Risk Taking Behaviors and Attitudes in the U.S. Fire Service

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Certification Statement

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Abstract

This research was conducted to address the problem of the number of structural fires in the United States having plateaued since the mid-2000s, while the death rate of structural firefighters has increased. The purpose of the research was to determine if certain demographic factor and personality type firefighters are prone to taking excessive fireground risk. While no Collinsville firefighters have died on duty, conditions which lead to the increased death rate presumably impact all firefighters.

Descriptive research was used with a review of literature on risk taking behaviors and attitudes of firefighters and Type T personality traits. An 18-question online survey of firefighters was conducted to determine attitudes toward risk taking and if the respondent had Type T traits. There were 512 surveys completed.

Research questions were: a) Does age, experience and sex impact risk taking behaviors and attitudes of firefighters?, b) Does rank and experience in assuming incident command impact risk taking behaviors and attitudes of firefighters?, c) Is there a difference found in risk taking behaviors and attitudes between volunteer and career firefighters?, d) If a fire department has policies which require emergency scene risk gain analysis, is there a change in firefighter attitudes about risk acceptance?, and e) How do Type T personality traits impact risk taking behaviors and attitudes of firefighters?

Survey results found older age groups and those with significant experience as incident commander were somewhat less likely to accept higher risk. Those from departments with risk/gain analysis policies were also somewhat less likely to take
risk to save property. Those with Type T traits were inclined to accept higher risk at emergency scenes.

Recommendations included promoting adoption of risk/gain analysis policies, increasing awareness of Type T personality trait liabilities and making greater effort nationwide to develop a fire service culture of safety.
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Introduction

In the last 30 years, the number of structural fires in the United States has decreased markedly. There has also generally been a corresponding decrease in the number of reported firefighter fatalities. However, the National Fire Protection Association (NFPA, 2010) reported a divergence between the structural fire rate and the firefighter fatality rate. The problem statement for this Applied Research Project is: Since the mid-2000’s, the number of structural fires in the United States has plateaued, while the rate of death of structural firefighters has increased.

A number of possible causes have been suggested for this apparent disconnect between fire and fatality rate. In a fire service environment which is becoming increasingly focused on the risks it takes relative to possible gains, the personality profiles of firefighters warrant further study. Are they impacted by fire service culture and public expectation or do they possess sensation seeking personalities? Also, how do these characteristics present among different ranks, ages and experience levels and between career and volunteer firefighters? Further, are firefighter attitudes toward risk taking changed if the department has policies in place requiring risk/gain analysis of emergency scene operations? The purpose statement of this Applied Research Project is: To determine if certain vocation-related demographic factors and personality type firefighters may be more prone to taking excessive risk on the fireground.

Research questions were: a) Does age, experience and sex impact risk taking behaviors and attitudes of firefighters?, b) Does rank and experience in assuming incident command impact risk taking behaviors and attitudes of firefighters?, c) Is
there a difference found in risk taking behaviors and attitudes between volunteer and
career firefighters?, d) If a fire department has policies which require emergency
scene risk gain analysis, is there a change in firefighter attitudes about risk
acceptance?, and e) How do Type T personality traits impact risk taking behaviors and
attitudes of firefighters?

Descriptive research will be conducted for this Applied Research Project with a
review of literature which may explain why some firefighters may think it necessary
to assume an inappropriate level of job risk. Literature review will also examine traits
of sensation or thrill seeking (Type T) personalities and their possible impact on
firefighter behavior. An 18 question online survey will be conducted of fire service
personnel to determine their attitudes toward risk taking as it relates to firefighting
and to determine if they have Type T personality traits (Appendix A).

Background and Significance

In the eyes of many, membership in the U.S. fire service includes an implicit
agreement to accept death or serious injury in the performance of the job. This
attitude is not new. Consider the words of Chief E. Croker of the Fire Department of
New York upon the deaths of a deputy chief and four firefighters in February, 1908.

“Firemen are going to get killed. When they join the department they face that
fact. When a man becomes a fireman his greatest act of bravery has been
accomplished. What he does after that is all in the line of work. They were not
thinking of getting killed when they went where death lurked. They went there
to put the fire out, and got killed. Firefighters do not regard themselves as
heroes because they do what the business requires” (Croker, 1908).
The thought that the business of firefighting requires deaths of firefighters is a commonly accepted belief held by some in the fire service still today, more than 100 years after Croker’s comments. It is an attitude that chafes at modern fire service leaders who are trying to make the occupation safer. There seems no dispute that firefighting has a high level of risk, but how can that risk be reduced if many in the profession write it off as part of the job? Attitudes are changing, but there remains much to be done. Retired Phoenix Fire Chief Alan Brunacini said prior to recent years, “firefighters suffered the most unfair occupational discrimination in the United States, as it relates to health and safety” (Wolf, 1998).

Meanwhile, federal reviews of firefighter injury and fatality incidents continue to point to judgment errors on level of acceptable risk made by firefighters or fire incident commanders. Corrective suggestions and recommendations seem to fly in the face of many of those intent on preserving the culture of the fire service.

Some in the American fire service are not giving up easily on keeping firefighters free of what they view as cumbersome safety regulations which impede the ability to rapidly put out fires. They yearn for the heroic persona. “In these litigious and regulatory times, that mystique is becoming an anachronism. Today’s firefighters are perhaps the last of a dying breed” (Angione, 2001). The author cites a “new morality” among firefighters. “Even firefighters are questioning the danger of some of their previously routine duties.”

As an example of the increased regulation, the author cites the Occupational Health and Safety Administration (OSHA) two-in/two-out rule as being impractical and laying the groundwork for potentially deadly delays in firefighting. The rule requires
personnel be on standby outside of hazardous areas to rescue those working inside, if needed. But even with regulations such as these, the author believes, “a firefighter still gets to put his skill, courage, reputation-and, yes, his personal honor-on the line in meeting the challenge and fighting the Red Devil.” (Angione, 2001).

Another writer states civilian deaths and injuries have increased dramatically and ponders its impact on the fire service. “And where does that leave duty and honor and sacrifice? We’ve replaced tough tactics with comfort tactics. We’ve replaced ‘how well we live’ with ‘how long we live.’ It’s unnatural. It’s not the right way” (Manning, 1999). He worries that some regulatory paths will destroy the “greatness” of the fire service. “Forget about ‘calculated risk’. It’s really ‘calculated sacrifice’ that defines your greatness.”

Indeed the fire service culture likes to honor its heroes. It is common for fire departments to give awards for heroism when their members make valiant efforts to save lives. Some state and national groups also give such awards for heroic effort. Firehouse (2011), a magazine geared toward firefighters and enthusiasts, annually presents the Firehouse Heroism and Community Service Awards. In 2011 the magazine presented more than 50 monetary awards for heroic actions in a 14-page spread in the magazine. The most heroic stories were retold in great detail; photos of winners were used.

In the end of the same list of hero awards in Firehouse, nine community service awards were also presented. These awards were primarily for community risk reduction activities, the kinds of things that prevent fires from ever starting in the
first place. No money was awarded and little detail was given on those who were presented the community service awards.

It isn’t just some members of the fire service who hold an expectation that firefighters will take their job at their own peril. The public perception of what risks firefighters are expected to take is sometimes engrained into potential firefighter candidates even before they begin their careers. In the book, *Careers in Firefighting*, the authors quote a veteran fire officer, who states: “These men are the last American pioneers, for they face, with each day, with each fire, an uncertain future” (M.P. Lee and R.S. Lee, 1993).

One fire chief writes that some in the fire service have the Firefighter Duty to Die Syndrome, which he euphemistically refers to as FDTDS. It is a condition where the firefighter believes they must take unacceptable levels of risk to do their jobs properly, even to the point of death (Crawford, 2007). He believes the fire service must examine what drives firefighters psychologically to find a solution to this type of behavior. The severity of the problem may well depend on the level to which risky behavior is accepted and institutionalized in the respective fire departments. For example, if an officer or other firefighters praise a speedy response by an apparatus driver even though he drove recklessly, it enables future risk taking by that firefighter and his coworkers. Firefighters who are praised for risky behaviors rely on ends to justify the means, the author states.

