

**EXAMINING THE NONROUTINE ACTS OF EMERGENCY
WORKERS AND HOW THEY BECOME ROUTINE**

A Thesis

by

CAMILLE M. MCDONALD

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE

August 2010

Major Subject: Sociology

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Approved by:

Co-Chairs of Committee,

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Jane Sell
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ABSTRACT

Examining the Nonroutine Acts of Emergency Workers and How They
Become Routine. (August 2010)

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Co-Chairs of Advisory Committee: Dr. Jane Sell
Dr. Stuart Hysom

The purpose of this study is to determine how nonroutine acts performed by trained emergency workers developed into routine emergency acts and skills. I will be specifically looking for concepts that are common throughout the different types of emergency workers that will be interviewed. The data is gathered from focus groups that were recruited from classes on campus. In particular the results depict some very common techniques used in training that allowed the workers to feel confident about their role in emergencies. These tended to include repetition of "classroom training," but more importantly from the viewpoint of the workers, repetition of simulated emergencies. The development of autonomy in decision making was an important facet for workers whose work "territory" was varied; however, autonomy was rarely stressed for those in relatively constant surroundings such as pools.

Several commonalities were found throughout each field. These included interruptions, self-efficacy, the use of judgment and tacit knowledge. Many of the participants also expressed the same sentiment towards their feelings of the training and

its efficiency. Some research will also show attempts to change policy and training within emergency workers in order to improve job performance and enhance the safety of the public as well.

I will include a small statistical appendix that looks at the satisfaction level of evacuees who fled to Houston, Texas when Hurricane Katrina hit. Five specific factors were examined and regressed to determine satisfaction levels. Only two factors showed any type of significance. As the discussion will indicate, certain previous factors, before the hurricane hit, are believed to be the cause of these particular results.

DEDICATION

This study is dedicated to:

My savior Jesus Christ, for giving us the tools to fight and the victory of every war. My relationship with you is stronger because of this experience and I thank you for it.

My family who have instilled in me the drive to never give up and are always proud of me regardless of the outcome.

My friends whose support and motivation never seems to end. I love you guys.

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INTRODUCTION

When disaster strikes, people spring into action. Endorphins kick in, adrenaline rushes, and a high is experienced. For emergency workers, reactions to crises or disasters are part of their job. Somewhere along the way, they developed the necessary skills and techniques to transform non-routine acts into routine acts. How is this possible? What skills and techniques exactly are developed? Previous research suggests that efficient rigorous training produces the best paramedics and firefighters available (Birch 2008). But what does this entail? Even with extensive training and knowledge of routines involved, the situation can still yield tragic results; in order to prevent them, the training for this line of work must be adjusted and revised to prevent future problems as much as possible. Some research has focused on the importance of defining tasks carefully and recreating complex and problematic situations (Wyatt 2003). Some researchers have focused on individual personality characteristics (Kirmeyer, 1988).

The intention of this thesis is to investigate how those trained to respond to emergencies frame their education and training. Further, I will examine how they view their crisis experiences. In particular, I am interested in the question of how non-routine acts are made into routine acts. To investigate this, I and others conducted focus groups and analyzed the narratives of those trained for emergency settings. I examine a range

This thesis follows the style of *American Sociological Review*.

of people who are trained to respond to emergencies, but not those who are defined solely this role as a profession. Consequently, I will be looking at the narratives of those trained to deal with emergency events, but don't often have to actually encounter the emergencies they are trained for. So, for example, I will use the narratives of those trained as life guards, EMT's, airline attendants, etc. But I will not be analyzing narratives of emergency room physicians or firefighters. There is relatively little theoretical research on training issues for emergency workers. There are themes of research, however, that apply to the training of such workers. Such themes include the theoretical principles of judgment and decision making; tacit knowledge or knowledge that is difficult to articulate or formalize, learning based upon operant learning and punishment, modeling or social learning, learning through the reproduction of rituals, learning to deal with interruptions and the general issue of transfer of learning.

LITERATURE REVIEW

Operant Learning Principles

Operant behavior is defined by the Law of Effect (Thorndike 1911) as the probability of an act's future occurrence is affected by the consequences of the act. If behavior is increased by a consequent, then it is reinforcement; if a behavior is decreased by the consequent it is a punishment. Operant learning applies to all kinds of learning including learning emergency processes and the order in which they should be executed. One way that people are able to stay calm and make these quick non-routine decisions is from reinforcement learning (Rieskamp 2006). If certain behavior or methods are reiterated over and over and these are reinforced then even acts that are encountered non-routinely can become routine.

For example, "Many learning theories assume that recent reinforcement more strongly influences behavior than reinforcement that was received longer ago," (Erev,1998; Estes,1976; Sutton,1998). Basically, this means that initial training lessons learned through reinforcement may diminish over time and become less likely to be selected if it does not receive any reinforcement. Also, what Rieskamp and Otto (2006) call the forgetting parameter will outweigh the strategies that are initially learned for strategies that are considered better-performing.

Judgment and Tacit Knowledge

The separation of tacit knowledge and judgment is not always easy as the two concepts are easily intertwined with one another. Judgment can be referred to as "knowledge invested in action" (Dunne 1999). The degree of success in the aftermath of

an emergency situation gives credit to the amount of knowledge that went into the actions that were executed in order to attain it. Knowledge can be easily accessed and discussed. For emergency workers, knowledge might be awareness of the steps involved in administering CPR for example. Tacit knowledge, on the other hand, is learned through experience and often is construed as going with your gut feeling or your instincts; it is accountable for many decisions that are made during emergencies.

The association between implied knowledge (or tacit knowledge) and judgment create a viewpoint that is also seen between theory and practice (Hackley 1999). In order for an emergency worker to do their job well, they must learn the conventional nonroutine acts that are rooted in judgment and developed from the tacit knowledge. However, in the long run, this can be a problem for some expert, emergency workers because their label as being an expert can be questioned. The problem stems from the idea that practical skill or expertise derived from tacit knowledge can pose an epistemological problem. At what point is one qualified an expert? How do theory, discussion and simulated experience actually translate into behavior? What is the rationale behind obtaining an expertise level? The answers to these questions can be sought from a sociological perspective if one looks at the connection between what people do on a regular basis, in the field and how much knowledge they gain or change from what is taught to them.

Decision Making Process

There are many different models of how people combine information to make decisions. Early theorists assumed that people use all the information that they had

access to and merged this information into one impression to make a particular decision (see Anderson 1968). While there are controversies, most of the sociological theories about decision making in groups also assumed this kind of linear combinations. (See Berger et. al 1977). These general combination models have been challenged by other cognitive models. As reported by Kunda and Thagard (1996), some of these challenges include Brewer's (1988) dual process model and Fiske and Newberg's (1990) continuum model of impression formation. Both of these models assume that categorical (or stereotypical) information is used differently from individualistic information. Both assume that other things being equal, categorical information receive more importance than individualistic information. Parallel constraint processing actually is more similar to the earlier models, arguing that information processing occurs in parallel and different types of information "simultaneously" constrain each other. It may be difficult to discern one type of information processing from another in the narratives of those involved in emergency training, however, I will look for how people think about how they make decisions in certain circumstances. The processes by which they make these decisions are habitual by repetition and premeditated by the rigorous training.

