<b>Significance (2-tailed)</b>
Certification Levels	.908	24	.373
Current Employment	-.268	24	.791
Fitness	.094	24	.926
Satisfaction	.565	24	.578
Confidence BLS	.383	24	.705
Confidence ALS	-.387	24	.178
Likeliness 1 year	-.741	23	.466
Likeliness 5 years	-.158	23	.876
Likeliness 10 years	-.679	23	.504

There was not a significant difference in certification levels for male students (M=1.80, SD=0.41) and female students (M=1.64, SD=0.50);  $t(24)=.908$ ,  $p=.373$ . There was not a significant difference in current employment status for male students (M=1.40, SD=0.51) and female students (M=1.45, SD=0.52);  $t(24)= -.268$ ,  $p=.791$ . There was not a significant difference in feelings of fitting in for male students (M=1.67, SD=0.62) and female students (M=1.64, SD=1.03);  $t(24)=.094$ ,  $p=.926$ . There was not a significant difference in satisfaction for male students (M=2.33, SD=0.62) and female students (M=2.18, SD=0.75);  $t(24)=.565$ ,  $p=.578$ . There was not a significant difference in confidence in BLS skills for male students (M=1.53, SD=0.52) and female students (M=1.45, SD=0.52);  $t(24)=.383$ ,  $p=.705$ . There was not a significant difference in confidence in ALS skills for male students (M=1.67, SD=0.49) and female students (M=1.95, SD=0.57);  $t(24)= -1.387$ ,  $p=.178$ . There was not a significant difference in likeliness to remain in the field in 1 year for male students (M=1.73, SD=1.16) and female students (M=2.10, SD=1.29);  $t(23)= -.741$ ,  $p=.466$ . There was not a significant difference in likeliness to remain in the field in 5 years for male students (M=2.73,

SD=1.10) and female students (M=2.80, SD=0.92);  $t(23) = -.158, p = .876$ . There was not a significant difference in likeliness to remain in the field in 10 years for male students (M=3.20, SD=1.21) and female students (M=3.50, SD=0.85);  $t(23) = -.679, p = .504$ .

## 5.0 DISCUSSION

The survey confirmed the observation that several seniors in the Emergency Medicine degree program are not utilizing their training. For example, 27% of the students are not certified as paramedics, and only 43% of the total respondents are currently working as paramedics. Nearly one fourth (23%) of the students are not currently working as paramedics and do not ever plan on working on paramedics in the future.

The purpose of the study was to understand why several of the students were not utilizing their paramedic training during their senior years. The survey questions were designed a priori in order to explore possible reasons.

The students could be making their employment and certification decisions for similar reasons to ones that plague national and international paramedic recruitment, retention, and turnover conditions. However, the students' motivations could also be completely unique due to their current situations and future goals. The former factors were addressed by asking several questions based on national trends. However, the latter questions were based on observations of the paramedic students and ideas of their possible motivations and situations.

### **5.1.1 Generalizable Turnover Factors**

The literature review discussed several negative factors in EMS that were experienced nationally and internationally by paramedics and contributed to their turnover. It is possible that similar factors could be contributing to the decisions of the students in the present study. The literature review identified factors that included a lack of career mobility, wage, and job stress.

The effects of a limited career ladder were addressed by asking the students to rate the importance of “lack of advancement opportunities” to their decisions to not work as paramedics. This was the third most important factor to the students, which is not surprising considering the educational achievements of the students. Becoming a paramedic requires a certification, not a degree, and the students in this program were all attempting to exceed the educational requirements and achieve a bachelor’s degree. The level of college education that the students will claim upon their graduation already exceeds the EMS career ladder. Additionally, the majority of the class planned on attending graduate school; there are not traditional positions in EMS that require this advanced education.

Students were asked to rate the importance of “compensation/benefits” on their decisions to not work as paramedics in order to evaluate the effects of wage. This was the second most important factor to the students, and also was considered a turnover factor in the literature review. Considering the overlap between job responsibilities of paramedics with firefighters and nurses, and the much higher wages that are offered to firefighters and nurses, some people may be choosing to leave EMS for another profession due to the

wage differences. Students faced with expensive tuition costs may also be strongly influenced by the relatively uncompetitive wage of paramedics.

