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Airport Security Checkpoint Screener: An Analytical Study of Job Retention and Attrition Factors

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**Airport Security Checkpoint Screener:
An Analytical Study of Job Retention and Attrition Factors**

by

Norman Mark St. Laurent

**A Graduate Thesis Submitted to the
Department of Aeronautical Science
in Partial Fulfillment of the Requirements of the Degree of
Master of Aeronautical Science**

**Embry Riddle Aeronautical University
Daytona Beach, Florida
December 1994**

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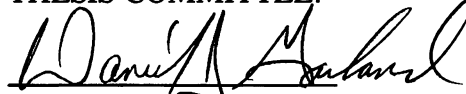
**Airport Security Checkpoint Screener:
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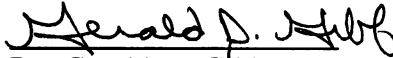
Norman Mark St. Laurent

This thesis was prepared under the direction of the candidate's thesis committee chairman, Dr. Daniel J. Garland, Center of Aviation/Aerospace Research, and has been approved by the thesis committee. It was submitted to the Office of Graduate Studies and was accepted in partial fulfillment of the requirements for the degree of Master of Aeronautical Science.

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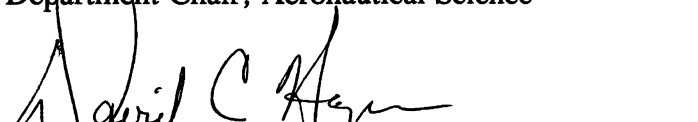


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ABSTRACT

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The proposed research seeks to identify the factors contributing to job retention and job attrition in terms of why an airport security checkpoint screener would try or want to stay on the job or leave the job. By identifying the causes of employee satisfaction and dissatisfaction, and by understanding the integral components of employee turnover can develop appropriate interventions that curb existing retention problems (exceeding 70% annually in most facilities). Aside from the obvious costs affiliated with recruiting, selecting, and training replacement employees, there is likely to be a detrimental impact on the effectiveness of airline passenger screening when a substantial percentage of the workforce are novice workers. The success and deterrent potential of an airport security checkpoint is primarily dependent on the personnel who operate it. As with most safety-critical systems, there is no room for system-induced or operator-induced errors.

To date there has been little emphasis placed on the selection of airport security checkpoint screeners. In a report by the 1989 Presidents Commission on Aviation

Security and Terrorism (Presidents Commission, 1990), the commission was critical toward the Federal Aviation Administration with regard to how little attention was paid on recruiting and motivating security personnel. The significance of the work has many demerits to it. Ideas and conclusions formulated from these concerns and issues are essential in addressing the empirical attention needed in this area. They also carry strong implications toward the standardization of screening and hiring of airport security checkpoint screeners and towards the development of a standardized protocol that can be applied industry-wide. •

TABLE OF CONTENTS

Abstract	v
List of Tables	xi
List of Text Boxes	xii
List of Figures	xiii
List of Abbreviations	xv
•	
Introduction	1
Impact and Effectiveness	2
Statement of the Problem	11
Review of the Related Literature	12
Airport Screener Work Force Performance Issues	12
Regulatory Background	13
Passenger Screening	17
Theoretical Basis	20
Training Issues	24
Current Training Methods	26
Research on Training to Improve Screener Performance	29
Computer-Based Instruction Training	30
International Total Services (ITS) Study	31
A Hierachy of Motivations and Needs	34

Job Retention and Job Satisfaction	40
Predictors of Job Satisfaction	43
Supervision	44
The Work Group	45
Job Content	46
Wages, Benefits, and Current Rates (Compensation Impact)	47
Reward Systems	49
Motivation and the Expectancy Theory	51
Turnover Issues	53
Scope of the Research	56
Method	57
Subjects	58
Instruments	59
Delphi Workshop	59
Design	62
Procedures	64
Analysis	71
Pre-Workshop Survey	72
Workshop Objectives	78
Job Satisfiers and Motivators	79

Dissatisfiers and Dislikes	81
Post-Workshop Survey	83
Group Goals - Process	83
Group Goals - Products	90
Conclusions and Recommendations	98
General Findings	98
Post-Workshop Survey - Process	101
Post-Workshop Survey - Products	102
Thesis Objectives in Workshop	102
Satisfaction and Motivation	104
Dissatisfiers and Dislikes	111
Initial Recommendations to Improve Employee Job Satisfaction, Decrease Employee Job Dissatisfaction and Increase Career Longevity	115
References	121
APPENDIX A: Delphi Workshop Packet	126
APPENDIX B: Workshop Cover Letter	151
APPENDIX C: Objectives	154
APPENDIX D: Screener Information	156
APPENDIX E: Pre-Workshop Survey Question Ratings	158

APPENDIX F: Post-Workshop Survey - Process Question Ratings	160
APPENDIX G: Post-Workshop Survey - Products' Question Rating	162

LIST OF TABLES

1. Security Costs Effecting Airlines (1985)	18
2. Comparison of Screeners Nationwide to Veteran Screeners (data from ITS Personnel Performance Study, 1993, Selection III: Employee Retention, Graph 1).	32
3. Herzbergs Major Dissatisfiers	39
4. Work Role Variables Affecting Job Satisfaction	44
5. Job Satisfiers and Motivators - Intact Group Ratings by Level of Perceived Importance (N = 34)..	80
6. Job Dissatisfiers and Dislikes - Intact Group Ratings by Level of Perceived Importance (N = 34).	82

LIST OF TEXT BOXES

1. Follow up Letter from Mrs. Ferrell (SME, JFK)	100
2. Example Given of Lack of Respect	119

LIST OF FIGURES

1. Explosives Aboard Aircraft by Region	3
2. The Effectiveness of Passenger Screening	5
3. Maslow's Hierarchy of Needs	35
4. Maslow's Needs Horizontal	37
5. Herzberg's Motivational Factors	38
6. A Comparison of the Motivational Theories of Maslow and Herzberg	41
7. Frequency Distribution of Participants by Number of Months Employed at Current Job.	72
8. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 1	73
9. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 2	74
10. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 3	75
11. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 4	76
12. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 5	77
13. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 6	78
14. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 1.	84
15. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 2.	85
16. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 3.	86
17. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 4.	87

18.	Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 5	88
19.	Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 6	89
20.	Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 7	90
21.	Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 1	91
22.	Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 2	92
23.	Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 3	93
24.	Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 4	94
25.	Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 5	95
26.	Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 6	96
27.	Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 7	97

LIST OF ABBREVIATIONS

ACSSP	Air Carrier Standard Security Program
ATA	Air Transportation Association of America
CBI	Computer-Based Instruction
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
GAO	General Accounting Office
ICAO	International Civil Aviation Organization
ITS	International Total Services
JFK	JFK Airport, New York
MCO	Orlando Airport, Florida
SFO	San Francisco Airport, California
SME	Subject Matter Expert
TSI	Transportation Safety Institute

Airport Security Checkpoint Screener:
An Analytical Study of Job Retention and Attrition Factors

Introduction

Air travel is by far the safest method of transportation. It is important, however, to place the increasing problem of aviation terrorism and sabotage into proper perspective. This is especially meaningful as it relates to the significance of the role each individual airport security checkpoint screener has in controlling this increasing problem. The goal of this thesis is to focus on the human factors issues of job retention and attrition within airport security companies who are contracted by the airlines. "The success and continuity of any organization...is ultimately determined by the *productivity* of its employees as well as the *satisfaction* that they derive from their jobs, fellow workers, management, and the rewards system of the organization" (Dunn and Stephens, 1972, p. 2). Given the negative effects of unwanted employee turnover on airport security checkpoint operations, organizational sensitivity to the antecedents of employee satisfaction and intentions to leave is consequential and warrants empirical attention.