Autonomy and Decision Making

When is autonomy in decision making productive? When is it appropriate to rely on a specified plan of action with little individual variation allowed? A study was conducted where a common procedure of reviving a patient was modified to allow paramedics and EMT's to forgo or halt resuscitation in prehospital atraumatic cardiac arrest. Many paramedics and EMT's "felt it empowered their decision-making abilities;

and thought the benefits to patients, family, EMS, and the public outweighed the risks. Except under certain circumstances, such as when the body was in public view or when family members did not appear emotionally prepared to have the body left on scene, they felt the policy improved care" (Grudzen 2009). Other factors that affected the decision-making process include knowledge and comfort of the new policy, and the family's agreement. Paramedics became more certain and confident about the critical decisions they were making in the field. The public to whom they provided care for also gave positive reviews of the service and satisfaction as to the help that they provided. If certain corrections are made to a training routine and the outcome is generating positive feedback among the emergency workers and in the people they provide care to, then a constructive and helpful change to policies might be made. It also stands to reason that these changes should be considered for use by other emergency services

Repetition of Rituals

Operant behavior models emphasize the role of punishment and reinforcement in the acquisition or modification of behavior. However, it is also the case that individuals and groups can reproduce behavior in the absence of direct reinforcement and punishment. One way this occurs is through social modeling (see Bandura 1986)

Additionally, simply observing behavior "rituals" or routines performed in the same manner encourages their reproduction. Ritualized behaviors that operate in a particular setting can greatly influence the ritualized behaviors that progress in the different aspects of everyday life. This influence can be felt on a social and personal level. Repetitiveness of certain acts can be taken for granted as they are performed in

the "wider social environment that acquire significance for the actor and then become part of the individual's script for his or her immediate world." (Sell et al, 2000.) These habits manifest themselves in our daily jobs, at home behind closed doors, and in our social interactions with strangers, thus making them routine and normal.

Repetitiveness of behaviors can also play a major part in establishing the hierarchy within a group. For example, in cases requiring quick action, one person may take a leadership role and this can start a process whereby that particular person is ceded this role in the future. Of course, sometimes leaders are appointed and this creates a hierarchy. This hierarchy is usually presented as established through years of experience, gained respect, and deserved promotions. Experience, which is arguably the key to getting promoted, is gained through repetitive acts that generate positive results with significant outcomes.

Sometimes, behavior is reproduced because no punishment follows. So, for example when emergency workers perform actions and certain acknowledgement is *not* given, it sends the message that the action taken is satisfactory and should be repeated if deemed necessary.

Training and Generalization

The formal training that one goes through is of the utmost importance. According to Ford (1998), traditional models of training involve many of the issues discussed above: the use of reinforcement and the progression from simple to complex. The key components to what is learned and taught in training are knowledge,

communication, and proficiency. These elements must be taken seriously if the training of an emergency worker can be understood to fullest possible extent.

"Knowledge is the foundation on which abilities and skills are built." (Goldstein 1993) This knowledge can be nurtured from practice scenarios/exercises, books, and real-life experiences. It is through this attainment of knowledge that mastery and performance are developed. These conceptions will then lead to self-efficacy (or feelings of autonomy) which transfers to a higher level of performance by the workers.

Ford (1998) recognize the important of operant learning, but also emphasize that "transfer" effects or generalization to other settings are better if the learners are actively involved and engage in choosing different learning strategies. Ford (1998) tested this idea of active control over learning, or "metacognition" conducted a study to see what learning strategies helped people become more effective in terms of their outcomes and performances. The results showed that using a metacognition type strategy to learn led to self-efficacy and knowledge. Providing regular activities that were similar not identical to the behavior targeted in the learning process led to final training performance and greater knowledge; having identical elements in the training and testing only led to self-efficacy. The study also concluded that all three learning outcomes were significant in predicting a more complex transfer task (Ford 1998).

An example with problems with transfer and some strategies to rectify the situation was provided by Birch (2008). On May 17, 2006 in Victoria, British Columbia, two men were trapped in a deep hole with little oxygen to sustain them. Both of them had passed out. First one paramedic was lowered in and she likewise collapsed. The

partner paramedic went in after her, but also lost consciousness upon entering. All four victims asphyxiated to death, because the responding paramedics were unaware of the conditions they were entering. To prevent this problem from happening again, the British Columbia Ambulance Service (BCAS) implemented what they called Situation Awareness For Emergency Response (SAFER) course. Within this course, paramedics were faced with simulations involving challenging environments that were meant to enhance critical decision-making skills. Chief among these skills were explicit communication. The simulations were intended to promote practice with behaviors more similar to those likely to be encountered and therefore to transfer or generalize to actual crises.

The training that flight attendants undergo was described by Crystal. "Basically you pack your stuff and move into a hotel for 4 weeks and you live with a roommate you never met before. We had class from 8-5. Ours ran Monday through Saturday so 6 days a week you got one day off and you didn't drive, you take a shuttle to the training center and you're in class all day every week. You have a test kinda like survivor. If you failed a test, then you get one more chance to try and if you fail that, they pack you up and they send you home. They just send you away."

There are three levels of EMT's; EMT - Basic, EMT - Intermediate, and Paramedic. EMT - Basics must undergo a minimum of 110 classroom hours or coursework that meets with local and national requirements. Intermediates have between 200-400 hours and paramedics 1000 hours or more. In order to maintain certification, additional continuing education hours must also be achieved. The time it

takes to reach these hours varies by level. Basic's hours can be completed in as little as two weeks by having class 8-12 hours a day. A Paramedic's training can be completed in two years time and in alignment with an associate's degree. Clinical rotations are also required in all levels. These include time spent in the ambulance and time spent in various services in a hospital. The amount of clinical rotations needed varies by state.

http://en.wikipedia.org/wiki/Emergency_medical_technician#Levels_of_EMTs

Lifeguards go through the most physical of training among those mentioned in this thesis. A pre-test is administered before any coursework is to be completed. This pre-test consists of swimming 300 yards continuously using at least 2 different strokes. Next, the lifeguard must swim 20 yards using a front crawl or breaststroke and surface dive to a depth of 7-10 feet. A 10-pound object, usually a brick, must be returned to the surface, and the lifeguard must swim 20 yards back to the starting point within 1 minute and 40 seconds. Finally, certification can be achieved through passing CPR/AED and first aid courses. This certification is good for up to three years and then must be recertified. <http://www.americanlifeguard.com/lifeguarding.htm>

Interruptions

The break or intrusion of a continuous sequence of action can be called an interruption. Depending on the situation, interruptions can be a good incident with positive effects. When a student is studying for a test, it is unwise to study for several hours straight. Their mind can only assimilate so much information over so long a period of time. An interruption can provide a much needed break and provide a release for the student. In contrast, interruptions can be lead to detrimental results. This occurs

when interruptions prevent actions from being completed or present challenges so that engaging in one task contradicts engaging in another.

For emergency workers, interruptions rather than the emergency itself may cause the harshest stress. Identity control theories (Burke 2006) and affect control theories (Robinson 2007) both use the idea of interruptions as important points of stress. Such stress may demand changes in identity. In terms of their training, this implies that routines or rituals that were part of their training are interrupted and require adjustment. This adjustment represents a critical point. As mentioned, Grudzen et al (2009) emphasized the importance of autonomy early in decision making processes. Based on the theoretical work of identity control and affect control theories, if emergency workers have identities that incorporate the expectation and competence of handling interruptions, it is possible that stress will be less.