For some risk takers, the need for satisfaction or to be seen as a hero increases in time if their needs are not fulfilled. This can lead to increasingly dangerous actions or, in the case of some, even setting fires in order to satisfy their needs.
The author also looks at technological improvements in protective gear as perhaps enabling unsafe behaviors. For example, if the latest turnout gear or self-contained breathing apparatus (SCBA) hold up well in a very hostile fire environment, a firefighter might be encouraged to take even greater risk in the future. Similarly, a firefighter in poor physical condition may be encouraged to work at an even higher (riskier) level at the next incident (Crawford, 2007).

Many fire service experts believe peer pressure can increase risk-taking behaviors by firefighters. According to another veteran chief, “Some of the firefighters who have not had their turn on the tip at the ‘big one’ yearn for the opportunity to ‘prove’ themselves worthy of the recognition heaped upon the ‘heroes’ of those past fires” (Gasaway, 2003). This author too believes the fire service should not in any way praise those who make bad risk decisions, no matter the outcome. He further believes in rewarding personnel who are brave enough to follow their training and instincts which correctly tell them an action is not safe.

NFPA statistics paint a troubling picture of the trend for the firefighter death rate. The NFPA regularly monitors and tracks fire incidents and firefighter fatalities in the U.S. In 2010 the NFPA released a study noting structural fires and structural firefighter deaths had decreased dramatically, and on a similar trajectory, since 1977. Alarming, however, is since the mid-2000s, the number of structure fires has remained relatively unchanged, while the firefighter death rate has increased (NFPA, 2010).

The NFPA noted the major causes of the traumatic injuries in structural fires included firefighters becoming lost, structural collapse and rapid fire progression. An
accompanying graph shows a clear upward trend in the death rate after 2005. The increase is evident, even discounting a spike related to a single fire incident in 2007 when nine firefighters were killed in Charleston, SC (NFPA, 2010).

The author of the NFPA study says the data raises important questions for the fire service. Among them: “Are firefighters putting themselves at greater risk while operating at fires inside structures? Do firefighters think modern protective equipment provides a higher level of protection but do not realize the limitations of that equipment or are they ignoring those limitations?”

The NFPA has a laundry list of suggestions as to how the trend might be reversed. Many of these suggestions directly relate to risk acceptance and decision making by firefighters or incident commanders. These include implementing incident command and personnel accountability systems and rapid intervention crews. Particular problem areas have been lack of situational awareness or failure to respond to situational awareness indicators, for example, failure to maintain awareness of SCBA air level (NFPA, 2010).

The study also raises the conundrum of how can firefighters and incident commanders get the critical experience and on the job training they require if the number of fires continues to decrease. The fire service is doing much less of the fire suppression job, and injuring and killing more firefighters in the process.

Since 1998 the National Institute for Occupational Health and Safety (NIOSH) has investigated firefighter deaths and other serious or potentially serious firefighter injury cases in the United States through its Fire Fighter Fatality Investigation and Prevention Program. After each investigation, a report is issued which examines
probable causes for the fatality or injury and makes recommendations on what can be
done to avoid similar incidents (NIOSH, 2011).

An examination of these reports of incidents from 2007 to 2010 indicate as
many as 31 of the reported 46 firefighter traumatic injury deaths at structural fire
scenes may have been prevented if more extensive risk/gain analysis had been
practiced by the firefighters or incident commanders (ICs) involved. Many of the
deaths occurred where there was no need to take risk because the structure was
abandoned or already so consumed by the fire there was nothing left to save. At least
one fatality occurred when a survivability profile for the trapped civilian victim would
have clearly indicated he was already deceased. Causes of firefighter deaths were
primarily structural collapse or partial structural collapse (NIOSH, 2011).

In this same environment, there is the expectation of higher accountability for
fire department ICs, those who make many of the strategic and tactical decisions
which can put firefighter’s lives at risk. This was seen on the international level in
early 2011, when three fire officers in Great Britain were charged with manslaughter
by gross negligence following a 2007 fire in a vegetable packing warehouse in
Stratford-upon-Avon which killed four firefighters (Fire Chief, 2011).

Those charged all served as incident commanders at the fatal fire. They were
cited for making dangerous “operational decisions.” The former president of the
Institute of Fire Engineers and retired fire chief of Plano, TX, Bill Peterson, stated: “I
don’t think we’re going to take safety seriously until a fire chief or officer go (sic) to
jail” (Fire Chief, 2011). He stated it is probably only a matter of time until a similar
case is seen in the U.S.
This applied research project relates to the National Fire Academy course Executive Analysis of Fire Service Operations in Emergency Management in that it concerns emergency responders, such as the fire service, operating in the safest fashion possible. In times of large scale emergencies, responders themselves become scarce resources. Every effort must be made to keep the maximum number of responders available to serve their respective communities. If responders are involved in rescue operations of their own personnel, or if fewer responders are available, overall community response capability is obviously diminished. This is not to minimize the local impact which a single firefighter injury or death may have on survivors or an organization.

The cultural, personality and perhaps organizational issues which cause excessive risk taking behavior can be found in most fire departments, including the Collinsville Fire Department. Any research which attempts to address these concerns on a national basis will ultimately benefit all U.S. fire departments, including Collinsville.

This applied research project applies to U.S. Fire Administration Goal 1: Reduce risk at the local level through prevention and mitigation. It also relates to the strategic initiative of reducing line of duty deaths and injuries and the objective of encouraging state, local, and tribal adoption of risk reduction, prevention, mitigation and safety strategies.

Literature Review

Much study has been conducted by psychologists on risk taking behavior of individuals. What makes one person most enjoy reading books while another prefers
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skydiving, or activities somewhere in between? Some of the seminal research in this area was conducted by Marvin Zuckerman at the University of Delaware, where he has studied the topic since the 1960s. That work has been further refined by Zuckerman (2007) and those using Zuckerman’s sensation seeking scale (SSS) tests to learn why some individuals need sensation or thrills to feel complete.

Zuckerman (1994) provides the following definition: “Sensation seeking is a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience.”

Risk is a common part of everyday life, but sensation seekers tend to accept more risk because they think they will not suffer negative impacts. A sensation seeking smoker might be told that his chances of dying from lung cancer are 15 times greater than a non-smoker, but he usually does not believe he will be the one who dies. Risk can take many forms, representing from financial to physical to social loss. Significance of loss depends on individual circumstances. A millionaire might barely notice the loss of $5000 on an investment, while the same loss could mean survival for a person living in poverty. Why are high sensation seekers not deterred by the risks? Zuckerman (2007) says it is because they either underestimate the risks or are willing to accept them because they believe potential benefits outweigh them.

One study asked students to rate the perceived risk of some activities and vocations along with the perceived benefit, and place a numerical value between one and 100 for each. The highest risk was seen for smoking with a 68; relative benefits were rated at 24. The lowest risk was seen for jogging with a 14; benefits were rated
at 65. Firefighting was rated as one of the riskier activities with a rating of 44; but benefits were rated at 83, the highest value on the list (Zuckerman, 2007).

Personnel specialists were asked to rank 10 occupations according to degree of risk in the job. Risk was defined as “placing oneself or others in jeopardy.” Firefighting was rated as the fourth riskiest of the 10 vocations on the list (Zuckerman, 2007).

Psychologist Frank Farley of the University of Wisconsin-Madison has also done significant study of the Type T personality and believes those with the trait they can be both socially useful and socially appalling. “They are rejecting the strictures, the laws, the regulations—they are pursuing the unknown, the uncertain” (Leo and Galvin-Madison, 1985). “Type T individuals are doubly dangerous—to themselves and others.” Type Ts are described by Farley as high energy people, with T-plus persons being creative and T-minus being destructive.

In 2008 a dissertation entitled, *A Descriptive Analysis of Antecedents of Risk Based Decision Making in Firefighting*, was completed by a University of Wisconsin-Madison researcher. The dissertation was based on data collected from a single large municipal career fire department in the Midwest. This study attempted to answer three research questions (Gomez, 2008). They were:

1. What are personal characteristics that firefighting personnel possess?
2. How do firefighting personnel perceive the work environment of the firefighting profession?
3. How do firefighting personnel perceive danger, standard operation procedures and equipment used in the firefighting profession?
Question results will be reviewed as they relate to the research questions of this applied research project. The dissertation author used several questions in his survey to get an answer to his question one. He found that firefighters were not clearly Type-T personalities, but noted the majority of firefighters have a propensity to seek out new experiences, have boredom susceptibility and become restless and have a need for unpredictable things. He found that as firefighters aged, they became less conservative in approach and tended to take more risk (become loss averse). He found that firefighters need more pre-incident arrival information in order to help them with size-up related decisions (Gomez, 2008).