By the year 2000, airlines around the world will transport nearly two billion passengers a year. Even if the accident rate equals that of the lowest year in aviation history, a thousand passengers will lose their lives each year. The factors that

contribute to the dangers of air travel can range anywhere from human factor mistakes, aging aircraft, crowded skies, over-burdened air traffic control systems, to abrupt weather. Intricating these aviation and airport problems is the ever present distressing and sophisticated threat of terrorism and sabotage. Unfortunately, history has shown that motivation to achieve competent security frequently comes in the wake of tragic incidents.

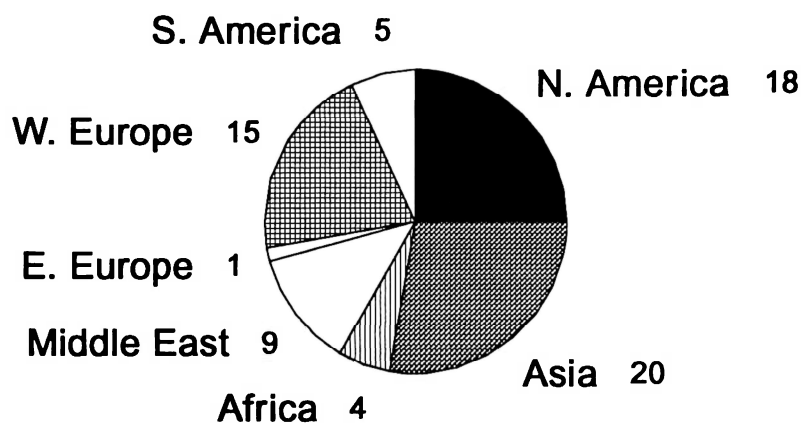
Impact and Effectiveness

The safeguarding of civil aviation against acts of unlawful interference has been a matter of critical concern to Governments of the world. The civil aviation program has no option but to take the problem seriously. The risk of a terrorist incident or sabotage act is always present and "...is not confined to the Middle East and other trouble spots in the world" (Oster, Strong, and Zorn, 1992, pg. 143) (see Figure 1). Such unjust acts have had a profound world-wide detrimental effect on civil aviation operations. For example, the bombing of Pan Am flight 103 over Lockerbie, Scotland, on December 21, 1988, reminds travelers that the reality of the risk is real and can take place anywhere.

Security factors that contributed directly to the destruction of Flight 103 involved a combination of errors on the part of the air carrier and its security contractor. "These factors were passenger screening; baggage handling, especially matching passengers and their bags; almost complete reliance on X-ray equipment to find explosive devices; and the lack of an integrated information system to track passengers and their baggage on specific flights" (Vosburgh, 1993, p. 5). The cost of

Explosions Aboard Aircraft by Region

1950 - 1989



Explosions - Region (Total 72)

Figure 1. Explosions Aboard Aircraft by Region

these unlawful acts in terms of to the loss of human lives, disruption to air operations, and negative economic impacts is unfathomable. Terrorism against civil aviation will always be a threat. There are no set rules due to the fact that the elements involved will vary with the environment and location. The emotional attractiveness of such a malleable, newsworthy target allures those who commit acts of unlawful interference. As these acts interfere with the civil aviation system, a demand for continued resistance is required. There must be more " . . . world wide vigilance and the enhancement of security measures" (Sutherland, 1992, p. 6).

The late 1960's and early 1970's had a sudden and unexpected increase in aircraft hijackings. The response was a coordinated and extensive civil aviation security system instituted by the United States Government and the International Civil

Aviation Organization (ICAO). A significant part of that system is aircraft passenger security checkpoint screening using metal detectors and X-ray machines. "Since the initiation of mandatory security screening procedures in 1973, over 11 billion persons and their carry-on items have been screened. This has resulted in the detection of over 45,600 firearms and more than 20,150 arrests" (Federal Aviation Administration, 1991 p. 11). The effectiveness of the security procedures can be portrayed by comparing the Federal Aviation Administration (FAA) hijacking statistics for domestic air carrier operations before and after the onset of the passenger security screener process (see Figure 2).

"During the July 1, 1989, through December 31, 1989 reporting period, over 535 million persons were processed through screening checkpoints at U.S. airports resulting in the detection of 1,464 firearms" (Federal Aviation Administration, 1991, Feb.). Of these 1,406 (96%) were detected by x-ray inspection, 30 (2%) by physical search, and 28 (2%) by use of metal detectors. In addition, ten explosive/incendiary devices were discovered during this period including five grenades, three fireworks, one flare gun, and one tear gas device. During this six month period, 764 persons were arrested at airport security screening checkpoints for unauthorized carriage of firearms or explosive/incendiary devices. "Study Tallies" (1991) analyzed hostile acts against civil aviation between January 1980 and December 1990. During that 11-year period, the investigators uncovered 304 hijacking incidents accounting to one every 13 days. Foreign air carriers however encountered the majority of these hijackings. Aeroflot had the highest with 24, followed by LOT Airlines with 16, and Iran Air

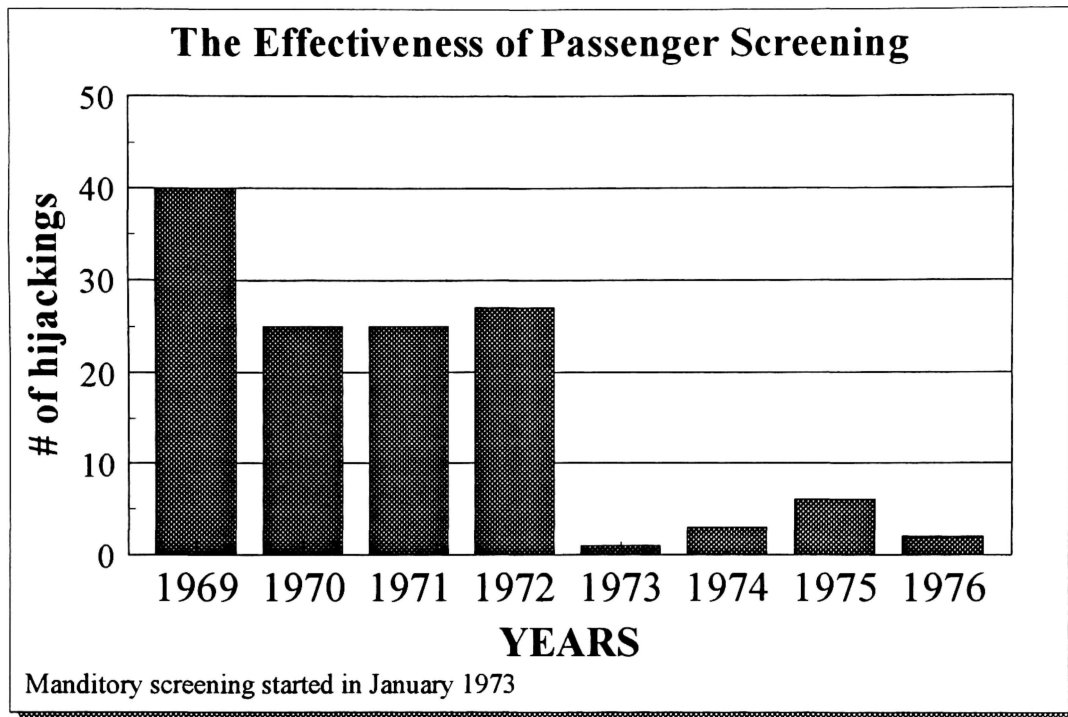


Figure 2: The Effectiveness of Passenger Screening

with 15. Although hijacking incidents do not materialize an immediate threat for U.S. operators, St. John (1991) stated, "As international security tightens, the United States, with its lack of safeguards at airports, becomes more inviting to terrorists" (p.85). Oster, Strong, & Zorn (1992) concluded that the overall volume of terrorist activity has grown at an annual rate of about 12 to 15 percent during the 1980's. If that rate of increase continues, there could be a doubling of terrorist activity by the end of the decade.