Kirmeyer (1988) conducted an empirical study analyzing interruptions in emergency work settings. She observed dispatchers during one work shift and some of these same dispatchers for two additional shifts. Kirmeyer looked specifically for work activity that was finished, left unfinished because another demand took precedence only to be finished later, and left unfinished because another activity took priority. She had coders "code activity and interruptions and also asked for the participants' perceptions. There were a great many interruptions that occurred during the observations. As would be predicted by identity theorists, her results demonstrated that it is not just the amount of work that is important for how the dispatcher felt, but rather the interruptions were important as well. When overload prevented tasks from being completed, or

interfered with their completion, dispatchers were more negative and turned to different kinds of coping mechanisms. These mechanisms included providing less individualized attention, devoting less time per requests and reordering tasks. Different personality types were also investigated: Type As and Type Bs. As defined by the Jenkins Activity Survey Form (Jenkins, Zyzanski and Rosenman 1979) Type A's are characterized by a pattern of behavior characterized by impatience and striving for competitive achievements. Type B's are more easily going and tend not to be competitive. Dispatchers with type A behavior had lower thresholds for appraising demands as overloading and taking coping actions than did type B subjects. These findings show that interruptions are a critical factor in stressful jobs among human service professionals. It also validates the significance of measuring objective work demands (Kirmeyer 1988). Sometimes too many events occurring simultaneously lead to interruptions. Sometimes it is the person and the way they may handle the situation.

PURPOSE

I am particularly interested in is the preparedness of the people who are trained to deal with emergencies but who are not emergency professionals such as firefighters or police officers. Such people include lifeguards, and part-time EMTS. Such first responders are more likely to encounter more people than professionals, precisely because there are so many of these people relative to emergency professionals. Is their training sufficient enough? How do people trained to deal with emergencies or crisis events reflect upon their training? In particular I am interested in how emergency workers feel about the role of repetition and reinforcement, the leaders involved in the training, the nature of interruptions, and their autonomy in decision making.

METHODS

Focus groups are especially appropriate for answering the questions posed because I am interested in the narratives of emergency workers. Additionally, as argued by Berg (2009), focus groups are especially appropriate for discovering normative structures. (See appendix A for the IRB approval and the consent forms for these focus groups.).

I have access to eight focus groups and one interview for a total of twenty-one people. The people who participated were EMT's, airline attendants, life guards or others trained in emergency settings. People were recruited in classes or recommended by those recruited in classes. The sessions were all conducted in the Academic Building on campus and lasted between about forty minutes and an hour and forty minutes. People who participated in these sessions received a small payment of twenty dollars for their participation and also received snacks during the sessions. The sessions were also audio-taped and later transcribed to a computer by transcribers. With one exception, the transcriptions were done by one person who listened to the tapes at a slower speed than originally taped.

For these particular groups, questions were initially asked about training, the participants' assessment of the adequacy and effectiveness of their training, examples of situations they have dealt with, their assessment of how others' either helped or didn't

help/ (See Appendix B for a list of initial questions.). In analysis, I coded the transcripts according to the themes developed in the literature review. I looked for certain commonalities or differences in the experience reported. When I found comments that illustrated a particular theme, I wrote down the concepts on a separate piece of paper and highlighted each concept a different color. I then went through each transcript and made a note to the side each time a corresponding concept was made and highlighted it the same color. Whenever I wrote of a concept, I referred back to the transcripts and use the example I had marked to make my point or illustration.

RESULTS

Operant Learning Principles

As discussed, operant learning principles involve either reinforcement or punishment applied after a behavior. It is one of the most well-known and used principles of learning. According to the reports of those trained, it is common to use reinforcement and punishment in differing contexts; however, the effectiveness of these strategies was sometimes questioned.

It was a universal response that "textbook learning" was employed, and that some sort of testing techniques were used. The testing process involves the reinforcement of a high test score, the punishment of a low test score, or even the possibility of a failing test altogether. All of those trained for emergency settings, mentioned that multiple choice tests were the first portion of their testing. The nature of those tests varied a bit by the position: lifeguards often had tests that covered materials in one or two days, while EMT's and flight attendants had much more extensive testing. While most people agreed that the testing was important, several of the lifeguards in particular, thought that it was not intensive enough. Nick stated: "The only thing I didn't like was the certification. I think the training should be longer, when it is shoved into one weekend the kids are just cramming the material instead of learning the process." Noah (in the same focus group) agreed, "I agree. It is hard to retain all that information. You will remember it for that week but it's hard to retain for the entire summer." This point addresses the problem of "generalizing" information from a textbook setting to

other settings and the problem with training that occurs at one point in time.

The diversity of testing experiences, especially among the lifeguards, ranged considerably. Some mentioned multiple choice questions that tested them over "PowerPoint's", while others mentioned being asked to memorize a great deal. Bianca, for example, stated that "We had a book we were supposed to memorize and then a lot of videos and I actually took the course with my future boss and he was strict so he passed out worksheets, situational worksheets." In this classroom environment, there were heavy expectations and more frequent testing which functioned to both reinforce and to punish.

The testing process was also employed along with modeling or the instructors or other students demonstrating correct behavior. One technique that received almost universal approval of those trained was the simulation of behavior. This type of training involved closer approximation to actual emergencies rather than simply answering test questions. Trainees were involved in simulated behavior and received some of this simulation training. As with paper and pencil training, there seemed to be more variation among lifeguards. EMT's and flight attendants received intensive simulation experiences.

For example, Krystal an EMT mentioned how her instructor would employ traditional classroom techniques, but:

She would give you a patient and you would have to explain what you would do and then she would split us into different shifts where there were three different crews in our class and in each crew there were 6 people and randomly the teacher would be like "ok crew two you are dispatched to the office for an 18 year old female complaining of..." and she would just give you a scenario and you treat it

just like you are getting a call, you go grab the jump bag, backboard anything you needed like there was one class where right in the middle of a lecture just stopped and told shift two of a situation and we had to grab our stuff and respond, and then afterwards she would tell us what we did wrong.

The simulation training for lifeguards involved dropping a brick in the deep end of the pool, retrieving it, and bringing it to the side. This represented someone who may have drowned in the deep end and was at the bottom of the pool. Training also included jumping in the pool from the side to the deep end and from the lifeguard stand to the deep end, retrieve someone at the bottom and bring him or her to the surface. This technique was also used when learning how to use the backboard. Sometimes the lifeguard has to jump in the pool with clothes on. This scenario was also used in training as the lifeguard was tested on how well they used their clothes as a flotation device. The reinforcement and punishment was in the form of the comments by the supervisors. When the tests were done in groups or in front of others, embarrassment at performing poorly could serve as punishment and pride at performing well could serve as reinforcement.

For EMT's, the scenarios were more diverse as unlike lifeguards, the environment to where they must retrieve a person can vary by far. William, an EMT in training, said "Whenever they were testing us in a class, they would set up situations, scenarios, and say „Ok, find a so and so in the car, whatever, passed out" ...I know, for me, sample history about what to ask signs, symptoms, allergies to medications, all of that kind of stuff, so it's very mechanized and the class itself is very, memorization, thinking of different scenarios and how to respond to them." This emphasis on

memorization and repeated questioning shows the significant of simple repetition as well.