Four survey questions were used to answer the dissertation’s research question two. These questions found that firefighters feel they must sometimes work around standard operation procedures. In examining fire service culture and its impact, those surveyed felt traditions were usually fire-station based rather than fire scene based. However, peer pressure might cause some personnel to not follow some safety procedures, such as wearing of SCBA during overhaul of a fire. The author also sought information on whether the firefighters would continue to work past the limits of their endurance; most indicated they would. Because of this response, the researcher believes fire departments should insure firefighters’ physical abilities throughout their careers. Those surveyed felt the job required them to make critical decisions while under high stress and during times of heavy workload and possible fatigue (Gomez, 2008).

To answer his research question three, the author used three questions in his survey. With regard to perception of imminent danger, younger employees generally
felt they were as adept as veterans in recognizing danger. Almost half of the respondents reported they would do a task they were not trained for, if necessary. The firefighters reported they would embrace effective equipment and technology which would make their jobs easier (Gomez, 2008).

In discussion of the results, the author said firefighters must be made aware of their thrill seeking tendencies, if present, so this risk may be managed in an emergency situation. The study found there were nearly equal groups of loss averse and risk averse persons in the fire department. The result that experienced personnel were more risk averse was interpreted as perhaps meaning more senior employees could better judge dangerous situations than newer employees. With regard to working around SOPs, it was felt employees need flexibility to deal with situations which are not addressed by existing policies (Gomez, 2008).

A Spanish psychologist looked at what motivates firefighters in an article for Fire International. He believed firefighters to be motivated by humanitarian urge and, in some cases, economic survival. If the firefighter is acting for the latter of those motivations, it can lead that person to assume risks that are out of keeping with his or her psyche and can cause psychological changes, according to the author (Frago, 1999). He further identified the aptitudes which cause certain behavioral characteristics in career firefighters.
Table I

*Characteristics & Aptitudes in Career Firefighters*

<table>
<thead>
<tr>
<th>Behavioral characteristics</th>
<th>Firefighter Aptitude</th>
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</thead>
<tbody>
<tr>
<td>Confronting limits</td>
<td>Risk taking potential</td>
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<tr>
<td>Risking one’s life for others</td>
<td>High levels of altruism</td>
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<tr>
<td>Knowing one’s physical limits</td>
<td>Good physical self awareness</td>
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<tr>
<td>Breaking the rules if necessary</td>
<td>Personal initiative</td>
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<tr>
<td>Satisfaction in surmounting highly problematic situations</td>
<td>Sense of achievement</td>
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<tr>
<td>Sensing one’s own importance through saving lives</td>
<td>Rescue as positive</td>
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<td></td>
<td>natural leadership (Frago, 1999)</td>
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Risk decision making may be responsible for a significant difference in the fatality rate of U.S. firefighters as opposed to their counterparts in England. A researcher (Klein) in Great Britain in 2001 compared firefighter fatalities there to U.S. fatalities. In the 1990s, the decade prior to completion of the research, the U.S. firefighter fatality rate per 100,000 workers was approximately three times higher than the rate in Great Britain. The author gives much of the positive credit to the 1974 passage of Britain’s Health and Safety at Work (HASAW) Act. After the passage of the act, many fire officials feared “firefighters would be emasculated by the new
legislation” and become ineffective. That did not happen, but British fire brigades were made to work much more safely.

An important component of HASAW has been attempting to quantify risk to life. Zero risk is recognized as unattainable. Level of risk is established ranging from negligible to unacceptable. The concept of acceptable risk to life is found in the As Low as Reasonably Practicable (ALARP) principle, which grew out of the nuclear energy industry. Reasonably practicable is interpreted in Great Britain to mean that unless the cost is grossly disproportionate, the employer must take on the expense to do the job safely (Klein, 2001).

British officials note the critical importance fire command officials have in keeping the workplace safe, although firefighting and rescue tasks by nature tend to be highly dynamic. Similarly, they are averse to writing off injuries or fatalities as a “firefighter accident.” The study recognizes the need to eliminate high risk taking in the fire service. “The development of a safety culture understood by everyone can go a long way to prevent this sort of behavior, as can a sense of personal responsibility to one’s colleagues—the ‘buddy’ factor” (Klein, 2001).

Several U.S. studies have confirmed higher injury rates in employees who show risk-taking behavior while off duty. One study was conducted of over 3400 employees of the city of Birmingham, AL. Possible reasons cited for the higher injury rates for the risk taking employees included bypassing established safety procedures and the need or desire to take on higher risk assignments. The study by Forrester, Weaver, Brown, Phillips and Hilyer (1996) takes into account that Type T personalities are drawn to occupations such as firefighter and police officer and notes that some risk
taking is essential in those type vocations. “Interventions in these populations must reduce the risk of occupational injury without altering the public safety workers propensity to do the job” (Forrester, et al, 1996).

The culture of the fire service is often cited as a culprit when the topic of excessive risk taking is examined. But some believe the fire service is slowly building a proper culture of safety. Establishing this safety mindset has multiple steps, according to two veteran firefighters with the San Bernardino, CA Fire Department (Alder and Fratus, 2007). The first of these is identifying the duty to act. Second is identifying all associated risks and calling these to the attention of responders. Third is establishing safety systems to address the identified risks, which some describe simply as “running the department.” The authors note that many departments stop the process at this juncture, making the assumption that policies, resources and training will take care of the issue.

Fourth, and perhaps the most important step, is establishing a safety culture in the organization. It may be the difference between having a written policy and actually living the policy. It starts from the top down and everyone in the organization is focused on it. Safety problems or deficiencies are corrected every time, often by chief or company officers. There must be immediate intervention on the fireground, where hazards are always lurking. Dynamic risk assessment must continue throughout all evolving incidents (Alder and Fratus, 2007).

Peer pressure should not be underestimated in the process of examining root causes of unsafe actions. Alder and Fratus also point to the fire service culture of
focusing on objectives at the task level, which precludes individuals and organizations from seeing a safety problem may actually be at the strategic level (2007).

Veteran fire tactics and strategy expert Vincent Dunn (2009) agrees that all firefighting presents some degree of danger, but states the fire service must take extra measures because some tactics are inherently more dangerous than others. If the first step is to identify risk, the fire service must analyze those risks which predominate. He offers the following risk-evaluation principles for basic structural firefighting tactics:

1. Initial tactics performed without charged hose lines in place are more hazardous than those with hose protection.
2. Tactics performed closer to the flames are more hazardous than those performed further away from the flames.
3. Tactics executed above the fire are more dangerous than those performed on the same floor level as the fire or the floor below the fire.
4. Tactics performed in enclosed spaces are more hazardous than those performed in unenclosed areas.
5. Tactics performed in a burning building are more dangerous than those performed outside the building, due to collapse risk.
6. Tactics performed during the early stages of a fire are more hazardous as the fire is still in active growth stage.
7. Tactics which are rarely performed present a greater risk than those done frequently, as the firefighter is more trained and experienced on the task.
8. A tactic for which little training is available is a higher risk than tactics for which there is greater knowledge and training.

9. A tactic which is known to have caused injury or death of a firefighter previously is more hazardous than those which have no reports of same.

10. Tactics performed by individual firefighters are greater risks than those completed by a team of at least two firefighters.

Dunn (2009) believes heightened recognition of tasks involving one of the aforementioned warrant extra risk/gain analysis on behalf of all personnel, including the IC, company officers and firefighters themselves.

With the relatively recent focus on improving risk/gain analysis in firefighting, NIOSH (2010) published *NIOSH Alert: Preventing Deaths and Injuries of Fire Fighters Using Risk Management Principles at Structure Fires*. This alert urges from firefighters up to incident commanders to follow 20 guidelines to individually or organizationally reduce risk in situations where there is little to gain. Safe, best practices are encouraged for all structural fire scenes. The burden for safety is placed on all department members, with the realization it must be most heartily embraced at the command level. It urges marking or signage systems for abandoned or unsafe buildings to alert firefighters so acceptable risk level can be reduced. Appropriate International Code Council and NFPA standards are cited as references. Four example cases are cited to illustrate the need for better risk/gain analysis. In those fires, five firefighters were killed as unnecessary risks were taken in offensive attacks at buildings known to be or suspected of being unoccupied. The alert booklets were mailed to every known U.S. fire department (NIOSH, 2010).
The International Association of Fire Chiefs (IAFC) has been actively involved in spreading the word on the subject of risk/gain analysis as it relates to structural firefighting. It regularly promotes its *Firefighter and Incident Commander Rules of Engagement for Firefighter Survival*. This is done in the form of flyers and posters, which can probably be found posted in thousands of fire stations throughout the nation. These rules speak to the most critical issues of fireground safety for both the firefighters and the incident commander (IAFC, n.d.).