Routine inspections evaluating the effectiveness of airport security checkpoints report an average success rate of 90% in detecting test weapons that are designed to imitate explosives, incendiary, and deadly or dangerous weapons. Contrary to the

FAA 1991 report, the US General Accounting Office (GAO) Report (1987, April) reported that the nationwide success rate in the detection of test weapons was only 80%. Additionally, the GAO report found immense variability with the success rate among airport security checkpoints in detecting test weapons. The report illustrates the lack of effectiveness and clearly demonstrates a need to focus on and accentuate productivity for airport security checkpoint personnel through job satisfaction and motivation.

Job satisfaction is believed to have a direct bearing on motivation and job productivity. Job satisfaction is also believed to be reflected in both voluntary and involuntary turnover. Studies have shown a link between the employee's job satisfaction and the employee's speed and ability in acquiring skills on the job. Both intrinsic and extrinsic motivational factors should be reviewed to invigorate effectiveness. The Conference Board Inc. (1971) reported that motivation and productivity are inextricably linked. "Job design that takes into consideration human needs and motivations can provide the needed impetus for increased productivity. This is true despite automation, improved engineering, and other technological advances. Without worker motivation a large segment for the sought-for productivity standard is missing" (The Conference Board, Inc., 1971, p. 10).

Emphasis on hiring practices to find qualified personnel with the proper motivation will result in a more suitable work force while reducing attrition for those not proficient or properly motivated in their profession. More importantly, developing a screening program that identifies and staffs the nation's airport security system with

the most capable, motivated, and qualified individuals will enhance the overall success and deterrent potential of the security system.

As previously stated, the job of a security checkpoint screener is an extremely important one. Their efforts are responsible for the protection of the lives and safety of millions of travelers each year. How well each screener performs his/her job makes this protection possible. The task of the security checkpoint screener is so important to the overall security system that it is necessary to hire those who are best able to do the job, and who are willing to do the job for a long period of time. The use of psychological principals in the job environment have resulted in practical goals to reduce employee turnover, absenteeism, and low productivity. Additionally, they have improved the design of a working environment, designed human-machine systems that optimize human abilities while minimizing error, and raised workers' morale and motivation.

How airport security companies structure the management of all the daily work experiences of its security checkpoint screeners has a dominate influence on the performance of those screeners. Precise personnel selection and training are consequential, indeed critical, for airport security organizations. "But no matter how perfectly the company performs these operations, if the organization is badly structured, performance in the long run, will be poor" (Yorks, 1976, p. 3). It is important to remember that security checkpoint screening is the element of aviation security most familiar to the traveling public. How a screener acts, looks, and communicates are all critical to a security system's effectiveness. The human element

in the security checkpoint process will remain paramount. It takes specific abilities and personality to be a successful screener. According to Wallis (1993) the performance of a checkpoint security screener (at the interface with the traveling public) can be judged to an extent, by the passengers. The general attitude of the checkpoint security screener is easy to detect. Personal presentation and appearance is readily observable.

Since aviation security is based on multiple layers of overlapping effort, it is highly dependant on each of the participants carrying out their individual responsibilities. The security screening checkpoint is a team effort that requires cooperation and excellent communications between everyone involved. The responsibility for establishing an effective and integrated aviation security program is shared by the air carriers, the airports, and the FAA. Thaher (1991) notes that in 1990 the FAA spent \$10 million on the development of new passenger screening, explosive and explosive devices and baggage inspection technology. To date, however, there has been little emphasis and attention placed on the recruiting and motivating of airport security checkpoint screeners. The success and deterrent potential of the security system is primarily dependent on the personnel who operate it. Fundamental attributes of screener success are determined by human factor issues. Performance issues and retention and attrition factors all have significant roles in the aviation security arena. Whether it be the safety of passengers and crew, the cost in training, or the success rate among airport security checkpoints in detecting weapons, each impinge upon the general concept of employee job satisfaction.

In addition, an effective national aviation security checkpoint screening program is based on adequate FAA guidance in the selection of screeners and in their training, as well as on the importance that individual airlines place on security. The security checkpoint screener must be able to effectively operate security equipment under varying workload conditions, (e.g., during peak periods when passengers are in a hurry, airport "rush hours", etc.). As with most safety-critical systems, there is no room for system-induced or operator-induced errors. Human factors issues (high turnover, low pay, hiring problems, and poor training) have plagued the larger airports particularly. Moore (1991) notes that motivation is a highly significant problem. Situations are handled all too often by negative reinforcement rather than positive reinforcement. These human factor issues are a prolific area for research, and much needs to be done to allay the job satisfaction and motivation problems these screeners encounter. The selection process of those persons who have the necessary attributes for target detection or abnormalities are relatively unexplored. In addition, one of the trends that has developed in the airport security industry is that the air carriers are using the contract security officers for duties other than predeparture screening. The logic for this is purely economic reasons. Contract security employees are utilized for international greeters, for pushing wheel chairs, and for monitoring the security of incoming and out going baggage (Moore, 1991). Although this provides a variety for the security checkpoint screener and makes the job more interesting (to some), it does require the necessary attributes, personality traits, attitudes, and motivation.

Predictive modeling of potential security checkpoint screeners is a key in screening for the appropriate candidates. The implications for cost savings in training and reduced turn-over are enormous. This suggests that it may be useful to use expert modeling for the determination of how successful security checkpoint screeners process information and arrive at a desirable level of competency. Understanding how successful security screeners think and perform will aid in establishing a selection and training guideline. Although individual differences are difficult to identify and quantify, the identification of satisfiers and motivators in successful screener operations can prove to be beneficial. The study of these can aid in the optimum performance model. Research proves that companies that satisfy employees' desires for good managerial relations, respect, fair and adequate compensation, and offer opportunities for growth and development through training, are reaping the benefits.

The President's Commission (1990) on Terrorism and Aviation Security concluded that the FAA paid little attention to the recruitment, training, and motivation of the aviation security work force. The agency was further criticized for not integrating the work force with modern technology to achieve a systems approach to security. At hearings before the Commission on February 2, 1990, it was pointed out to FAA officials that studies of human factors issues in security was visibly absent from the agency's research and development effort, despite human factors affiliated recommendations unfurled over a decade earlier.