The survey asked the students to rate the effect of “hours (time/scheduling conflicts)” on their decisions not to work as a paramedic in order to see the impact of work schedules. The students ranked this as the most important factor. Considering the large portion of students that are applying to graduate school, students may be struggling to balance their schedules with prerequisite classes for graduate school, mandatory research, or applications and interviews. Additionally, the schoolwork from the senior year classes may be perceived as more demanding and require more time for some students, which would also limit their time to work as paramedics.

The literature review also identified difficulties from relationships with coworkers as a factor that can contribute to job stress, consequently increasing turnover rates. The students were asked to rate how well that they fit in with their preceptors and coworkers in order to see if relations with their coworkers could be contributing to stress and limiting their likeliness to work as paramedics. Since they averaged a 1.65, meaning that their perceived fit was between ‘very well’ to ‘well,’ it is unlikely that this was a significant factor in their decision to decision to not utilize their paramedic training.

A few of the results from this survey were consistent with the Freeman survey mentioned in earlier sections (2009). Both surveys indicated that time/scheduling conflicts were the most important contributor to the decision to not work as a paramedic. Additionally, both surveys showed ‘fear of disease’ as a relatively unimportant factor.

### **5.1.2 Turnover Factors Specific to the Students**

The students were also asked about factors that were unique to their statuses as undergraduate students. For example, they were asked about intent to attend graduate school within two years. Students that were planning on going directly to graduate school would end up leaving EMS very quickly, and may not have seen value in working as paramedics for a brief amount of time. Since on-the-job training requirements can be lengthy for paramedics, they may have felt that they did not have sufficient time to work as paramedics (Freeman, et al., 2009).

Students were also asked about the years of prior experience that they had before their paramedic training. This was an important question to ask to this group, because some of them may have taken the EMT class as sophomores and then entered the paramedic training without any experience working in EMS. Since students may view the paramedic training as part of the Emergency Medicine major, which would lead to a bachelor's degree, instead of a certification that would allow them to work as paramedics, they may feel that EMT experience was unnecessary and therefore have entered the program with inaccurate perceptions of EMS. The lack of prior experience could indicate students that do not plan on working as paramedics as a long term career goal. This is supported by the result that students with less than 1 year of prior experience were less likely to remain in the field in 5 and 10 years.

Additionally, there is a disconnection between EMS education and actual job activities, which may add to dissatisfaction in the field (Patterson, et al., 2005). Considering that 69% of the paramedic students had less than one year of experience in

EMS at the time of the survey, they may not have entered the paramedic program with an accurate perception of the career.

### **5.1.3 Theoretical Considerations**

Job embeddedness, or the feelings of commitment that employees have towards their employers, can be used to predict turnover rates (Loan-Clarke, et al., 2010). Future turnover rates were estimated by the question that asked the students to rate their likelihood of remaining in the field in 1, 5 and 10 years.

The literature review indicated that commitment can be categorized as organizational and occupational commitment. The strength of each of these categories can be assessed by separating several of the questions into organizational or occupational factors. For example, question nine asks the students to rate the importance of several contributing factors to their decisions to not work in EMS. Organizational factors include 'dissatisfaction with other EMS coworkers,' and 'dissatisfaction with job duties.' Occupational factors include 'fear of illness/injury,' 'burnout,' and 'lack of advancement opportunities.' The averages of both organizational and occupational factors were approximately 2.9, indicating that each category of factors is equally important. Therefore, it is not possible to say that the students are not working as paramedics due to problems contained solely to the industry or to individual agencies. It seems the students are struggling with both occupational and organizational commitment. 'Compensation/benefits' and 'hours' are omitted from this because they could be included in either category.

The relatively high amount of students that are on a 'pre-professional' health track is perhaps unsurprising considering results of a study about EMS turnover by Patterson, et al. (2005). This study noticed a trend that they labeled "EMS Is a Professional Afterthought," meaning that EMS was not the first career choice for many of its employees. The pre-professional students are interesting examples of this trend. By using their paramedic training as a springboard to their graduate schools, they are using EMS as a sort of professional 'pre-thought.' However, if they are not accepted into their graduate schools and end up working as paramedics, they would be quintessential examples of people that intended to work in another field as ended up in EMS as a 'professional afterthought,' as described by Patterson.