Among the Rules of Engagement, is that no life risk should be taken for lives or property which cannot be saved; limited risk may be taken to protect savable property; and vigilant and measured risk only may be taken to protect and rescue savable lives.

Similarly, the National Fallen Firefighters Foundation (NFFF) has for some years published and promoted its list of the *16 Firefighter Life Safety Initiatives*. These too can be found posted in many U.S. fire stations. The first four of these initiatives focus on the need to bring cultural change and accountability for health and safety to the fire service and the need to stop unsafe practices and integrate proper risk management at all incident scenes (NFFF, n.d.).

Progressive fire departments throughout the nation have responded to the call to bring better risk/gain decision making to their agencies and incident scenes. Many have adopted safety and risk/benefit standard operating procedures. Phoenix (AZ) area fire departments have adopted regional policies for many emergency operations. Its policy for Safety and Risk Management Profiles requires risk/gain decision making similar to that found in the Rules of Engagement. It goes into specific detail to serve
as a guide for when residential fire operations might have the greatest probability of success and therefore allow “very cautious, calculated rescue and fire control” (Phoenix, 2001).

In summary, the review of literature supports the need for further study into what drives the decision making processes of fire department members. Zuckerman (1994, 2007) and Farley (Leo and Galvin-Madison, 1985) identify sensation seeking traits which could cause people to take on unacceptable risk. Are these individuals disproportionately represented on fire department rosters? Gomez found that not to be the case (Gomez, 2008).

Firefighters in Great Britain have a substantially lower fatality rate than those in the U.S. Indications are that workplace safety efforts and risk/gain analysis have paid off in England (Klein, 2001). Much of the literary review speaks to the fire service culture in the U.S. There seems a realization that many long-held fire service beliefs must change and a safety culture must be fully embraced. Although Dunn’s simple reminders of high risk tasks sound almost elementary, they seem routinely forgotten by some firefighters and ICs (Dunn, 2009). There is recognition of the frequent lack of fire service safe practice and risk/gain analysis on a national level and numerous organizations are out to address those concerns.

Procedures

The research questions seek to determine how firefighters are influenced in decisions they make at emergency scenes and if they may be sensation or thrill seeking individuals. In the survey, demographic questions were first asked, including age, sex, type of department, years of experience, rank and how often the
respondent is in command at emergency scenes. They were asked their personal opinion and what they believe the public and fire service perceptions are of how much risk they must take to save life and property. They were also asked if risk is one of the reasons they were drawn to the fire service.

The introduction to the survey states it is to be taken by regular, active members of U.S. fire departments whose job duties include fire suppression. It also states the survey is being conducted as part of the research for a National Fire Academy class project and that results will remain confidential.

Six total questions were asked which were derived from Zuckerman’s Sensation Seeking Survey, fifth version (SSS-V). Four questions were drawn to create the Brief Sensation Seeking Survey (BSSS-4) and two questions were used for the Sensation Seeking two-question model (SS2). Both of these question sets were found to be highly representative of the results of those taking the full, 40 question SSS-V by Stephenson, Hoyle, Palmgreen and Slater (2003). These six questions in the survey are used to determine whether or not the respondent may have Type T tendencies.

Two questions ask whether the respondent’s department has offered training on risk/gain analysis and whether it has a policy on risk/gain analysis decision making.

In all there are 18 questions, the first six of which are demographic and must be answered to proceed to the next section (Appendix A). The survey was set up on the internet service, Survey Monkey, and took a test sample of firefighters approximately 3 minutes to complete. It opened September 28, 2011 at 5 p.m. Central time and closed at 5 p.m. Central time October 13, 2011. The survey was promoted by the author to St. Louis (MO) area fire chiefs and was posted on the
following Linked In group sites: Firefighter Nation Fire and EMS Network; International Association of Fire Chiefs; National Fire Academy Alumni and Student and National Fire Academy Alumni Association. As early results indicated the polling was predominated by career firefighters, the author distributed the survey to a number of volunteer fire departments whose leaders had previously attended Executive Fire Officer classes. The survey was also posted on the Firehouse.com website, in the general firefighting forum, with a brief explanation and link. A total of 512 people took the survey; 482 (94.1%) answered all questions.

Analysis of the demographics of respondents may point to some limitations in the survey as being representative of the U.S. fire service as a whole. The age distribution of respondents was very similar to that published by the U.S. Fire Administration (USFA, 2011). The number of female respondents, 5.1%, is similar to the 3.7% reported by the International Association of Women in Fire and Emergency Services (2008). There were only 26 female respondents to the survey. This low number may not be considered a large enough sample size to be statistically valid.

There were disproportionately more responses from career firefighters as opposed to those from volunteer, paid on call and part time firefighters. The USFA (2011) reports volunteers comprise 70% of all US firefighters and career personnel to be 30%. Respondents to the survey, however, were 56.1% volunteer, paid on call or part time and 43.9% career. This limitation would be that career personnel are slightly over-represented in the survey.

No known sources were found for three of the demographic questions. They were: How many total years of experience do you have in the fire service? What is
your current assigned rank level in your fire department? and After adequate resources reach the scene, how often do you serve as overall incident commander?

There are indications the number of respondents at the highest command experience levels and chief officer positions may also be over-represented. This may be due to the methods of survey distribution which were previously noted. Survey respondent rank assignment choices were: Firefighter or probationary firefighter; company officer (supervises one company or work group); and chief officer (supervises multiple companies or work groups).

Years of experience were broken into five groups. Those within the two lowest groups (0-10 years) made up 25.8% of respondents. Those with 11-20 years of experience made up 25.6% of respondents. Those with 21 years or more experience made up 48.6% respondents.

Although no national comparative source was found for experience, rank level and command experience, we can anecdotally assume that chief officers are over represented as they make up 36.1% of respondents. Also anecdotally, the number of company officer respondents (26.2%) seems nearly appropriate. This leaves a seemingly low percentage of firefighter respondents at 37.7%.

Similarly, we can assume those who may serve in the role of incident commander are over represented as they make up 53.7% of respondents. These respondents said they sometimes, frequently or always serve as incident commander upon scene arrival. A total of 46.3% of respondents stated they never or infrequently served as incident commander.
Another limitation to the survey was the distribution method, which used an internet based survey service. Those who are less prone to use the internet or less prone to take internet surveys would obviously be less likely to be exposed to or take the survey. In summary of limitations, it appears chief officers and career firefighters are over represented among the survey respondents. The impact this over-representation has on the survey results is unknown, but does not necessarily detract from its validity.

Results

Research Question A seeks to determine the impact age, experience and sex have on risk taking behaviors and attitudes of firefighters. Using cross tabulations, the 10 attitudinal and behavioral questions will be examined for significant differences among these variables (Appendix B).

The survey responses show some, perhaps predictable but significant, variation related to age. For example, Survey Question 7 asks what they believe the level of risk the public and the fire service expects the respondent to take to save property. Most respondents chose the neutral response of sometimes take risk, while the majority (41.3%) in the 55 year or greater age category chose take minimal risk. It is worth noting, however, that an equal number of respondents in the 46-55 age category chose the neutral response and the more aggressive response of regularly take risk (both at 31.8%).

Survey question 10 asked if the respondent was drawn to the fire service by the personal risk and excitement associated with the profession. All age categories except
the youngest denied any such association. Those 25 or less agreed (58.8%) with the assertion in the true/false question.

In some of the questions which are part of the BSSS-4, a clear incremental trend toward less risky behavior is seen in older respondents. In survey question 12, for example, respondents are asked if they agree with the statement, I like to do frightening things. The majority choice of those in the 25 and younger age group was somewhat agree (44.9%), while just 20% of those in the 55 and older age group somewhat agreed. Conversely, 27.5% of those in the 55 and older group disagreed with the statement, while just 4.1% of those in the 25 and younger age group disagreed.