In 1978, following inadequate test results of the security screening process, a task force of the FAA and airline security personnel studied ways to improve

performance at airport security screening checkpoints. This task force's report, referred to as the *Human Factors Study*, recommended several actions which were endorsed by both the FAA and the airlines. For the most part, these recommendations focused on the personnel-related aspects of the operation such as high employee turnover rates, low pay, and insufficient training. Although the FAA and the airline industry endorsed the study's recommendations, the air carriers have been slow in fully implementing them (GAO, July, 1987). In fact, in July 1987, the GAO reported to the Secretary of Transportation that an investigation of screening processes at six major airports found that many of the problems that were addressed in the 1978 human factors study still existed. For example, security firm managers reported that airport security screening personnel were still being paid at, or near, minimum wage and that low pay contributes to high-turnover rates (in some cases, 100 percent annually) and further resulted in problems in hiring capable people.

Statement of the Problem

The human element in the security checkpoint process is and will remain paramount. Acts of unlawful interference are not everyday occurrences and the likelihood of a security checkpoint screener actually being in a situation to thwart a tragedy is exceptionally unlikely. This prompts a principal motivation to be missing. The checkpoint security screener must be able to effectively operate the safety-critical system with 100 percent detection rates despite the fact that the actual task of the checkpoint is highly routine and a potentially boring job. Job training, recurrent training, and longevity on the job all play an important role on job performance in the

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parameters within which the air carrier will have to plan are those laid down in the carrier's own national legislation. The regulations of the countries the airline goes to will also have to be included to ensure the air carrier complies with the requirements of en route airports.

Air carriers' security branches vary in size and complexity. Some air carrier security operations are very large while others use just a handful of personnel to staff the airports they serve. "At the start of the 1990s, American Airlines claimed to be employing more than a thousand security personnel" (Wallis, 1993, pg. 80). At the time of this writing, there were over 15,000 screeners employed by some 46 security firms nationwide. Most air carriers look to their government's security agencies to collect information and consequently take appropriate actions to respond to this information. The air carriers evaluate the risk opposing their operation, making crucial decisions and staffing manpower accordingly. Air carrier operations must be adequately flexible to meet the varying conditions that are entailed within the operation.

Regulatory Background

In December 1972, air carriers were given 30 days to institute a program of 100 percent screening of all passengers and carry-on luggage. Part 121.538, the rule affecting security by air carriers, was issued on January 31, 1972, and required each certificate holder to adopt and implement a screening program. Thirty days later the order was amended to require each air carrier to submit its screening program to the FAA. The air carrier is held responsible by the FAA for the effectiveness of screening

procedures, and for developing security plans which assure prevention or deterrence of aircraft hijacking, sabotage, and related criminal acts.

Few air carrier operations were staffed with enough personnel to accommodate the increased labor burden these new screening requirements required. "No one was certain how long these requirements would last; it would not be good management to hire a considerable number of new employees only to let them go six months later if the requirements were canceled" (Moore, 1991, pg. 91). These factors have forced most air carrier operations to go to outside contract screening companies. Whether an air carrier decides to contract the required screening relies on a variety of circumstances. Among these circumstances, cost remains the primary factor (Moore, 1991). In addition to cost, another advantage to hiring an outside contractor is the internal flexibility the air carrier operator is given. For example, the air carrier operator is relieved of hiring or firing employees, scheduling vacations, handling pay raises and the scheduling of shifts. The downside to the subcontract passenger and security screening companies is that "...these companies unfortunately have had a record of seeking to maximize the profit potential of their contracts by hiring staff at minimum wage levels and by providing the most elementary training" (Wallis, 1993, pg. 49). The performance standards consequently fall considerably short of what is expected and required. The aviation industry, more specifically the airlines, have been accused of a penny-pinching attitude toward security (St. John, 1991).

The FAA Act of 1958 was amended to implement the convention for the suppression of Unlawful Seizure of Aircraft. This Act (Public Law 93-366) was

enacted by the House of Representatives and Senate of the United States Congress. It was signed by the President on August 5, 1974, and contained two acts; the Anti-hijacking Act of 1974 and the Air Transportation Act of 1974. The Air Transportation Act of 1974 requires that "...all passengers and all property intended to be carried in the aircraft cabin in interstate air transportation be screened by weapon-detecting procedures or facilities employed or agents of the air carrier."

Section 315 of the General Aviation Act directs the FAA to prescribe regulations requiring the screening of all passengers and carry-on items for the presence of unauthorized items. Section 316 of the Act also requires regulations to protect persons and property aboard aircraft from acts of criminal violence and piracy. A certificate holder is an airplane operator subject to FAR-107 (regulations covering airport operator security) and FAR-108 (regulations covering aircraft operator security), and is engaged in scheduled passenger or public charter passenger operations, or both. Air carriers are responsible for developing and implementing security plans which pledge prevention or deterrence of aircraft hijacking, sabotage, and related criminal acts (i.e., the carriage of any explosive, incendiary, or a deadly or dangerous weapon). Each air carrier security operation is governed by a document referred to as the Air Carrier Standard Security Program (ACSSP) which is approved by the FAA. The airport operators are to provide law enforcement support to screen and maintain security programs which deter and hinder unauthorized entry into air operations areas (Federal Aviation Administration, 1991).

After the tragedy of Pan Am 103, the President's Commission on Aviation Security and Terrorism was formed on August 4, 1989, by Executive Order 12686 (President's Commission, 1990). The Commission's goal was to conduct a comprehensive study and appraisal of the practices and policy options to prevent terrorist acts against civil aviation. The President's Commission Report (1990) emphasized the significance of having a consistent set of selection and training standards for airport security and was demonstrated by the Pan Am 103 investigation. In addition, the investigation suggested that the security weaknesses found could be connected to breakdowns in airline security personnel performance. For example, the investigation found that Pan Am security personnel failed to properly screen 38 passengers at London's Heathrow airport.

Currently, the FAA has initiated several programs to counter terrorist threats. The FAA sponsors aviation security training programs at the Transportation Safety Institute (TSI) in Oklahoma City, Oklahoma under the authority of Section 316 (c) of the Federal Aviation Act of 1958. The current programs relating to aviation safety and security are administered by the Aviation Security Division of TSI (Federal Aviation Administration, 1991). In its security program the FAA identifies the core requirements and guidance for the initial, recurrent, and on-the-job training of airline screening personnel at domestic airports. Despite the FAA's efforts to standardize security training programs, several task forces and studies have found that the quality of security screener training provided by the airlines and contracting security firms varies widely between and within an airline (President's Commission, 1990).

Passenger Screening

One of the fundamental elements of the aviation security system is passenger screening. By requiring passengers to pass through a security checkpoint for the inspection of their personal and carry-on items, it is possible to establish a sterile area in which there are no unauthorized weapons, explosive devices, and/or other objects or devices that could be used to harm or threaten aircraft, air carrier personnel, or passengers. Studies conducted by United Airlines during the early stages of the predeparture screening program found that there was an average of 1.2 bags per passenger. Wallis (1993) notes that enormous sums are expended on security checkpoint screening staff and are largely wasted in the since that the level of the screeners performance is inadequate to offset any act of unlawful interference. As stated previously, the airlines bid out security contracts to security companies and usually the lowest bid is awarded the contract. "One natural element of such a bid is a low wage for the staff" (Wallis, 1993, p. 127). Consequently, the caliber of security personnel hired under such conditions correlates to the wage structure and falls far short "... of that needed for the function" (Wallis, 1993, p. 128). Although air carriers spend large sums on security checkpoint screening personnel by way of agency contracts, there is little cost effectiveness that is associated with this activity. Only 65 cents per passenger ticket goes toward security, in contrast to the passenger facility charge which can top out at \$3.00 per passenger ticket. These restricted means affect the quality of the equipment obtainable as well as the quality of personnel selection, training, and benefits. "The last thing airlines want to consider is spending more

money for security. What they do not seem to realize is that security must be a component part of their service, just like on-time flights, safety, and passenger satisfaction" (Vosburgh, 1993, p.6.). McKinnon (1986) notes that there has been some cost-vs-benefit ratio discussions in terms of dollars. See Table 1 for an example in 1985 of security costs effecting the airlines:

Table 1. Security Costs Effecting Airlines (1985)

→	\$74, 794 per firearm detected
→	\$155,642 per related arrest
→	\$19,821, 605 per hijacking or related crime believed to have been prevented

Despite this, the threat of being screened before entering a sterile area and the fear of related security measures in effect have eliminated thousands of potential crimes and hijackings.