Flight attendants are put through different scenarios, but the information that must be learned does not only cover how to handle certain passengers, but also on how to serve meals/beverages, and where the fire extinguishers are on different types of aircrafts. One participant from a focus group, said "Yea we had the information in the books that we needed to study for the exams, but we also had mock airplanes in a swimming pool so if we had to train how to ditch, they tried to make it realistic; they would release smoke in the airplane to simulate a fire, it was real hands on."

One type of simulation experience that all of the emergency workers received was CPR training. This involves reinforcement and punishment that is applied immediately in the training. All trainees had "dummies" to work with, although some dummies were more sophisticated than others. These dummies furnished some degree of reinforcement, if the chest rose appropriately or punishment, if the chest did not rise. Additionally, in most cases, an instructor was there to comment on breathing technique, thereby applying reinforcement or punishment. For flight attendants, it was more than just correctly applying CPR. Crystal spoke of her training in this way, "...they had a dummy, and told us that someone passed out in the bathroom and had vomited on himself and needed CPR so we had to get all this equipment. So with that, you did what you felt was best and with CPR, you had to do it timed and then they tell you what you did well and what you needed to do better..." She felt that this technique of learning through reinforcement was particularly helpful as certain details were pointed out and

corrected on an individual basis. Another flight attendant mentioned, "I don't know specific names but they trained us with the different equipment like the defibrillator. I have had CPR training since the flight attendant training and it seems amplified, it just wasn't basic CPR training to me because it was so hands on and there were so many situations and so much practice. It just wasn't there is this dummy and you do this and it's over, it was what if the person is pregnant? You got the belly and baby, it wasn't like basic, OK, this is how you do the Heimlich maneuver, it seemed amplified for flight attendant training, if you have people who are diabetic or people going into labor or people having a heart attack. We spent a lot of time on medical training actually."

For lifeguards, the possibility of getting a pregnant woman who had drowned were very slim, so when it came time for them to be trained on CPR, they were taken out of the room one at a time and given either an adult or baby dummy, and had to show what they learned. It seemed that lifeguard training on CPR required a couple days. Warren, who had CPR training and is a certified lifeguard, said, "It was two days long. The first day was all CPR and watching film and the second day was about the Heimlich and devices and that's the day we actually got tested." Katie, who is also CPR-certified and works as a lifeguard, remembers, "Yea, I've been trained through two companies, the first year was Red Cross and I was trained down at U.T. and it was very intense. The first night we did CPR and the book stuff and a lot of written materials as far as CPR and methods of getting people out of the pool and the medical aspects of the training." When asked about being tested, she responded, "Uh-huh, there was a written test and there were two parts of it...it was pretty basic information, some of it was in depth but

not too much. To make sure the lifeguards were constantly on their toes, a "Red Ball Test" would be administered. Warren explained, "They would just put a ball in your section and you have to get the ball out of the water and do CPR, but that was randomized and not every person would get red ball tested. I didn't get red ball tested the entire summer."

Judgment and Tacit Knowledge

Judgment is one of the key components to performing a job in the emergency field. Making the correct choice is crucial and dire. This component must be influenced and cultivated to where the worker is sure of the judgment they are about to make. Sometimes, a situation would occur that was not foreseeable, nonetheless judgment calls must be made. For flight attendants, these situations that may occur are practiced before the attendant will fly. For them it was beneficial in that "...it was a way to make sure you were up to date..." and "...even if you are insecure about something you still know how to handle it, you feel that you can handle it. I don't know if it's because you have to but you feel that you can handle it." It is this feeling of confidence that makes flight attendants as efficient as they can be. Sometimes, the situation is foreseeable, as some people are let on board a flight, in a clearly intoxicated state. The passenger causes a scene and the flight attendant must deal with it. In one situation in particular, an intoxicated man was on a flight, and began randomly punching other passengers. Other men subdued him in his party. The flight attendants could not let the men hurt each other, but could not let the aggressor attack others as well. The situation required the

judgment of the flight attendants as to what to do, which they dealt with him as best they could. In other extreme situations, some attendants made the judgment of removing drunken passengers off the plane before it took off. In each case, the best judgment was made in the interest and safety of the other passengers.

EMT's are also taught to cultivate their judgment calls. Sometimes it is cultivated through techniques taught from a book or co-workers, in the beginning. Later much of the judgment is made through experience. For example, when an EMT in training is learning how to use an anti shock garment or mask trousers, they are taught by other EMT's how best to do it. The EMT in training that was interviewed said it became a little confusing do to the 4 different ways he was being told how to do it. Finally he turned to the book. Lifeguards are trained on making the best judgment call that depends largely on the person in distress and the circumstances of the situation. One lifeguard interviewed relayed the story where someone hit their head when they fell in the pool. The person was pulled out of the water without any trouble, never stopped breathing, and didn't go to the hospital. They were just checked out and let go. It seems like they should have been examined by a paramedic, but at the time, a judgment was made in the best interest of the person and yielded safe results.

Tacit knowledge is the acquisition of information through "informal" means. It is acquired through experience rather than through formal training. For instance, when one lifeguard was speaking of using a backboard for the first time on someone with a serious injury, she said it is a little scary. But after the person is stabilized, and the

backboard is in place, the person will be above water and the feeling of anxiety experienced by the emergency worker becomes categorized as normal. This kind of tacit knowledge seemed often to refer to how the emergency workers thought about their own emotions. Several of the EMT's for example mentioned that emergencies, especially larger scale emergencies created "adrenaline rushes" that signaled that they were ready or "in the zone." This feeling must come or develop soon because as another lifeguard put it, "...it's either you know it or you don't cause if you're not sure about it, you shouldn't be responsible for somebody's life."

Likewise, flight attendants use equipment that requires the use of tacit knowledge. Although they may not have been taught specific things to do at specific times: "Everything is there; you have access to anything you are going to need in any emergency or medical situation. You have everything you need; it's just a matter of knowing how to use it and getting to it in time."

Another aspect that also mirrors tacit knowledge is self-efficacy. It is the idea that one is able to perform a task in a certain manner in order to achieve certain goals, even if the specific issue has not been faced before. These manners or techniques are developed based in part by the results that they generate. For example, Crystal, a flight attendant, has to sometimes deal with people who have never flown before in their lives. She had a short conversation with a woman who was 45 and had never flown on a plane before. Crystal told the woman "...she just had to sit there and that it was real easy." It seemed to work, which reinforces to Crystal that this technique has positive results thus

developing her personal level of self-efficacy.

In another focus group, Tara, a lifeguard of six years who is first aid and CPR certified, spoke of how she would be returning this year as a supervisor or pool manager. Part of her job requirements now involve making sure other lifeguards perform well and up to expectations. When asked what she has learned since helping to train future lifeguards that she didn't know before, she replied, "The information really sticks when you're trying to teach someone. It helped me better understand the material, like CPR is confusing at first and having to teach someone makes it very clear in my mind and I know what exactly needs to be done." She taught based on her own experience of six years, and still learned more effectively by teaching others. Billy, an EMT in training, spoke of the confusion that comes with being told a procedure by different instructors and how he coped with it. "With the different instructors I had, it's good to get a variety of opinions on things, but for one thing, the PASG, pneumatic anti-shock garment or mask trousers, you throw them on the legs in case there is massive traumatic damage and is to hold them together. I got probably 4 different stories, use them, don't use them, use them like this, yes, no, do one leg, do both. It's a little frustrating. I'll just go by the book. Lot of different techniques." When asked what he would do in an emergency, he responded, "When I come to an emergency, I will ask the paramedic how to do it, most of the stuff that you encounter is pretty cut and dry."