Similar trending was seen in Survey Question 13, I like new and exciting experiences, even if I have to break the rules. The majority answer for those in the two youngest age groups was somewhat agree, while for the three oldest age groups the majority answer was disagree.

Survey Question 15 asked how often respondents did dangerous things for fun. The four youngest age groups gave the majority answer of occasionally. The majority answer for the oldest age group, however, was very rarely.

Years of experience in the fire service did not appear to have as profound an impact as age in the risk acceptance questions. The majority of responses for each years of experience group generally appeared to be more closely along the neutral response line, without the pronounced trending to reduced risk taking as years of experience increase. A deviation of note was seen with Survey Question 7, asking what they believe is the level of risk the public and the fire service expect the
respondent to take to save property. Most respondents chose along the neutral response line, while firefighters with less than 5 years experience most frequently chose the more conservative answer of taking minimal risk to save property.

Responses to Survey Question 10 show many of those with less experience acknowledging they were drawn to the fire service by the personal risk and associated excitement. Nearly half of respondents in the 5 years or less and 6-10 year categories acknowledge this belief, with 48.4% and 51.5% respectively. Denial is much higher as experience level increases.

Again a sharp difference was seen in responses to Survey Question 12, I like to do frightening things. Most experience groups were clustered along the neutral lines, but respondents with 21 years or more experience disagreed with the statement 26.8% of the time, for the majority opinion for that group.

A similar response was seen from the oldest age group to the similar question from BSSS-4, I like new and exciting experiences even if I have to break the rules, Survey Question 13. In the oldest age group, the majority of respondents (32.2%) disagreed with the statement.

Survey Question 15 asked how often respondents did dangerous things for fun. The three lesser experience groups and the most experienced group gave the majority answer of occasionally. The majority answer for the 16-20 year experience group, however, was rarely (35.5%).

As noted in limitations, any analysis of risk acceptance questions as related to sex of respondent must be done with great caution due the reduced number of female
respondents, 26 out of 512. Great similarity was generally found, however, between the responses of the female and male firefighters.

Due to the low number of female respondents, data was not closely compared to male respondents. It is interesting to note the females taking the survey tended to exhibit more risk taking traits in the questions based on BSSS-4, although results were mixed on questions based on SS2 and fire service risk acceptance perceptions in general.

In summary of data for Research Question A, attitudes and behaviors toward taking risk seem to clearly trend to taking less risk as the firefighter grows older. This trend is certainly much less pronounced when analyzed compared to years of fire service experience, however. Although results appeared highly similar to males, little attempt was made to compare the risk perceptions and traits of females due to the low number of female respondents.

Research Question B asks for similar comparison of risk perception and acceptance for those serving in ranking positions in the department and those who assume incident command regularly. Upper ranks make decisions which potentially impact a higher number of fire department members (Appendix B).

For categorization, company officers are defined as those supervising a single company or work group and chief officers are defined as those supervising multiple companies or work groups. The other rank option for the survey was firefighter or probationary firefighter. Responses between the three rank choices were highly similar.
Survey Question 7 asks about fire service and public expectation and reveals the majority of firefighters believe risk should regularly be taken to prevent loss of property, whereby the majority of both groups of officers chose the more conservative sometimes take risk.

In other risk questions, the majority answers chosen by the three rank levels were highly comparable. In questions related to taking risk for fire fighting activities, however, some variation was noted as firefighters and company officers chose slightly higher risk responses.

Survey Question 12 states the respondent likes to do dangerous things and asks for level of agreement with the statement. While the majority of firefighters and company officers somewhat agreed, the majority of chief officers disagreed.

Survey Questions 15 and 16 from SS2 are similar, inquiring on attitude toward dangerous activities. Both officer groups had the same majority answer as the firefighters, although a lesser percentage of chief officers choose that answer.

All ranks disagreed with the premise they joined the fire service because of the risk and excitement, but as with earlier responses, the greatest percent of negative answers (70%) came from chief officers.

The same questions were analyzed from the perspective of those who stated they served as ICs frequently or always. Other possible choices were never, infrequently and sometimes and were the predominant selections for firefighters and company officers.

Those serving always or frequently as ICs tended, like the chief officers and older respondents, to be more conservative in their answers and take lower risk than
those who serve less frequently as IC. For example, answers to Survey Questions 7 and 8 seek to learn level of risk to be taken to preserve property and life, respectively. With regard to saving property, the majority answer of sometimes take risk is given by those who frequently and sometimes serve as IC. Those who always serve as IC in majority chose the more conservative take minimal risk answer. Interestingly, those who never or infrequently serve as IC selected regularly take risk as the majority answer.

Similar variation was seen in the amount of risk to be assumed in saving lives. Regularly was the majority answer (60.9%) for those always serving as ICs. All other groups chose the less conservative always take risk.

Survey Questions 11-14 from BSSS-4 found highly similar majority answers by those serving frequently or always as IC. Survey Question 14, however, saw variation by those who always serve as IC. The majority (27.3%) of that group disagreed with the statement, I prefer friends who are exciting and unpredictable. The majority of those who frequently serve as ICs held a neutral position, neither agreeing or disagreeing (32.5%).

More conservative answers were also seen for the SS2 items, Survey Questions 15 and 16, by those who always serve as ICs. These question responses correspond with previously noted trends.

Frequent and “always” ICs disagreed with the premise they joined the fire service because of the risk and excitement. As with earlier responses, the greatest percent of negative answers (82.6%) came from the most senior level, those who always serve as ICs.
In summary of data for Research Question B, most experienced firefighters and chief officers tended to be more conservative in responses and less likely to take excessive risk. Those serving as company officers appear prone to take less risk than chief officers, but would not appear to accept as much risk as those serving in the firefighter rank.

Research Question C seeks to learn variations in level of acceptable risk by volunteer, part time and paid on call firefighters as opposed to career firefighters. For this comparison, the data for part time and paid on call firefighters will be combined with data of volunteer firefighters. (This combination will be referred to as volunteer/part paid.) In all categories, there were 234 volunteer respondents, 53 paid on call or part time respondents and 225 career respondents (Appendix B).

Great similarity was found in the responses between the volunteer/part paid and career firefighters. With regard to risk for saving property, for example, the majority answer for both groups was sometimes take risk, which was chosen by 34.4% of the volunteer/part paid and 33.7% of the career firefighters. Survey Question 8 asks about acceptable level of risk to save life, and again both groups chose always take risk as the majority answer, with 44.1% of the volunteer/part paid and 49.8% of the career firefighters. Similarity was also found for the amount of risk they believed the fire service should take to accomplish its objectives, with majority answers for both groups as sometimes take risk.

Both groups deny they were drawn to the fire service by risk and excitement, as suggested in Survey Question 10. Of the volunteer/part paid firefighters, 64.5% deny the assertion, as do 65% of career firefighters.
Results were very similar for the four survey questions which make up the BSSS-4. At times there were different majority answers selected by the groups, but all majority responses tended to have the same relationship to the neutral answer. This is clearly seen in the responses to Survey Question 13, I like new and exciting experiences, even if I have to break the rules. Volunteer/part paid firefighters disagreed with the assertion (28.2%) at a slightly higher rate than career firefighters (24.3%). Yet a significant number of both groups, 17.3% of the volunteer/part paid and 27.6% of the career firefighters somewhat agreed with the statement.

Survey Questions 15 and 16 sought responses for the SS2 questions and again results were highly similar. Asked how often they did dangerous things for fun, both groups answered occasionally most often, with 28.1% of volunteer/part paid and 36.8% of career firefighters. Asked how often they did exciting things, even if they are dangerous, both groups chose occasionally as the majority answer, with 36% of volunteers and 44.1% of career firefighters.

In summary of the response data for Research Question C, it was found to be highly similar for both volunteer/part paid and career firefighters. Slight, but apparently insignificant variations were at times found in the majority answer chosen by the groups of respondents.

Research Question D sought to determine if the respondents’ fire department had policies which require risk/gain analysis at emergency scenes, was there a change in firefighter attitude toward risk. This took the form of two questions in the survey. Respondents were asked if their department had risk/gain analysis policies in place and also if it had provided training on risk/gain analysis. Responses to these true-false
questions were very similar. For analysis purposes, only the more definitive question about having a risk/gain analysis policy in place was utilized (Appendix B).