Passenger screening today is accomplished with metal detectors, X-ray machines and bag checks. Improved technological machinery has been and is currently being developed and upgraded as an aid in the detection of weapons. Guns, knives, and hand grenades are favorite weapons of hijackers. These devices can usually be detected with X-ray equipment (the output of an X-ray machine is a visual image of the object being examined). Even attempts to mask or hide such items can usually result in their identification using X-ray equipment. Haas (1976) notes that X-ray devices are the

only practical means today of providing an interpretable visible image of objects and their contents with non-destructive penetrating radiation. However, the actual job task of X-ray screening can be very monotonous requiring both motivation and a positive mental attitude.

The effectiveness of X-ray screening depends upon the skill of the operator in recognizing the objects that are displayed on the X-ray monitor and proper techniques to screen a person entering the sterile area or a screener providing a bagcheck to a bag entering the sterile area. Detecting unauthorized weapons, explosive devices, and/or other objects or devices that could be used to harm or threaten aircraft, air carrier personnel or passengers is extremely difficult for even highly trained technicians. Most airport security personnel are not highly trained and not all people can be trained. Although checkpoint screeners are, for the most part, extremely conscientious some may have inherent weaknesses. Low wages draw two types of social classes to the job. The first social class is the undereducated, and less experienced. These people have trouble getting a higher paying job because of their lack of education, lack of working skills and experience, scarcity of jobs, and/or interests in security work. Aubrey and Felkins (1989) note that education has been shown to increase employee needs for greater influence in the work place. The second class is the older population who is more interested in passing time, being around people, flexible job hours, enjoying their co-workers, and who do not consider money an important role in the selection of the job. Moore (1991) states that many of the more effective security screeners are older adults, and they tend to be long term employees. Guide (1991) notes that the

physiological literature indicates that there usually are physical decrements in vision, audition, cognitive processing, vigilance, and memory with increasing age. The physiological and psychological effects are an essential everyday part of the screening task.

A high percentage of the security checkpoint screeners have never held or even seen a real explosive device in their lifetime. Their ability to detect an obvious threat is based upon the training they receive and the test objects they see most frequently. • Some obvious threats, such as a pipe bomb, grenade, gun, knife, and handcuff are easy to detect because they have distinctive shapes and are very dense so they show up well on an X-ray. These items are easy to detect regardless of their orientation, profile, angle, and/or location, unless they are masked by an opaque object. If this is the case, the X-ray image appears as a possible threat and should be bag checked. On the other hand, some obvious threats such as time bombs, dynamite bombs, and plastic bombs can be extremely difficult to detect and are frequently missed during tests. These objects are not dense and can be penetrable on the X-ray image. In addition, these objects are not only difficult to detect when they are isolated, but they are even more difficult to detect when cluttered by other objects. Training is a paramount issue in the detection process.

Theoretical Basis

Experts agree that security checkpoint screeners must develop and maintain a high degree of proficiency at their work. The detection of any explosive, incendiary, or deadly or dangerous weapon in individual carry-on or checked in baggage is a

continuously changing equation that presents multidisciplinary security challenges (e.g., vigilance, scanning, prediction, and knowledge of materials). Haas (1976) noted that the usefulness of X-ray equipment is only starting to be comprehended. There are few other practical ways which are used to inspect carry-on or checked articles of passengers. These are especially effective ways "...which do not significantly invade people's privacy" (Funke, 1992, p.30). The detection of dangerous weapons from obscure X-ray images of all types of baggage relies heavily on the skill of a screener. Funke (1992, p.30) stated, "Little attention has been given to this critical human component although it represents a critically weak link in the airport security system".

The FAA's testing of the effectiveness of the screening process is relatively unsophisticated. The agency historically utilizes test weapons, such as simulated pipe bombs, three sticks of simulated dynamite tied together with a large clock and attached wires, encapsulated hand guns, and *dead* grenades to test the x-ray equipment and the ability of the operator to detect a potentially lethal weapon. The test object is generally placed in a briefcase or bag with little or no effort to conceal, clutter, or disguise it. The briefcase or bag is then taken by the FAA inspector posing as a passenger to enter the sterile area. The FAA inspector enters the screening point and is submitted to the screening process. One would expect near 100% detection rates since the FAA test objects resemble only very obvious threats and since the FAA inspectors are not allowed to hide the test object(s) into the carry-on baggage (GAO, 1987, July). In addition, airport security checkpoint screeners are often aware that they are being tested because: a) FAA inspectors are well known to screeners at most airports, and b)

screening teams look out for each other and signal the presence of the FAA inspector to other members of the team. One investigator (Vosburgh, 1993) notes that this approach is not very practical. Most screeners "...would probably not recognize a real bomb [or threat] since they train primarily to identify test objects similar to those used during airline and FAA tests" (Vosburgh, 1993, p.61).

Moore (1991) notes the importance of developing innovative ways to improve the system operator's effectiveness that should always remain a high priority. Studying checkpoint screener needs and social conditions are two ways to improve motivation and job satisfaction, hence, positively influencing job performance. Numerous human factors issues (i.e., lighting and glare, floor grade, work station design, ambient noise levels, the seating provided for the screening position, the effect of night work and circadian rhythms on screening performance, the need for training of handling and lifting heavy loads, and provide good management training to supervisors) can adversely impact screener performance and reduce the efficiency of the overall security procedures. Poor work environments may also induce fatigue and may affect personnel retention. Supporting this concept, Astley and Fox (1975) noted that providing an improved working environment — as a result of physical changes (e.g., ergonomically designed chairs, padded floormats) — will influence personnel turnover and absenteeism in a positive direction.

The President's Commission (1990) noted that the FAA had failed to include human factors considerations in integrating new technology and training. The FAA's approach was found to be reactive rather than proactive. Changes were mandated to

unite human factors into the overall design and management of the security system. The FAA had failed to consider the human factors involved in aviation security, particularly those factors in the security checkpoint screener position. The human factors approach is to improve the security checkpoint screener performance. In addition to using the human factors approach there are other ways to improve human performance. These are: (a) select of new personnel who are less likely to make errors than the current personnel; (b) improve training so that everybody's level of performance is improved; (c) motivate the security checkpoint screener to perform better; and (d) change the social consequences of making an error. It is important that the employee maintain at least the "...the average level and quantity of output and learn to perform his task at a satisfactory rate, effective operation also requires that these duties be performed regularly and faithfully" (Beaumont, 1945, p.17). ICAO has also identified areas in aviation security requiring attention. These include: (a) low wages; (b) lack of career prospects; (c) lack of challenge in the job; (d) lack of authority; (e) poor working hours; (f) pressure from the airlines to perform during peak hours; (g) fear of possible health effects (e.g., bomb detonation, sore backs from lifting luggage, and radiation exposure); (h) penalties for poor performance; and (i) lack of sufficient knowledge to handle dangerous situations (e.g., armed passengers, and explosive devices).