Decision Making

Decision making discussed within the literature review, suggested different

models of how people combine information. Different models depicting different processes of combining information. When emergency personnel reported how they made decisions, they rarely talked about HOW they combined information. However, it seems that a common report involved a kind of "check list" kind of decision making that followed the repetition methods used in their training process. So, for example, an EMT in training mentioned that the first stage in decision making involved gathering information in a linear, additive way. Is the person breathing; can the person talk and say what is wrong; is there someone present who knows the medical history of the person or has knowledge of the recent events. The EMT said, "We do this thing called triage where you go through and the first thing you do is set up your command, like this unit, we are the command, and you set up all the triage zones, transport zones, treatment zones and all that other fun stuff. And then you're going to make, say, and „if you can hear me, and you can get up, come towards me."

The parallel constraint model emphasized how categorical (or stereotypical) information is used simultaneously with individualistic information. This seemed to be the best descriptor of the decision making mentioned above and by many of the emergency workers as they worked between both the checklist and the individualistic information.

So, for example, one lifeguard told of a scenario where a woman with breathing problems became hysterical when she got in the water. Even after getting her out of the water, no lifeguard could calm her down. The decision to call 911 was made; when the

paramedics arrived, they hooked her up to an oxygen mask and she was fine. In this case, the conditions of the particular woman prompted the decision, even though the situation was not really a traditional emergency.

Autonomy

As mentioned in the literature review, autonomy in decision making can be an important mark of an "expert". Interesting, in the focus groups, lifeguards rarely mentioned independent decision making. In fact, when asked about what might happen when emergencies arose, they most often mentioned that they were trained to alert the lifeguard supervisor or manager.

The EMTs, flight attendants, and emergency trained people who were not constrained to a certain location (like a pool or water park) usually did mention issues related to autonomy. In large part, this was because the situation and their training emphasized their responsibility and the fact that responsibility could not be diffused to other people. One emergency trained wrangler, for example highlights this idea of location "induced" autonomy by mentioning how the groups she worked with were traveling over rugged terrain for relatively long distances:

I've worked there 5 years so its been over the duration of that time, its not that common it doesn't happen all the time, there is at least one major incident over the summer, you expect it more when there is another variable like a horse, you just learn that something can happen and you need to take precaution.

As an example of such an emergency that was totally unexpected, but that had to be dealt with involved a horse that had a heart attack and due to the attack rolled over on the

rider.

Flight attendants encounter a more unique situation as their scenarios mostly take place in a plane but the plane itself is moving through differing locations preventing them from easier access to the hospital. As an example, upon one flight, a girl with mental problems was let on board a plane. Her mother deliberately did not give her any medications out of spite towards her father whom she was flying to see. This made for a very difficult flight for her and even more difficult for the flight attendants. The other passengers on the plane were mostly cooperative and the flight made it safely to its destination.

It is through this process that information, processing, and reaction, all become embedded in the mind of an emergency worker. They are, of course, trained to handle emergencies within their environment, flight attendants on a plane and lifeguards in a pool. However, due to this development of autonomy, flight attendants and lifeguards inadvertently become skilled in handling emergencies when they are out of their environment. For example, Crystal had a flight attendant friend who was simply checking in at the airport, and saw a woman having a heart attack. "...no one did anything, and it was second nature to him and he started CPR and when the EMT's showed up, they gave her two shocks with the AED and then continued to check in and he didn't even say anything til someone mentioned that there had been an incident and he was just like oh yeah, I gave that woman CPR...". Another woman, from the same focus group, relayed a story of the times she has witnessed her fellow flight attendants

spring into action when they weren't even on the plane. "I've seen flight attendants come to the aid of people just in concourse, similar situation in Phoenix, a guy, just the sound of this man's head hitting the floor is a sound I will never forget cause he was having a seizure and he just dropped and it was the most awful sound and again people were just watching and you immediately saw flight attendants zoom the person, „cause in those situations you know what to do, how to handle the situation."

Repetition

As suggested by the literature, repetition creates reproduction, even in quite different settings. It is this kind of transference that is the target of the type of training that stresses practice over and over. For lifeguards, CPR and first aid certification must be renewed every year. Even if the lifeguard has performed CPR one hundred times over the last year, they must still perform it again to become certified. During the recertification process, the lifeguards interviewed all described a similar situation in which they were taken out of the room and randomly given either an infant dummy or an adult dummy. Whichever dummy was received, they had to perform CPR on it. If the lifeguard failed the test, they were given a second chance. It was rare that someone failed a second time (an indication that, at least for life guards, punishment was not frequently used).

Additional tests for lifeguards included rescuing people from an area where the water was especially deep. Warren, who lifeguards in a water park, mentioned the training it took to master the techniques. "For deep water training, they just had

someone who was the victim in deep water and you had to help them while treading water and get them to the sides. It was a little harder because you couldn't touch the bottom... They had us practice the technique for about 15-20 minutes and then when you were ready you would ask to get tested on it." When asked if everyone passed, Warren responded, "If you didn't, they would give you a second chance so you went until you got it. That was the same for the swimming test. There is no time limit; people could tread water and finish it in an hour." Repetition also comes into play for learning techniques with a backboard. Katie, who lifeguards at her neighborhood pool during the summer, commented, "The only reason I would be able to do it now is because I have done it so many times with the training. If I only had it once, I wouldn't feel comfortable."

Other techniques were also taught and repeated during the certification process to become a paramedic. Skills tests are a way to ascertain if an EMT knows what to do when they come across a person who is not breathing, or has trouble breathing. They were also tested on what questions to ask and in what order. William, an EMT in training, recounted his experience with taking the skills test. "It was dummies and stuff for all the skills we do. We have to perform it six times and after that we have to actually have these skills tests where they go through the list and you can get points for things you do remember to do, and if you fail to do certain things, then it's an automatic fail, for intense suctioning. If you do it more than 10 seconds, you know, when you suction you pull air out of the airway and more than 10 or 15, usually 10 seconds, that's

not good so that's for example that would be an automatic fail, stuff like that, administering medications, the AD which is the defibrillator, all that stuff is skills tested over and over. It's the mechanization, do it 6 times, get tested on it, then keep going over it in your head." Warren also portrayed his training as "...you sort of go into robot mode and ask yourself what to do next, what to ask. I know for me, sample history about what to ask, signs, symptoms, allergies to medications, all of that kind of stuff, it's very mechanized and the class itself is very memorization, thinking of different scenarios and how to respond to them." This is an example of repetition and reinforcement through prior testing.