Data for impact on firefighter attitude toward risk taking was gained from three survey questions. Survey Question 7 asked respondents what they believed the public and the fire service perceptions were toward level of risk to be taken in saving property. Respondents from departments which have risk/gain policies in place were slightly more conservative, with the majority answer of 34.8% believing risk should sometimes be taken to save property. The majority opinion (36.3%) of those from departments without such policies in place believed they should regularly take risk to save property.

Survey Question 8 asked the same question about public and fire service perceptions of risk taking for saving life. Respondents from departments with and without risk/gain policies in place both chose always take risk as the majority answer (50.3% and 49.6%, respectively).

Survey Question 9 also drew very similar responses from the firefighters from departments with and without risk/gain policies in place. The majority opinion of both groups of respondents was that personnel risk should sometimes be taken to accomplish the objectives of the fire service. Those from departments with risk/gain policies chose sometimes 65.7% of the time while those without such policies chose it 63.5% of the time.

In summary of results for Research Question D, there was little difference in firefighter attitude or perception toward risk acceptance seen between members of departments which had risk/gain policies in place and those which did not. There was
slightly increased acceptance of taking risk to save property shown by those from departments which did not have risk/gain policies in place, however.

Research Question E sought to determine how behaviors and attitudes of firefighters are affected if they have with Type T (thrill or sensation seeking) personality traits. Six survey questions were asked which make up the BSSS-4 and SS2 personality trait tests. Those who possess at least some Type T traits would have answered some or most of those questions with a positive response, as opposed to a neutral or negative response. To determine the impact those traits have on firefighter attitude and behaviors, those who answered positively were examined in comparison to the other respondents by cross tabulation (Appendix B).

Survey Questions 7, 8 and 9 were analyzed to determine how Type T traits impacted responses from surveyed firefighters. These questions sought the respondent’s perception of what the public and fire service expected in risk taking by firefighters to save property and life and to determine what the firefighters own perceptions were with regard to occupational risk taking.

Survey Question 7 asked what the respondent believed public and fire service perceptions were for risk taking to prevent loss of property. Answers were similar to those who gave negative or neutral responses to the Type T questions, with a few exceptions. Those who had positive responses to Survey Question 12 were more likely to sometimes take risk than other respondents by a margin of 43% to 30%, for example.

Survey Question 8 asks about public and fire service perceptions for risk taking to save life. The majority answer given by all groups was that risk should always be
taken. But responses to all six risk trait questions revealed risk takers held more aggressive attitudes toward accepting that risk. For example, 58.4% those who gave a positive trait response to Survey Question 15 indicated that risk should always be taken, as opposed to 44.8% percent of respondents who were not risk takers.

Survey Question 9 asks to the respondent’s personal beliefs with regard to amount of risk to be taken to accomplish the objectives of the fire service. The majority answer for all survey respondent groups was to take risk sometimes and this pattern continued when the results of those with Type T traits only were analyzed. However, those with T traits again showed a more aggressive attitude toward taking occupational risk. Those who answered positively to three of the Type T trait questions (Survey Questions 11, 15 and 16) were much more likely to take risk than those who those who answered with a more conservative response. For Survey Question 11, the disparity was 83.7% to 71.2%. For Survey Question 15, the disparity was 89.8% to 72.9%. For Survey Question 16, the disparity was 87.7% to 72.5%.

In summary for Research Question E, results were similar to those found among all respondents, however those with Type T personality traits clearly trended to be slightly more aggressive in risk taking to accomplish the objectives of the fire service.

Discussion

This Applied Research Project largely compliments, but takes a different direction, than the work of Gomez (2008) in his dissertation for the University of Wisconsin-Madison, *Antecedents of Risk Based Decision Making in the Fire Service*. This research project instead focused on firefighter demographics and their relationship to greater risk acceptance and what impact firefighter Type T personality
traits might have on risk acceptance. Results of this research contradicted Gomez’ findings that firefighters accepted higher levels of risk as they grew older. NFPA (2010) research has called the fire service’s attention to the fact that firefighter fatalities are headed in the wrong direction, given the declining U.S. structural fire rate. That upward trend brought the need to determine what factors may cause firefighters to take on unacceptable levels of risk.

In the minds of some in the fire service, we are still in the age of FDNY Chief Croker, who in 1908 stated: “Firefighters do not regard themselves as heroes because they do what the business requires.” The crux of the issue, more than 100 years later, is “what the business requires.” Are very high levels of risk still unnecessarily accepted as part of the job by too many in this profession? One writer stated the term calculated risk should not be considered in the fire service, but that it was “calculated sacrifice which defines greatness” (Manning, 2009).

For too long, too many in the fire service have sought that “greatness.” Sometimes with fatal consequences. How about the less-spectacular approach that everyone goes home after their shift and burned, abandoned buildings are properly loaded into a dump truck the following day? No one denies there is risk associated with structural firefighting. Much of that cannot be changed. What can be changed is the level of risk taken when there is little to gain.

Crawford (2007) calls out that dangerous line of thinking in what he describes as the Firefighter Duty to Die Syndrome, or FDTDS. It is the belief that a fatal end is always justified as firefighters are expected to die while performing their jobs. Crawford is one of the leaders who want to fire service to take a step back before
making high risk decisions, to see if the potential gains are really worth it. Much of the time, they are not. Brunacini is considered one of the earliest to bring this concern to the consciousness of the U.S. fire service. He first exposed the fire service to the concept of risk a little to save a little, but risk a lot to save a lot. He correctly notes American firefighters have suffered the worst “occupational discrimination” as it relates to health and safety, of any profession (Wolf, 1998).

The fire service need only look within to see the primary causes of this line of thinking. Neither city managers nor mayors nor citizens groups wait at emergency scenes and order firefighters to take unreasonable risks. Those decisions, oftentimes non-decisions, are made by those from within fire departments. Those in command positions and individual firefighters make the calls which are no doubt well intentioned, but none the less fatal. High risk fire ground tasks listed by Dunn (2009) should raise red flags for all firefighters, but are routinely assigned by many in the U.S. fire service without a second thought.

For too long it seems adrenaline, testosterone and visions of grandeur have ruled much on-scene decision making in the U.S. fire service. Why consider the consequences first if you are in a hurry to be a hero?

In examining NIOSH firefighter fatality reports, it was noted that 31 of the reported 46 fireground traumatic deaths from 2007 to 2010 may have been avoided if better risk/gain decisions had been made. In reading the reports it seemed, tragically, the concept of risk/gain never entered into the minds of many of those in command or taking high risk actions when there was very little to be gained.
What will it take to get the full attention of the U.S. fire service? One chief notes it may take criminal charges, as were filed in early 2011 against three British fire incident commanders after four firefighters were killed in 2007.

Looking inside the fire service, those with Type T personality traits seemed likely suspects. People with these traits assume risk just for the thrill and sensation experience. Zuckerman (2007) said they tend to underestimate risks or think potential benefits will outweigh the risks. Sounds familiar, doesn’t it?

Farley calls certain Type T personalities “doubly dangerous—-to themselves and others” (Leo and Galvin-Madison, 1985). Nothing could be more truthful if you consider those with thrill seeking traits could serve as company officers or incident commanders. But the message also applies to an overzealous firefighter on a hose line or roof, who could endanger himself and everyone with him.

Not all risk taking is bad, however. Researchers (Forrester, et al, 1996) noted that thrill seekers are often attracted to police and fire department jobs. But any assumption of risk must be well managed and controlled to provide for the safest possible workplace. Significant risk should only be taken when there is the possibility of significant gain.

Gomez (2008) correctly suggests that increasing self awareness of thrill seeking traits may be part of the solution for the fire service. Alder and Fratus (2007) believe, also correctly, that cultural change must take place throughout the fire service before the danger level, and fatality rate, will drop in the U.S.

It is interesting to note the comments of two authors (Angione, 2001), (Manning, 1999) who believed the U.S. fire service was on the road to ruin for
enacting safety regulations such as two-in, two-out. They lamented firefighters would no longer get the chance to be heroes. The complaints are remarkably similar to those voiced in 1974 in Great Britain, before that nation adopted the Health and Safety at Work (HASAW) Act. It required employers to only do the job when it could be done safely, unless the cost was grossly disproportionate. HASAW’s critics at the time thought the fire service would be “emasculated” by the legislation. That has not happened. What has happened is the firefighter death rate per structural fire became approximately one third lower in the U.K. as compared to the U.S.