To make the overall security system work best, in the effective identification of weapons and contrab, efforts must be made to improve both human performance and technology. For the security checkpoint screener operator, learning is a paired process

consisting of the acquisition of the required responses and inhibition of competing ones. Unfortunately, error is a necessary part of learning. The ultimate improvement in security checkpoint screening effectiveness would come from a fully automated security screening system which would include artificial intelligence applications. The day may come when security screening is fully automated, but it will not be soon. Hughes (1993) noted that a key conclusion of the latest National Research Council study is that there is no single detection technology available today that can provide a high probability of bomb or weapon detection.

Training Issues

Most of the emphasis has been allocated towards technology and little has been directed towards the enhancement of human performance. A precisely trained and extremely motivated operator combined with advanced technology can be effective in screening for obvious and potential threats. The Conference Board Inc. (1971) notes that if jobs lack motivational content, material and human resources alike are under utilized. Training does not have to occur in a formal situation or a classroom. It can take place in a meeting one on one with a supervisor or in a conversation with a teacher or a facilitator. A successful training program should improve the moral of the employees as evidenced by greater devotion to duty, accelerated learning rates, decreased absenteeism, fewer complaints, and a smaller labor turnover.

While there are many physical techniques designed to make the job easier and more effective, security checkpoint screeners cannot and should not be entirely eliminated from the system. Training is needed to confirm that the operator remains

cognizant of the prevailing technology and demands required on the job. Training renders a solution in the reduction of errors and skill development. "A properly trained and highly motivated operator, combined with suitable screening enhancement tools can be very effective in screening for dangerous objects. This is why the need to develop innovative ways to improve the system operators' effectiveness should always remain a priority" ("Keeping the Operator", 1992, p. 41). Senders and Moray (1991) note that well-trained operators whose knowledge and skill are appropriate to the task will make fewer errors than unskilled operators. Motivation can be developed and maintained by good system design, both in the human machine interface and the working policies. Senders and Moray (1991) note if training and psychology are relied on to reduce error, then one must start by adopting a different attitude towards errors. In addition, one can regard error only as a clue to the processing system in the central nervous system that are responsible for the behavior. Training can be improved by a combination of both formal and on the job training conducted on an on going basis.

Not all people can be trained, however. Some individuals may possess inherent weaknesses. The conceivable efficiency of security personnel should be considered at the time of hiring. Wallis (1993) elucidates that training and refresher training should strive at ensuring the personnel understand precisely what items they are seeking and how to identify the components on the x-ray monitor. People who are less likely to make errors should be selected as a security checkpoint screener to provide the needed security level. On the other hand, Senders and Moray (1991) note that personnel selection is not a very powerful method of improving systems. The Civil Rights Act

states that an employer can not discriminate between race, age, and gender. Well trained staff are key to an effective security program and is a positive alternative to personnel selection. Standards are paramount if the security arena is to be successful in preventing additional attacks against the civil aviation industry. "Implementation of these provisions requires highly trained staff at all levels, and the training of security personnel should be considered a high priority" (Sutherland, 1992, p.6). Training should improve the operator skills and retention levels. •

The actual tasks of the airport security checkpoint personnel are highly routine and provide the elements for a boring and dry job. With boredom comes inefficiency. Wallis (1993) notes that boredom and complacency from the checkpoint job task have to be met with effective man-management routines. Senders and Moray (1991) emphasize that people can be trained to perform better, not necessarily to make fewer errors. Shields and Maddox (1991) note that training can reduce workload at the same time that it improves performance, and it can assist the individual in meeting the task demands. Along with training Wallis (1993) notes that once a security checkpoint staff has been engaged, their management becomes a fundamental ingredient in the security process.

Current Training Methods

Most screeners are trained with obvious test items, and are only instructed on complete explosive items and not their components. Assessments by ICAO of the security situation of some 34 countries confirms that deficiencies are characteristic due mainly to the inadequacy of training practices. A program that recognizes the

individual and the diverse characteristics of states has been designed to meet the needs and to improve the effectiveness and cost-efficiency of adequate civil aviation training in the developing world. "The content of the ICAO training program for aviation security, in the form of standardized training packages (STPs) is based on an objective analysis of the tasks to be performed and the skills and knowledge required to perform them" (Sutherland, 1992, p.6). The training requirements effect all levels of personnel. For example, the Basic Airport Security Personnel Training Course has 14 modules and activities. Among a list of 14 modules and activities that are provided are: (a) 9 hours of training for passenger screening and physical search of passengers; (b) 8 1/2 hours of training for X-ray examination of baggage; and (c) 5 1/4 hours of Physical inspection of baggage. The course has the duration of 12 working days, of which 75 percent involves formal class room instruction and 25 percent involves simulated practice exercises and field events. Sutherland notes that upon finishing AVSEC 123/Basic, the trainees will be capable of performing the following tasks: (a) work and move in and about an airport facility; (b) communicate and cooperate with other airport agencies; (c) control the movement of people and vehicles by means of access control techniques and systems; (d) guard and patrol airport vulnerable areas, facilities and aircraft; (e) recognize weapons and explosive/incendiary devices; (f) inspect, screen and search passengers and baggage; (g) respond to airport emergency situations; and (h) escort people and consignments. "This Program will assist in meeting the present human resource training requirements of the world wide aviation community" (Sutherland, 1992, p. 7). ICAO recommends that airport security

checkpoints should be manned by teams of people who are capable and able to rotate their functions on a twenty-minute cycle. Five persons working as a single unit can be sorted into different stations as to provide peak security performance and traffic flow. The five positions are as follows: one person to direct the flow of passengers; another to monitor the x-ray screen; a third person, to hand search baggage and components entering the sterile area that have been selected during the X-ray process for further examination; a fourth to control the flow of traffic through the magnetometers; and a fifth security checkpoint personnel to manually frisk people who alarm the magnetometer. A rotation system minimizes the boredom and provides a variety and an all-around understanding of the total security checkpoint task (Wallis, 1993). Job rotation not only gives the employee a broader perspective, but it also increases skills and knowledge about the job and it provides a variety that relieves boredom.

The training manual published by the Air Transportation Association of America, makes it clear to new checkpoint security screeners during their initial training that there is a direct relationship between appearance and effectiveness. A checkpoint security screener's actions, appearance, and speech must project the seriousness of the screening process at all times. It is in the airline's best interest to hire an adequate staff; screeners must not operate in a manner that could jeopardize the public's expectations of a professional screener. For obvious reasons, a screener cannot afford to appear inattentive or un-wary in the conduct of their duties and responsibilities. Staff attentiveness is equally visible. The individual is the key link in

the passenger security screening process which remains an important part of a proven civil aviation security system.