Sometimes, it's the training that is repeated as well as the execution of it. Tara, a six-year lifeguard veteran, remembers the repetition in her training. "We would do a mix of classrooms where we would watch videos and read the book and then we would go in the water and practice. So usually in the morning we would do the book stuff and then after lunch we would get in the water and practice what we learned." This would be the routine for the entire course. Some techniques were easier to learn than others. It was the harder techniques that required more repetition than anything else. Tara described using a backboard for a serious injury. "...I have done it a lot because last summer I went to summer camp with my boss and trained lifeguards and we had to make sure they were doing it right over ten times...The information really sticks when you're trying to teach someone...I learn by practicing and so I would have people in the water more and actually doing it than watching a video or reading a book." This repetition also served as a reinforcement of material for Tara.

This type of repetition and then generalization is also demonstrated through learning to pay attention to small signals or discrepancies. Tara, the future pool manager, dove in the deep end to save a 4-year-old boy who decided to jump off the diving board without his life jacket on. His grandfather was on the other side of the pool and did not notice him. When Tara was asked why she reacted so immediately, she gave the most simplest and direct answer she could have possibly given. "In my mind, it is better safe than sorry."

Interruptions

One way this could occur, one that was addressed to some extent by training, was when bystanders intervene in the delivery of care. Lifeguards reported consistently that they were taught both in texts and through simulations to give explicit, short directions to bystanders so they would not impede any actions. Noah explains as follows, "Yes, if it's a legitimate situation, CPR or serious injury, then you clear the pool out, everyone out of the water, get them to move to one side of the pool, especially away from where the lifeguards are working." This procedure was part of his training. Noah also mentioned that regulars who had been coming to the pool for years know the procedure and act accordingly.

Not every lifeguard is as fortunate as Noah, however. Wendy and Michael told of different experiences with bystanders and interruptions. Besides "freaking out" and creating more pressure, both lifeguards agreed that the main reason for bystander interruptions was because they simply did not understand the situation. Very few times were bystanders helpful. Wendy said, "They try to be helpful, if they know what they are doing they are helpful but if they don't then it's not helpful." Another lifeguard,

Tara, went into more detail about what to do with spectators. "Usually you are trained to get bystanders out of the way. One of the first things you are taught to do when there is an emergency situation is to tell someone to call 911 and you are supposed to tell multiple people because people will go into shock and not call 911." Tara then told of an instance of when a bystander turned out to be useful. "When we had our drowning, there was a DPS officer at the pool and he helped out the lifeguards and helped perform CPR and when my manager got on the phone with 911, they weren't taking him seriously so the DPS officer got on the phone and help was there within 5 minutes." This situation differed from what Tara was taught to do, that is, not to rely on bystanders for any kind of help because it is a liability because they are not certified.

William, an EMT, underwent a different type of training where the interaction he had with bystanders is more crucial. "I get a lot of training on how to talk to families, other victims, how to break bad news, and how to go about dealing with potential hostile people who might show up on scene, family members who don't know how to handle it or get violent. There is a whole chapter on talking to family members... You talk to them directly; it has to be the right time, your main priority is treating the patient effectively and if you have to break bad news, they said to do it directly. You don't say so and so passed away; you would say your brother has died, so there is no misinterpretation. When you're talking to patients or family members. You don't give false hope. You don't say he's going to be OK. They give you certain things that you can say like these are great doctors, they are doing all they can do. As for hostile people on scene, that's all PD, police department. They teach you body language in case a

family member might get angry..."

Interruptions that flight attendants go through are different from both lifeguards and EMT's. In flight attendant training sessions, many different situations are presented. The idea seemed to be that the more surprising the situation, the more accustomed the flight attendant will be to the different possible of scenarios that could occur. "They ask us these kinds of questions at the end of recurrent but going through the motions is the most help, and then having training where we don't know what the scenario is going to be. So just throwing you into situations and shocking you as in not expecting situations and learning to deal with things that you weren't expecting, so the best thing they could do is to keep surprising us. Don't make it so routine because nothing is routine when you have to deal with situations. You could have two medical emergencies going on and three flight attendants. Not everyone can be there."

It would seem that bystanders, whether on the ground or in the air, will add stress to the situation by means of their own ignorance at not knowing what to do or how to help. However, for flight attendants, bystanders can add stress by being self interested. During an emergency landing, passengers would yell at the flight attendants about the inconvenience of having to take another flight or the security of their baggage. Interruptions during emergencies also come in the form of details that are left out of training scenarios. "They trained us for a heart attack but they didn't train us for body fluids that were going to come out. The reality of the situation is different. That's not a dummy anymore."

DISCUSSION

There have been relatively few sociological analyses of the training components for those who are faced with emergencies, but are not full-time emergency professionals. This research was directed at those people and sought to answer the question of how the nonroutine acts that occur during emergencies are somehow made more "routine." I found that the techniques of repetition and reinforcement seemed to be the most often used strategies of learning. But, one thing emphasized by the research participants was that while these strategies were viewed as important, simulations of emergencies, that is, more realistic approximations to actual events were viewed as particularly important. One very practical implication of the study would be to include more emergency simulations in training sessions. If this includes immediate feedback (that is reinforcement and punishment) they should be especially effective. It also seems that these simulations could incorporate varying kinds of interruptions so that understanding how to deal with these are practiced.

Participants rarely mentioned explicit thought processes, but when they did, the process seemed to best approximate the decision model in which people processes information additively (described by some participants as a "checklist") and then quickly try to give precedence to "categorical" information at the scene, such as is the person coherent, is the person able to communicate?

Operant learning principals were very significant to the learning process of the emergency workers. The reinforcement of some techniques such as CPR, and the punishment of failing recertification tests that could not be retaken for months, served as

a motivating factor to master the techniques and pass the test. This sometimes was difficult to do based on the amount of information that must be learned, retained, and perform when necessary. When the emergency workers spoke of repetition and ritualization, they spoke of it with security and confidence of the skills learned from them. This undoubtedly was a strong tool for learning and refining competence and skill. As mistakes were made, they were corrected and improved by the instructors or teachers. This also reiterated to the instructors and teachers the techniques that they practiced as well.

Flight attendants gave the most intriguing accounts of how the characteristic of autonomy was ensconced in their reaction. This characteristic was also spoken of more so in the emergency workers who were more experienced leading to the conclusion that over time, autonomy becomes ingrained in emergency workers of all types. It may also explain why less experienced workers go to the more experienced workers for advice, assistance, and defense. It is protocol to seek a supervisor whenever an incident happens, but if it were not, it seems that a supervisor would be sought after for other reasons as well.

Generally judgment and tacit knowledge grew with experience. Examples of this occurred when participants explicitly talked about "disregarding" what one supervisor might have said in favor of another's advice. Other examples included participants mentioning how their specific setting caused them to modified or adjust their training.

There are limitations to this study. There are only a small number of focus groups. All of the participants were recruited from the same college campus, thus giving

a certain viewpoint and culture. Even so, the experiences detailed in the groups were considerable although participants mentioned many commonalities to their training requirements, learning methods, and encounters. This signified a strong common component among the training that is taught by different kinds of emergency workers. Another benefit in this research is that the emergency workers that participated all came from different backgrounds, so that unique perspectives were analyzed and compared. This prevented a one-note direction for this research.

All in all, what can be learned is that emergency workers go through intense training to match the unpredictable situations that they may encounter. How they learn, and what they learn are not only crucial to the situation as it occurs, but also benefits the worker in the short-run and long-run.