There is a strong movement afoot to change this culture in the U.S. fire service. From the IAFC’s *Rules of Engagement* (n.d.), the National Fallen Firefighters Foundation (n.d.) *16 Firefighter Life Safety Initiatives* to NIOSH’s (2010) risk management bulletins. But changing this dangerous mindset and culture will take perseverance, and probably many years.

Survey results did not reveal any “smoking gun” issues which can be immediately addressed as root causes for the high amount of unacceptable risk taking in the U.S. fire service. Variations in responses as shown by cross tabulation of results produced what might be considered largely predictable findings. Perhaps more startling was the homogeneity in responses found among many of the different levels of experience, age, rank and career or volunteer/part paid status. Most of those taking the survey were of the same mindset in their responses (Appendix B).

Age, perhaps predictably, appeared to have the greatest correlation with less willingness to assume a higher risk, but years of fire service experience did not appear to be as strongly associated.
Those who were most experienced in serving as ICs or who were chief officers showed the greatest level of caution among those surveyed. Company officers took on a slightly higher level of risk, while firefighters most aggressively accepted risk. The results indicate those who have most frequently shouldered the heavy weight of command understand the high potential price which goes with high risk.

The similarity in responses between career and volunteer/part paid firefighters was remarkable in and of itself. There were only negligible differences in the responses between the two groups.

Firefighters in departments which did not have risk/gain policies in place did show willingness to take slightly more risk to save property than those from departments with such policies. It would appear policies and training on the risk/gain benefit concept does cause firefighters to be more cautious when only property is at risk.

Those who answered positively to the six Type T personality trait questions clearly appeared more willing to accept risk while performing fire department functions related to saving property and life. There would seem to be benefit to making those with thrill seeking traits aware of the risks of such behavior, to both themselves and their coworkers.

Implications of this research for the Collinsville Fire Department are similar to those for the U.S. fire service as a whole, where there must be increased training, discussion and awareness on the issue of appropriate risk/gain assessment prior to actions being taken at fire and emergency scenes. The Collinsville Fire Department has a risk/gain assessment policy in place and has had training on the topic.
Recommendations

1. All U.S. fire departments should be strongly encouraged to adopt risk/gain analysis policies and provide appropriate training on the subject. Efforts to promote this concern should be continued and/or increased by the U.S. Fire Administration (USFA), IAFC, NFPA and NFFF.

2. There must be heightened awareness and education on Type T personality trait individuals and the risks they pose to themselves and their fire service coworkers. Awareness of problematic traits is often the first step to lessening their potential negative results. This awareness education and training also should be facilitated by the USFA, IAFC, NFPA and NFFF.

3. Making the cultural change to work safer and smarter must be a top priority for every U.S. fire department. To encourage these efforts, Federal fire department grants should be denied to those agencies which cannot document the existence of certain safety-related policies and verify accompanying training of all personnel has occurred. This would require policy change at the Department of Homeland Security and the Federal Emergency Management Agency.

4. Future readers and researchers on this topic may choose to focus more strongly on cultural influences in the fire service which drive many high risk decisions. These same influences also sometimes inappropriately reward unsafe actions, making the high risk job of firefighting even more dangerous.


Fire Chief (2011, March). 3 U.K. fire officers charged with manslaughter in LODDs, 55, 12.


Appendix A, Firefighter Risk Survey

**Firefighter Risk Survey**

This survey is intended to be taken by regular, active members of organized Fire Departments in the United States, whose job duties include fire suppression. This survey is part of the research being conducted for a National Fire Academy class project. Individual results will remain confidential.

This survey contains 18 multiple-choice questions and takes less than 3 minutes to complete. Please select the most appropriate answer.

**1. Age:**
- 35 years or younger
- 36 - 45 years
- 46 - 55 years
- More than 55 years

**2. Sex:**
- Male
- Female

**3. What is your work relationship with your Fire Department?**
- Volunteer
- Paid on Call / Part Time
- Career

**4. How many TOTAL years of experience do you have in the fire service? Include experience with any previous departments.**
- 5 years or less
- 6 - 10 years
- 11 - 15 years
- 16 - 20 years
- 21 years or more

**5. What is your current assigned rank level in your Fire Department?**
- Firefighter or Probationary Firefighter
- Company Officer (supervises one company or work group)
- Chief Officer (supervises multiple companies or work groups)

**6. After adequate resources reach the scene, how often do you serve as overall Incident Commander?**
- Never
- Infrequently
- Sometimes
- Frequently
- Always
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 7. With regard to potentially saving PROPERTY, I believe the fire service and the public expect that I ________. | - Take no risk to save property  
- Take minimal risk to save property  
- Sometimes take risk to save property  
- Regularly take risk to save property  
- Always take risk to save property |
| 8. With regard to saving LIVES, I believe the fire service and the public expect that I ________. | - Take no risk to save life  
- Take minimal risk to save life  
- Sometimes take risk to save life  
- Regularly take risk to save life  
- Always take risk to save life |
| 9. To accomplish the objectives of the fire service, I believe risk to personnel should ________. | - Never be taken  
- Seldom be taken  
- Sometimes be taken  
- Often be taken  
- Always be taken |
| 10. Increased level of personal risk and excitement associated with that risk is one of the reasons I am drawn to the fire service. | - True  
- False |
### Firefighter Risk Survey

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
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<tbody>
<tr>
<td>11. I would like to explore strange places.</td>
<td>Strongly disagree, Disagree, Somewhat disagree, Neither agree or disagree, Somewhat agree, Agree, Strongly agree</td>
</tr>
<tr>
<td>12. I like to do frightening things.</td>
<td>Strongly disagree, Disagree, Somewhat disagree, Neither agree or disagree, Somewhat agree, Agree, Strongly agree</td>
</tr>
<tr>
<td>13. I like new and exciting experiences, even if I have to break the rules.</td>
<td>Strongly disagree, Disagree, Somewhat disagree, Neither agree or disagree, Somewhat agree, Agree, Strongly agree</td>
</tr>
</tbody>
</table>
### Firefighter Risk Survey

**14. I prefer friends who are exciting and unpredictable.**

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Somewhat disagree
- [ ] Neither agree or disagree
- [ ] Somewhat agree
- [ ] Agree
- [ ] Strongly agree
15. How often do you do dangerous things for fun?
   - Never
   - Very rarely
   - Rarely
   - Neutral
   - Occasionally
   - Frequently
   - Very frequently

16. How often do you do exciting things, even if they are dangerous?
   - Never
   - Very rarely
   - Rarely
   - Neutral
   - Occasionally
   - Frequently
   - Very frequently
### Firefighter Risk Survey

17. My Fire Department has policies in place which require risk/benefit analysis of emergency scene actions?

- [ ] True
- [ ] False

18. My Fire Department has provided training on the subject of risk/benefit analysis of emergency scene actions.

- [ ] True
- [ ] False
### Table 1

1. **Age:**

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<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
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<tbody>
<tr>
<td>25 years or younger</td>
<td>10.2%</td>
<td>52</td>
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<tr>
<td>26 - 35 years</td>
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<td>36 - 45 years</td>
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<tr>
<td>46 - 55 years</td>
<td>26.8%</td>
<td>137</td>
</tr>
<tr>
<td>More than 55 years</td>
<td>16.6%</td>
<td>85</td>
</tr>
</tbody>
</table>

*answered question 512
skipped question 0*

### Table 2

2. **Sex:**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>94.9%</td>
<td>486</td>
</tr>
<tr>
<td>Female</td>
<td>5.1%</td>
<td>26</td>
</tr>
</tbody>
</table>