#### **5.1.4 Significant Findings**

Significant differences were found between students with more than and less than 1 year of prior experience in confidence in BLS skills, likeliness to remain in the field in 5 years, and likeliness to remain in the field in 10 years. These are not surprising findings, since students with less prior experience would have practiced BLS skills for less time than the students with more experience. Additionally, students that have less experience in EMS may not have developed a high level of occupational or organizational commitment, leading to the increased probability of them leaving the field.

Significant differences were found between students with and without the intent to attend graduate school in certification levels, likeliness to remain in the field in 5 years, and likeliness to remain in the field in 10 years. Considering the time commitment of graduate school, and the fact that they will graduate with advanced degrees in different

fields, it is obvious that these students would end up leaving EMS within a few years. Their awareness of their limited time to work in EMS could be causing a lack of occupational commitment, which could explain why students are not bothering to take the certification exam. However, since all of the students have their senior years available to work (whether or not they plan to attend graduate school later), it is surprising that they are not certified as paramedics.

Significant differences were not found between male and female paramedic students. These results were surprising since the pilot study did find significant differences between male and female students in regards to wage, employment setting, and certification levels.

#### **5.1.5 Unaddressed Factors**

There are several other factors that could be influencing the students' utilization of the paramedic training. For example, the different socioeconomic status of the students could be causing different levels of employment between the students. Students that are financially struggling may have additional motivation to take their paramedic certification examination, since paramedics are paid more money than EMT's. On the other hand, students that cannot afford cars may be limited in their ability to work as paramedics since they are lacking transportation.

Other commitments, such as research positions, babysitting, etc. were not addressed in the survey. Students with increased levels of anxiety may be overwhelmed by the job stress, which could prevent them from entering the workforce. These factors

could have been fleshed out if interviews or Flanagan's Critical Incident Approach were used instead of researcher designed survey questions (Flanagan, 1954).

### **5.1.6 Limitations**

As mentioned in section 1.1.1, less than 1% of paramedic graduates were from a bachelor degree-granting program in 2005 (Administration, 2008). This would lead to a low potential for generalization about the entire paramedic workforce from this study.

Additionally, a small number of individuals participated in the study. On a larger scale, more significant findings may have occurred. Unfortunately, the sample size limited significant findings.

Finally, a possible multicollinearity could exist between satisfaction and confidence, or satisfaction and likeliness to remain in the field. If these variables are correlated, significance about isolated variables may be difficult to ascertain. Although multiple comparisons were performed, Bonferroni corrections were not used because the questions were designed a priori, which limited family-wise error.

### **5.1.7 Directions for Future Research**

Although recruitment and retention among degree students is a highly specific topic, this research could prompt into a longitudinal study in this cohort. These students could be surveyed in the future, or future classes of Emergency Medicine seniors could be surveyed during their senior year. Additionally, students at other institutions that offer

Emergency Medicine bachelor degrees could be surveyed if they have comparable programs. The larger sample size that would result from one of these extended studies could show more significant results and increase the power of the research.

The theoretical models that were identified in this literature review could be helpful for other studies in EMS. The information that was collected on recruitment, retention and turnover is not just applicable to degree students. For example, the theories could help to support research like the Longitudinal EMT Attributes and Demographics Study (Brown, et al., 2002).

## **6.0 CONCLUSION**

The purpose of the study was to understand why a portion of the students were not using their paramedic training during their senior years. Several factors were found that could be causing this phenomenon. These factors include scheduling conflicts, wage, and a lack of advancement opportunities.

Significant differences were found between students with more than and less than 1 year of prior experience in confidence in BLS skills, likeliness to remain in the field in 5 years, and likeliness to remain in the field in 10 years. Significant differences were also found between students with and without the intent to attend graduate school in certification levels, likeliness to remain in the field in 5 years, and likeliness to remain in the field in 10 years.

In summary, the students were less than satisfied with EMS as an industry. This probably prevented several of the students from testing for their paramedic certifications and from working as paramedics. This decreased satisfaction probably also caused their decreased likeliness to remain in the field in the future.