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APPENDIX A

IRB APPROVAL AND INFORMED CONSENT

**TEXAS A&M UNIVERSITY
DIVISION OF RESEARCH AND GRADUATE STUDIES - OFFICE OF RESEARCH COMPLIANCE**

1186 TAMU, General Services Complex
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Human Subjects Protection Program

Institutional Review Board

DATE: 06-Aug-2009

MEMORANDUM

TO: SELL, JANE

FROM: Office of Research Compliance
Institutional Review Board

SUBJECT: Initial Review

Protocol Number: 2009-0537

Title: Focus Groups of Emergency Personnel

Review Category: Expedited

Approval Period: 06-Aug-2009 To 05-Aug-2010

Approval determination was based on the following Code of Federal Regulations:

45 CFR 46.110(b) (1) - Some or all of the research appearing on the list and found by the reviewer(s) to involve no more than minimal risk.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation or quality assurance methodologies.

(Note: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b) (2) and (b) (3). This listing refers only to research that is not exempt.)

Provisions:

This research project has been approved for one (1) year. As principal investigator, you assume the following responsibilities

1. **Continuing Review:** The protocol must be renewed each year in order to continue with the research project. A Continuing Review along with required documents must be submitted 30 days before the end of the approval period. Failure to do so may result in processing delays and/or non-renewal.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB Office.
3. **Adverse Events:** Adverse events must be reported to the IRB Office immediately.
4. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB Office for review. The Amendment must be approved by the IRB before being implemented.
5. **Informed Consent:** Information must be presented to enable persons to voluntarily decide whether or not to participate in the research project.

This electronic document provides notification of the review results by the Institutional Review Board.

Consent Form

Emergency Personnel Focus Groups

You have been asked to participate in discussions of your experiences in different emergency situations. You will be discussing your experiences and your assessment of what seems to make a difference in how people respond in emergencies.

We anticipate that the discussion will take about 45 minutes. You will receive a \$20 gift certificate at the end of the discussion. If you are uncomfortable during the discussion, you can choose to not interact or if you wish, you can stop at any time. If you stop, you will still earn the gift certificate.

This study is confidential. We will be videotaping the interaction so that we can faithfully report the issues you discuss. However your name will never be used in conjunction with anything you say. Only the research team will see the videotapes and they will be destroyed after five years.

This study is not associated with any class at Texas A&M University. There will be no class credit involved, and your participation in this study will not affect your grades now or in any future classes at Texas A&M University.

This research study has been reviewed by the Institutional Review Board - Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through Ms. Melissa McIlhaney, IRB Program Coordinator, Office of Research Compliance, (979)458-4067, mcilhaney@tamu.edu.

By signing this document, you certify that you have read and understand the explanation provided to you. You certify that you have had all of your questions answered to your satisfaction, and that you voluntarily agree to participate in this study.

You have received a copy of this consent form for your records.

Signature of Subject

Date

Signature of Researcher

If you have any further questions, feel free to contact Dr. Jane Sell, Sociology Department, TAMU, 845-6120

APPENDIX B

FOCUS GROUP QUESTIONS

Questions for Emergency Personnel

1. Describe the training that a _____ must undergo before becoming certified.
2. Which techniques were the hardest to learn? Which were the easiest?
3. How many times have you used a certain technique in the field? Which techniques have you used the most? Which ones have you used the least?
4. Do you feel that the training you underwent was sufficient for your line of work? Why or why not?
5. What would you do to change it?
6. What happens if you perform a technique during an emergency that breaches what you have been taught? What are the consequences if the breach saves a person's life? What are the consequences if the breach causes a person's death?
7. Are some routines easier to perform in groups rather than as an individual?
8. Are some routines easier to perform as an individual rather than in groups?
9. Are you ever taught a procedure by trainers but were told by other experienced students how to do it in a more efficient manner?
10. How does practicing on life size dummies compare to the real person?
11. If there was something you could change about the routines and procedures you are taught during an emergency, what would it be?
12. How much of what you have been taught as far as reacting to an Emergency is accurate in your opinion?
13. Do you think your training is different from others you have met? If so, how?

APPENDIX C
STATA RESULTS

Stata Analysis

Introduction

So far, I have looked at emergency workers who work in situations on a one-on-one basis with the victim. But what about on a larger scale, where there are literally thousands of victims who all need assistance during an emergency? These emergencies have occurred throughout American history several times before. One of the more recent emergencies was the hit and impact of Hurricane Katrina. On August 29, 2005, the city of New Orleans was hit by the strongest and most devastating force of nature and left the city in ruins. Thousands of people were immediately displaced and chaos broke out as everyone tried to flee the city. Aid came in many forms such as the local police, fire department, the National Guard, and even aid from foreign countries. The areas that were completely destroyed were mostly the poorest parts of the city. For those persons who could not escape, floods, disease, and the constant rain became deadly. Bodies began floating down the street and people became extremely sick from the toxic environment. Most of the people who could escape fled to Houston, Texas by bus. However, Houston was unprepared for the sudden wave of refugees. People were crammed into the Astrodome and only given cots and blankets. Many families became separated due to a lack of organization. Some people were told to stay in New Orleans as buses would come for them, but the buses never came. Others in Houston were told to check with other arriving buses to see if their missing family members were on them, but were not. In this analysis I focus on the degree of satisfaction level of the evacuees towards the emergency workers. This is important to analyze because it reflects greatly

upon the effectiveness of the emergency workers and the end result of the rigorous training they go through.

Background

Two researchers from the University of Tennessee and the University of Houston collected the data by interviewing several victims who evacuated to Houston. The purpose was to determine the level of satisfaction the victims held for the authorities in charge and the factors that influence them. The first researcher is Sam Whitt from the Department of Political Science at the University of Tennessee. The second researcher is Rick Wilson from the Department of Political Science at Rice University, Houston, TX.

Between September 10 and September 19, 2005, a total of 352 evacuees participated in this research project. The interviewees were predominately African-American refugees who evacuated New Orleans and relocated to one of six Houston-area shelters including the Astrodome, the Reliant Center, and the George R. Brown Convention Center. The researchers recruited evacuees from dining halls, TV rooms, and sleeping areas among the shelters. A systematic random sample of evacuees was deemed impossible by the researchers based upon the diversity of conditions and the size of each shelter. Seventeen group sessions were conducted, ranging in size from 15 to 26 participants per session. Each participant was paid an amount of \$65 cash. Each participant also came from a different family so as not to duplicate information or have biases within the data collected. A questionnaire was administered to each literate

participant; in the case of persons who were illiterate, the questionnaire was read aloud to them and their answers manually recorded.

About 30% of the participants said they came from the New Orleans Superdome whereas roughly 18% came from the house of a friend, family member, or hotel inside of New Orleans. Roughly 12% had been stranded on an upper-story building or rooftop. The remaining 40% choose "other," indicating that they were saved by "Black Hawk choppers" or by another means of rescue. Of the sample interviewed, 58.2% arrived in Houston by bus, 35% were given a ride in a car, and the remaining 6.8% arrived by train or plane. The majority of the samples, 98%, were African-American, and 52.4% were female, and 31% never completed high school or received their GED. The average age of the interviewee was 36.1, with a range from 18 to 69. Approximately 20% of the subjects were married, 10% were divorced or separated, and almost 60% said that they were single. Approximately half of the subjects had two or more children, and 51.1% of the sample reported an annual household income of less than \$15,000 a year.