*answered question 512
skipped question 0*
### Table 3

3. What is your work relationship with your Fire Department?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteer</td>
<td>45.7%</td>
<td>234</td>
</tr>
<tr>
<td>Paid on Call / Part Time</td>
<td>10.4%</td>
<td>53</td>
</tr>
<tr>
<td>Career</td>
<td>43.9%</td>
<td>225</td>
</tr>
</tbody>
</table>

answered question 512
skipped question 0

### Table 4

4. How many TOTAL years of experience do you have in the fire service? Include experience with any previous departments.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years or less</td>
<td>12.7%</td>
<td>65</td>
</tr>
<tr>
<td>6 - 10 years</td>
<td>13.1%</td>
<td>67</td>
</tr>
<tr>
<td>11 - 15 years</td>
<td>12.7%</td>
<td>65</td>
</tr>
<tr>
<td>16 - 20 years</td>
<td>12.9%</td>
<td>66</td>
</tr>
<tr>
<td>21 years or more</td>
<td>48.6%</td>
<td>249</td>
</tr>
</tbody>
</table>

answered question 512
skipped question 0
### Table 5

5. What is your current assigned rank level in your Fire Department?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firefighter or Probationary Firefighter</td>
<td>37.7%</td>
<td>193</td>
</tr>
<tr>
<td>Company Officer (supervises one company or work group)</td>
<td>26.2%</td>
<td>134</td>
</tr>
<tr>
<td>Chief Officer (supervises multiple companies or work groups)</td>
<td>36.1%</td>
<td>185</td>
</tr>
</tbody>
</table>

answered question: 512  
skipped question: 0

### Table 6

6. After adequate resources reach the scene, how often do you serve as overall Incident Commander?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>24.2%</td>
<td>124</td>
</tr>
<tr>
<td>Infrequently</td>
<td>22.1%</td>
<td>113</td>
</tr>
<tr>
<td>Sometimes</td>
<td>24.8%</td>
<td>127</td>
</tr>
<tr>
<td>Frequently</td>
<td>24.0%</td>
<td>123</td>
</tr>
<tr>
<td>Always</td>
<td>4.9%</td>
<td>25</td>
</tr>
</tbody>
</table>

answered question: 512  
skipped question: 0
## Appendix B, Survey Responses

### Table 7

7. With regard to potentially saving PROPERTY, I believe the fire service and the public expect that I __________.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take no risk to save property</td>
<td>2.8%</td>
<td>14</td>
</tr>
<tr>
<td>Take minimal risk to save property</td>
<td>29.2%</td>
<td>145</td>
</tr>
<tr>
<td>Sometimes take risk to save property</td>
<td>33.7%</td>
<td>167</td>
</tr>
<tr>
<td>Regularly take risk to save property</td>
<td>30.2%</td>
<td>150</td>
</tr>
<tr>
<td>Always take risk to save property</td>
<td>4.0%</td>
<td>20</td>
</tr>
</tbody>
</table>

answered question 496
skipped question 16

### Table 8

8. With regard to saving LIVES, I believe the fire service and the public expect that I __________.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take no risk to save life</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Take minimal risk to save life</td>
<td>2.4%</td>
<td>12</td>
</tr>
<tr>
<td>Sometimes take risk to save life</td>
<td>12.7%</td>
<td>63</td>
</tr>
<tr>
<td>Regularly take risk to save life</td>
<td>35.1%</td>
<td>174</td>
</tr>
<tr>
<td>Always take risk to save life</td>
<td>49.8%</td>
<td>247</td>
</tr>
</tbody>
</table>

answered question 496
skipped question 16
Appendix B, Survey Responses

Table 9

9. To accomplish the objectives of the fire service, I believe risk to personnel should __________.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never be taken</td>
<td>4.2%</td>
<td>21</td>
</tr>
<tr>
<td>Seldom be taken</td>
<td>16.8%</td>
<td>84</td>
</tr>
<tr>
<td>Sometimes be taken</td>
<td>65.1%</td>
<td>325</td>
</tr>
<tr>
<td>Often be taken</td>
<td>11.6%</td>
<td>58</td>
</tr>
<tr>
<td>Always be taken</td>
<td>2.2%</td>
<td>11</td>
</tr>
</tbody>
</table>

answered question 499
skipped question 13

Table 10

10. Increased level of personal risk and excitement associated with that risk is one of the reasons I am drawn to the fire service.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>35.3%</td>
<td>176</td>
</tr>
<tr>
<td>False</td>
<td>64.7%</td>
<td>323</td>
</tr>
</tbody>
</table>

answered question 499
skipped question 13
## Table 11

11. I would like to explore strange places.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>2.2%</td>
<td>11</td>
</tr>
<tr>
<td>Disagree</td>
<td>8.4%</td>
<td>41</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>5.5%</td>
<td>27</td>
</tr>
<tr>
<td>Neither agree or disagree</td>
<td>21.4%</td>
<td>105</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>33.1%</td>
<td>162</td>
</tr>
<tr>
<td>Agree</td>
<td>21.0%</td>
<td>103</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>8.4%</td>
<td>41</td>
</tr>
</tbody>
</table>

answered question 490  
skipped question 22

## Table 12

12. I like to do frightening things.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>5.1%</td>
<td>25</td>
</tr>
<tr>
<td>Disagree</td>
<td>19.8%</td>
<td>97</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>12.9%</td>
<td>63</td>
</tr>
<tr>
<td>Neither agree or disagree</td>
<td>23.3%</td>
<td>114</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>24.5%</td>
<td>120</td>
</tr>
<tr>
<td>Agree</td>
<td>9.6%</td>
<td>47</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>4.9%</td>
<td>24</td>
</tr>
</tbody>
</table>

answered question 490  
skipped question 22
### Table 13

13. I like new and exciting experiences, even if I have to break the rules.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>12.4%</td>
<td>61</td>
</tr>
<tr>
<td>Disagree</td>
<td>26.5%</td>
<td>130</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>14.9%</td>
<td>73</td>
</tr>
<tr>
<td>Neither agree or disagree</td>
<td>16.7%</td>
<td>82</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>21.0%</td>
<td>103</td>
</tr>
<tr>
<td>Agree</td>
<td>6.3%</td>
<td>31</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>2.2%</td>
<td>11</td>
</tr>
</tbody>
</table>

answered question **491**  
skipped question **21**

### Table 14

14. I prefer friends who are exciting and unpredictable.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>5.3%</td>
<td>26</td>
</tr>
<tr>
<td>Disagree</td>
<td>20.2%</td>
<td>99</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>14.9%</td>
<td>73</td>
</tr>
<tr>
<td>Neither agree or disagree</td>
<td>28.8%</td>
<td>141</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>21.9%</td>
<td>107</td>
</tr>
<tr>
<td>Agree</td>
<td>7.4%</td>
<td>36</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>1.4%</td>
<td>7</td>
</tr>
</tbody>
</table>

answered question **489**  
skipped question **23**
Appendix B, Survey Responses

### Table 15

15. How often do you do dangerous things for fun?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>10.3%</td>
<td>50</td>
</tr>
<tr>
<td>Very rarely</td>
<td>17.3%</td>
<td>84</td>
</tr>
<tr>
<td>Rarely</td>
<td>24.9%</td>
<td>121</td>
</tr>
<tr>
<td>Neutral</td>
<td>11.3%</td>
<td>55</td>
</tr>
<tr>
<td>Occasionally</td>
<td>31.9%</td>
<td>155</td>
</tr>
<tr>
<td>Frequently</td>
<td>4.1%</td>
<td>20</td>
</tr>
<tr>
<td>Very frequently</td>
<td>0.2%</td>
<td>1</td>
</tr>
</tbody>
</table>

answered question    486  
skipped question       26

### Table 16

16. How often do you do exciting things, even if they are dangerous?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>4.6%</td>
<td>22</td>
</tr>
<tr>
<td>Very rarely</td>
<td>16.8%</td>
<td>81</td>
</tr>
<tr>
<td>Rarely</td>
<td>22.6%</td>
<td>109</td>
</tr>
<tr>
<td>Neutral</td>
<td>10.6%</td>
<td>51</td>
</tr>
<tr>
<td>Occasionally</td>
<td>39.5%</td>
<td>191</td>
</tr>
<tr>
<td>Frequently</td>
<td>6.0%</td>
<td>29</td>
</tr>
<tr>
<td>Very frequently</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

answered question    483  
skipped question       29
Appendix B, Survey Responses

Table 17

17. My Fire Department has policies in place which require risk/benefit analysis of emergency scene actions?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>71.6%</td>
<td>345</td>
</tr>
<tr>
<td>False</td>
<td>28.4%</td>
<td>137</td>
</tr>
</tbody>
</table>

answered question 482  
skipped question 30

Table 18

18. My Fire Department has provided training on the subject of risk/benefit analysis of emergency scene actions.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>72.8%</td>
<td>351</td>
</tr>
<tr>
<td>False</td>
<td>27.2%</td>
<td>131</td>
</tr>
</tbody>
</table>

answered question 482  
skipped question 30