Research on Training to Improve Screener Performance

Funke (1979) analyzed a study in 1975 accomplished by Potter. In this study he examined the ability of perceptual training techniques on developing the skill of detecting weapons for screeners. Data was obtained from 18 subjects. All were high school graduates and 9 were college students. Subjects were randomly assigned to one of three groups: Group 1 was trained with sound and slide presentations dealing with explosives; Group 2 was trained with an audio and visual program on guns; and Group 3 (the control group) was trained with written instructions concerning items they should watch for during visual inspections. Subjects were shown 95 slides of x-rayed baggage of which approximately 30% contained various weapons. Subjects were to express whether they thought the bag required opening, and if so the reason for their decision. The slides were shown for 6 seconds followed by a 4 second vacant period.

Three measures of performance were investigated: (a) number of bags containing weapons which were missed; (b) number of carry-ons which were incorrectly identified (false alarm) as containing weapons; (c) number of bags correctly identified as containing weapons, however, the weapons themselves were misidentified. The number of carry-ons incorrectly identified and the number of carry-ons that had misidentified weapons were not significantly related to the training conditions. In spite of this, the type of training had a significant effect on the number of weapons found, although no statistical data was accounted for by Funke (1979). These findings

indicated that perceptual training techniques (e.g., sound and slide presentations can significantly improve target identification on visual inspection tasks, particularly when targets appear infrequently (Funke 1979). The support data for these findings for the three groups is as follows: (a) the mean percentage of the weapons missed for explosive trained (mean = 10.0); (b) the mean percentage of the weapons missed for gun trained (mean = 22.6); and (c) the mean percentage of the weapons missed for the control group (mean = 32.8).

Computer-Based Instruction Training

Nadler and Mengert (1993) researched the advantages of computer-based instruction (CBI) compared to present methods of selection, training, and screener certification. They utilized a system developed specifically for airline security checkpoint screeners (Safe Passage System). The Safe Passage System shows airport security checkpoint screeners x-rayed carry-on images stored in a video database of approximately 2,000 images. The images depict eight categories: (a) innocent; (b) suspicious innocent; (c) electronic innocent; (d) explosive; (e) gun; (f) knife; (g) other sharp objects; and (h) combined/other weapons. The research team collected data from 1,465 screeners who worked for security companies at five major domestic airports equipped with the Safe Passage System.

The initial findings (reported in their interim report) were based on data from 500 screeners referred to as their Sample Data Set. Airport security checkpoint screeners performed *simulated* screening tests while threat images were presented in random intervals. Three levels of competence were programmed into each test

containing 12 different images (i.e., low, medium, high). This enabled the test to have each level contain increasing percentages of relatively *difficult* test images: 25, 50, and 75 %, respectively. The researchers went on to note that four of the eight image categories (i.e., suspicious innocent, explosive, knife, and other sharp object) portrayed accuracy levels less than 80% in the Low Proficiency Level, accounting for accuracy levels of percent, 77.4 %, 76.8 %, and 77.3 %, respectively. Hence the images that fall into these categories are prevalent to be more difficult to detect. Preliminary conclusions also indicate a low percentage of critical errors (i.e., errors resulting when a screener passes a carry-on that should have been held for further inspection). In addition the research team found that 50% committed no critical errors at each proficiency level. Based on the this preliminary data, Nadler and Mengert (1993) concluded that there is however, ample room for improvement in the screener's ability to distinguish threat items from innocent items in x-ray images of carry-on items. After analysis of this CBI system it can be concluded that it is the most advanced training program available on the market today.

International Total Services (ITS) Study

The aviation security contractor ITS investigated if there is a relationship between screener performance and certain employee characteristics. In 1993, the Training and Personnel Development Department at ITS completed research of demographic elements and their relationship to job longevity and performance on FAA checkpoint testing (ITS, 1993). ITS compared performance criterion for a sample of 3,183 screeners divided into sub-groups by: (a) age; (b) sex; (c) ethnic background;

(d) educational level; (e) previous employment; (f) military background; and (g) citizenship. Although the constitution of the United States prevents using these results for employee selection and hiring, the findings are worthy to mention.

During the study, significant differences were found when comparing screeners with three or more years tenure vs. nationwide airport security checkpoint screener population. High tenured screeners were on the average, older, better educated, more likely to be female, more likely from Asian than black ethnic background, and less likely to possess U.S. citizenship (see Table 2). Nearly one-third of the high tenured

Table 2. Comparison of Screeners Nationwide to Veteran Screeners (data from ITS Personnel Performance Study, 1993, Selection III: Employee Retention, Graph 1).

	Total Sample of Screeners (N = 3,183)	Screeners with \geq 3 years
Average age	38 years	54 years
Female	45.4%	57.2%
Asian	10.9%	30.9%
Black	32.4%	12.2%
U.S. Citizen	82.9%	63.0%

* The sample size of the veteran screeners was not reported

sub-group were of Asian background (nearly equally divided by gender), with another 17% Caucasian females. It is important to note that employment tenure was also found to be twice the duration for the *housewife* sub-group than any other prior work

experience sub-group. The relationship between educational level and job tenure also has some findings worth mentioning. ITS found that airport security checkpoint screeners with four year college degrees and those with advanced college degrees have the two highest employment duration averages, respectively. It can be noted that the results presumably reflects the current poor outlook in the job market for college graduates and a work atmosphere that is appealing for retired professionals. It is interesting to note that demographic factors were not useful in differentiating screeners who remained employed less than 60 days from the total sample. The ability to identify screeners who do not perform effectively (i.e., fail FAA checkpoint tests) is of potentially significant importance. The data presented by the ITS study however, does not demonstrate a relationship between demographic issues and the number of FAA test failures over the proceeding 12-month period. The only substantial difference found is that the black subgroup is more likely to fail FAA tests than any other ethnic group.

Several demographic factors distinguish superior performance in screeners (i.e., as determined by ITS security firm evaluations) from the total nationwide sample that were similar to the findings for the job tenure criteria. A set of 159 airport security checkpoint screeners were selected for special recognition because they "... showed an exceptional ability to repeatedly pass FAA tests." This selected set of screeners differed from the overall nationwide sample in: (a) mean age (51 years vs. 38 years); (b) gender (54% vs. 45% female); (c) ethnic background (50% vs. 24.2% Caucasian); (d) FAA pre-employment average test scores (98 vs. 93.5);

(e) experience background (nearly a three-fold difference in prior military background and twice the percentage of the total sample with a law enforcement background).

A Hierarchy of Motivations and Needs

Abraham Maslow, a social scientist in the 1950's, developed a theory of how all motivations fit together. Maslow made sense of the assortment of human motives by arranging them in a pyramid, which he called a "hierarchy of needs". Wade and Tavris, 1990, note that Maslow's theory is immensely popular because it is intuitively logical and optimistic about human nature. There is, as it seems from past and present research, some uniformity to the seemingly capriciousness of employee wants.

However, Maslow changed the pyramid rank of need over his life. This theory of motivation is the concept of a "*need hierarchy*" in which humans are motivated by the various needs and can be positioned on a hierarchy of prepotency. These needs are at different levels. Maslow (1954) notes when a need is fairly well satisfied, the next prepotent (higher) need emerges, in turn to dominate the conscience life and to serve as the center of organization of behavior, since gratified needs are not active motivations. As one level of needs are satisfied, people are no longer motivated by them. People seek to satisfy the next higher level of needs. The hierarchy basically ascends from simple biological needs to complex psychological motives, culminating in self-actualization. Maslow contests that needs must be met at each level before a person can think of the matters posed by the level above it.