I want to examine various factors that may be hypothesized to influence the satisfaction of the evacuees from the job performed by the emergency workers. Yes, they arrived to help, but arguably not in time. Just how well organized and efficient were the emergency workers? What can be learned from all of this? I'm interested in ascertaining whether certain characteristics of people are associated with their being more or less satisfied with the emergency workers. I will be looking at the questions asked and answered that specifically relate to the services rendered by the emergency

workers and the mayor of New Orleans, and the satisfaction of the evacuees. I will examine 5 specific factors that may influence the satisfaction level of the interviewees.

Data

In order to determine the satisfaction level, logistic regression equations were estimated. Logistic regression will allow me to predict an outcome based on a set of variables that have an answer that is either yes/no, satisfied or dissatisfied. A new variable was created that determined and measured the satisfaction of the mayor, National Guard, police department, and fire department. The dependent variable will be the satisfaction of the evacuee and scored as a 1 if they were satisfied and 0 if they were not satisfied. Because there are only two possible outcomes for this variable, it is also known as a dummy variable. The independent variables are five separate variables that are may be hypothesized to be influential in determining satisfaction. They are age, education level, income level, whether the person interviewed had a missing family member during/after the evacuation, and whether or not they had a deceased family member during/after the evacuation. The age variable is measured in years and the income variable is measured in thousand dollar increments, with a range between \$0 to \$75,000/year before taxes. There are five categories in total. They range from earning less than \$15,000/year, earning between \$15,000-\$25,000/year, earning between \$25,000-\$50,000/year earning between \$50,000-\$75,000/year, and earning over \$75,000/year. There are also five categories in the education variable. It is measured from graduating college to having less than a ninth grade level education. The

categories range from less than a ninth grade level education, having between a ninth grade and twelfth grade level education but not earning a high school diploma/GED, earning a high school diploma/GED, having some college, but not earning a diploma, and finally earning a college diploma. The missing family variable is defined as not having located an immediate family member since evacuating, and the deceased family variable is defined as learning of a family member's death since or after evacuating. They were coded as 1 if they lost a family member or 0 if they did not. These two variables are dummy variables.

In the survey, a question was asked about the evaluation for each person or department. Due to missing data from participants who chose not to answer or skipped a question, there were 278 total responses that were recorded and used. The logistic regression coefficients were transformed into odds ratios through exponentiation; I then calculated percentage change in each odds ratio by subtracting 1 from the odds ratio, and then multiplying by 100. Multicollinearity is a test, which determines that if two or more variables are extremely close to each other, which would indicate no variance at all. For this regression, no multicollinearity was detected because the VIF of all the variables were greater than 2.9. The tolerance levels of the models were also found to be above .35 which indicates that normal tolerance levels.

Results

The first dependent variable pertains with the satisfaction of the mayor. In the logistic equation predicting this outcome, the only variables that were significant are

education and income. In order to determine significance, the P-value generated must be lower than .05. For education, the P-value was .04. The odds ratio for education was .74; it can be determined that for other factors being equal, for every category increase of educational attainment, there was a 26% reduction in the odds of being satisfied with the job performed by Mayor Nagin of New Orleans.

For income, the P-value is .01 which means this variable is significant. The odds ratio for income was 1.53. This means that for every category increase in income, the odds of being satisfied with Mayor Nagin increased by 53%, controlling for all other variables in the model.

The second dependent variable is satisfaction of the National Guard. One of the independent variables has a statistically significant association with this outcome, namely education. The odds ratio for this variable, education, was .77 meaning that for every category decrease in education, the odds of being satisfied with the National Guard decreases by 23%, controlling for all other variables. However, when the income variable is also regressed in this model, the education variable is no longer significant. This would suggest that there might be some multicollinearity between the education and income; however, as mentioned earlier, there is no multicollinearity in the model. The change may be due to the fact that education is barely significant at .049. Or that it was almost not significant in model 4.

The New Orleans Police Department was considered the first to respond. The third dependent variable pertains to satisfaction with the police department. But none of

the variables generated significant results. The P-values for all the variables were above .05 and therefore could not tell anything noteworthy about the satisfaction level.

The fire department was rarely mentioned in the media with regard to the extent of help they contributed. Satisfaction with the fire department is the fourth dependent variable. None of the independent variables were shown to be related statistically with the dependent variable.

Discussion

The only variables that generated any statistically significant results were education and income for the models that assessed satisfaction with the Mayor and the National Guard. Upon closer examination, the education variable's significance shows that the higher the education level of the evacuee, the lower the satisfaction rate as seen by the evacuee towards Mayor Nagin. Why is this so? One reason can be that the more educated the person, the more logical rationalizing they can do towards the evacuation and how it should have been handled. Even though educated people tend to have more resources at their hands than less educated people, the resources that were available that day could have been scarce, limited, and inadequate. The same logic can be applied to the income variable as well. It was largely reported that the poorest parts of New Orleans were hit the hardest and had the most property damage, as well as the most deaths. Like wise the poorest evacuees of New Orleans were the least satisfied with the Mayor and the richest evacuees of New Orleans were the most satisfied with the Mayor.

The living conditions of the people may have led to a previous biasness towards the Mayor before the hurricane hit.

This research is beneficial in that it provides a psychological insight to the mentality of people who have undergone a tremendous life-changing experience. The only limitation to this research is the lack of people who did not or chose not to answer a question. However, in the future, this can be a stepping-stone into further research the next time a disaster strikes a city of this magnitude.

Table 1.1

	Logistic Regression for the Satisfaction of Mayor Nagin				
	Model 1	Model 2	Model 3	Model 4	Model 5
Missing family member	1.028945	1.075952	1.07318	1.039954	1.080949
Hurt family member		.7943657	.7486569	.7136603	.6809242
Age			.9844251	.9838947	.9807438*
Education				.8582845	.7416241**
Income					1.529075**
N	278				

* significant at the .05 level

** significant at the .01 level

Table 1.2

Logistic Regression for the
Satisfaction of the National Guard

	Model 1	Model 2	Model 3	Model 4	Model 5
Missing family member	.8824521	.8917162	.8906221	.8421736	.8345526
Hurt family member		.9466524	.9298585	.8606676	.8710804
Age			.9950701	.9942635*	.994879
Education				.7701914*	.7965963
Income					.9092385
N	278				

* significant at the .05 level

** significant at the .01 level

Table 1.3

Logistic Regression for the
Satisfaction of the Police Department

	Model 1	Model 2	Model 3	Model 4	Model 5
Missing family member	.7878788	.7640996	.7636989	.7731746	.7795666
Hurt family member		1.173296	1.164602	1.185759	1.171851
Age			.9979384	.9981255	.9974382
Education				1.063313	1.026935
Income					1.102961
N	278				

* significant at the .05 level

** significant at the .01 level

Table 1.4

Logistic Regression for the
Satisfaction of the Fire Department

	Model 1	Model 2	Model 3	Model 4	Model 5
Missing family member	.7114625	.702547	.6972298	.6893868	.6835736
Hurt family member		1.068846	1.005575	.9905792	1.001671
Age			.9830136	.9828334	.9834084
Education				.9497866	.9809866
Income					.9121419
N	278				

* significant at the .05 level

** significant at the .01 level

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