A large portion of the class intended to attend graduate school within 2 years of graduation. This pre-professional track could also be influencing the likeliness to become certified as paramedics or work in the field.

Since the students feel relatively confident in their BLS and ALS skills, it is not likely that the training in the Emergency Medicine program is responsible for their decreased interest in EMS as a career. Instead, the factors, such as a lack of advancement opportunities, seem to be attributable to EMS as an industry. In order to improve recruitment/retention in EMS, the industry should do more research on these factors and consider addressing them.

## APPENDIX A

### Seminar survey questions: Gender and EMS

1. What is your gender? (Male/Female)
2. What is your current national registration level? (EMT-B, EMT-P, None, Other)
3. Are you currently employed? (Yes/No) If Yes, answer questions 4-6. If No, answer question 7.
4. If yes: What is your hourly Wage? (\_\_\_\_\_)
5. If yes: In what setting do you work? (Ambulance, Hospital, Air-Medical, Other, please specify)
6. If yes: At what level are you practicing? (EMT-B, EMT-P, Neither)
7. If no: please state your reasons for not working. (\_\_\_\_\_)
8. Please rate your satisfaction:
  - a. With your current EMS assignment: (Very satisfied, Satisfied, Dissatisfied, Very Dissatisfied)
  - b. With the EMS profession: (Very satisfied, Satisfied, Dissatisfied, Very Dissatisfied)
9. Please rate the likelihood that you will be working as a paramedic
  - a. One year from now: (Very likely, Likely, Unlikely, Very Unlikely)
  - b. Five years from now: (Very likely, Likely, Unlikely, Very Unlikely)

c. Fifteen years from now: (Very likely, Likely, Unlikely, Very Unlikely)

10. Please rate your confidence as a healthcare provider: (Very Confident, Confident, Slightly insecure, Very Insecure, N/A).

## APPENDIX B

### SURVEY: USAGE OF PARAMEDIC CERTIFICATION

Please circle the relevant answer.

1. What is your current national registration level?  
EMT-B                      EMT-P
  
2. How many years of experience did you have in EMS (before paramedic training)?  
Less than 1 year                      1-3 years                      More than 3 years
  
3. What is your gender?  
Male                      Female
  
4. Are you currently employed in EMS?  
Yes                      No
  - o If Yes:
    - Please rate your satisfaction in your current position  
Very satisfied    Satisfied    Dissatisfied    Very Dissatisfied
  
    - In what setting do you work?  
Air    Ground                      Hospital                      Other

- What is your hourly wage?

\_\_\_\_\_

- At what registry level are you working?  
ALS BLS other

○ If No:

- Are you employed in a non-EMS position?  
Yes No

- Do you anticipate working as a paramedic in the future?  
Yes No

- Please rate the contributing factors to your decision to not work as a paramedic (write an x in the appropriate box):

	<b>Very Important</b>	<b>Important</b>	<b>Unimportant</b>	<b>Very unimportant</b>
Compensation/Benefits				
Hours (Time/ Scheduling Conflicts)				
Fear of illness/injury				
Burnout				
Dissatisfaction with other EMS coworkers				
Dissatisfaction with job duties				
Lack of advancement opportunities				

- Please describe any other factors that influenced your decision to not work as a paramedic.

5. Are you planning on attending a graduate professional school within 2 years after graduation (ex: medical, physician assistant, law, etc)?

Yes                      No

6. During your paramedic clinicals, how well did you think you fit in with your preceptors and coworkers?

Very well      Well                      Poorly                      Very poorly

7. Please rate your satisfaction with EMS as a profession.

Very satisfied                      Satisfied                      Dissatisfied                      Very Dissatisfied

8. Please rate your confidence with BLS skills.

Very confident                      Confident                      Insecure                      Very insecure

9. Please rate your confidence with ALS skills.

Very confident                      Confident                      Insecure                      Very insecure

10. Please rate the likelihood that you will be working as a paramedic (write an x in the appropriate box):

	<b>Very likely</b>	<b>Likely</b>	<b>Unlikely</b>	<b>Very unlikely</b>
One year from now				
Five years from now				
Ten years from now				

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