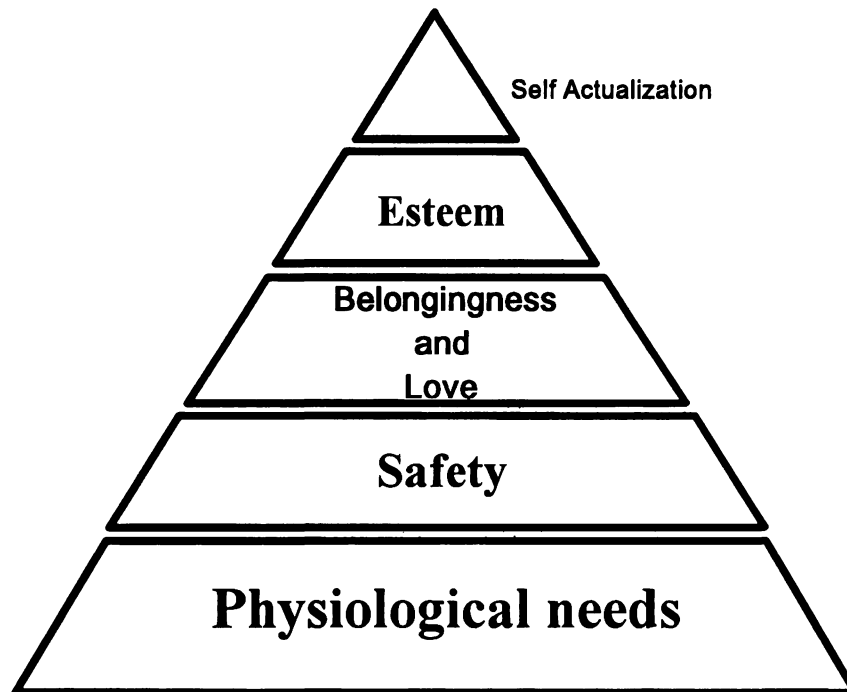


Figure 3. Maslow's Hierarchy of Needs

Maslow's first level of hierarchy begins with the basic physiological needs as initially the most vigorous in the motivation of the organism and extends through until a variety of psychological needs (like eating and breathing) are satisfied. Once these basic psychological needs are satisfied, people pursue the next highest level (see Figure 3). The basic biological motivations are generally found to be at a sufficient level of satisfaction so that the hierarchy lies within the various psychological and social needs of the individual. "The concept has led many people to feel that the worker can never be satisfied with his job" (Herzberg, Mausner, Snyderman, 1959, p.110). The next highest level consists of security or safety needs. This is where salary, benefits, and job security function as a role in motivation. On the next level are social or affiliation

needs. After this level is the esteem level. Respect and recognition are motivational at this level. Lastly, the highest level of the hierarchy of needs is self actualization.

Maslow articulates that a person cannot become self-actualized if he/she has not satisfied the need for self esteem.

"Maslow's hierarchy of needs is important to us because it helps to explain why high salary, good benefits, and job security may not be as important as other motivational factors" (Cohen, 1990, p.150). One problem with Maslow's theory however, Wade and Tavris note (1990), is that it is possible to categorize human needs horizontally instead of vertically, thus portraying a structure that is not a hierarchy (see Figure 4). In addition, employees have simultaneous needs for basic physical comfort and safety. An individual can also have simultaneous needs for understanding self esteem and competence. Thus, each person can develop an individual hierarchy of motives. A combination of many motives are cultivated in a way that suits one's own personality and experiences. "Since each individual may present at any one time a different scramble of his psychological need list, a systematic personnel practice hoping to cater to the most pre-potent needs of its entire working force is defeated by the nature of the probabilities. Forgetting for a moment the individual 'need hierarchies' it can be argued that there is sufficient homogeneity within various groups of employees to make for a relative similarity of 'need hierarchies' within each group" (Herzberg, Mausner, Snyderman, 1959, p.110).

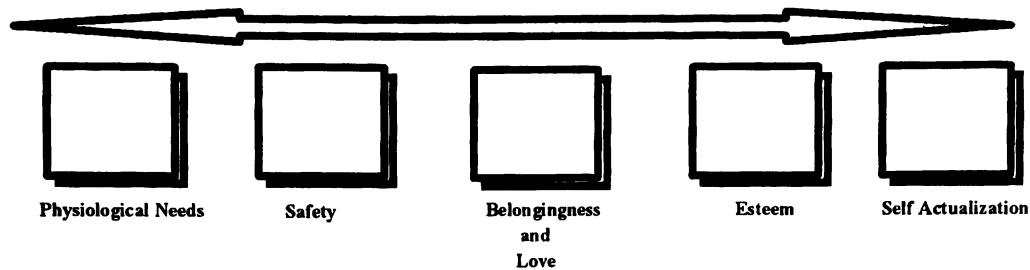


Figure 4. Maslows Needs Horizontal

Herzberg built upon Maslow's work and his studies conclude that people have two categories of needs which affect satisfaction and dissatisfaction with a job. Herzberg investigated job attitudes within employees in hundreds of companies and businesses, asking about events each had experienced at work which either had resulted in improvement in their job satisfaction or had induced a reduction in job satisfaction. In summary, two chief findings were derived from his studies. The factors involved in producing job satisfaction were *separate* and *distinct* from factors that prompted job dissatisfaction. According to Herzberg, five factors stand out as strong determinates of job satisfaction. These are achievement, recognition, work itself, responsibility, advancement (also see Figure 5).



Figure 5. Herzberg's Motivational Factors

According to Herzberg's findings, these five factors appeared very infrequently when the individual employees described events that paralleled job dissatisfaction feelings. The job dissatisfiers were similar to the job satisfiers in that they also had a unidimensional effect. See Table 3 for major dissatisfiers found in Herzbergs study were:

Table 3. Herzbergs Major Dissatisfiers

-
- ✗ company policy and administration**
 - ✗ supervision**
 - ✗ salary**
 - ✗ interpersonal relations**
 - ✗ working conditions**
 - ✗ status**
 - ✗ job security**
 - ✗ personal life**
-

The dissatisfier factors describe the environment and serve primarily to prevent job dissatisfaction. Since these dissatisfiers have little effect on positive job attitudes, *they* have been named the *hygiene* factors. These needs represent the function of preventive medicine in the workplace and can never be completely satisfied. The employee must maintain these hygiene factors or he/she will lose performance. Herzberg notes that although performance will not increase do to these hygiene factors, if an organization or individual is already performing well it, is possible to maintain these high standards with the hygiene factors. Motivators are in the second category because they are effective in motivating the individual to superior effort and performance (satisfying factors). Feelings of achievement, recognition for accomplishment, challenging work, increased responsibility, and growth and development are predominate in this second category. These are the factors that produce job satisfaction; fulfilling the hygiene needs will only prevent job dissatisfaction.

Herzberg states that separate factors for job satisfaction and job dissatisfaction need to be considered and, thus, the two factors are not the obverse of each other. Hence, the opposite of job satisfaction would not be job dissatisfaction, but rather no job satisfaction; and the opposite of job dissatisfaction is not job satisfaction but rather no job dissatisfaction. Job satisfaction is mainly unipolar and contribute very little to job dissatisfaction. Conversely, job dissatisfiers contribute very little to job satisfaction. Herzberg's two factors can be utilized to motivate people to be satisfied with their jobs. For example, if hygiene factors are reduced (i.e., an employees salary) job dissatisfaction is going to increase. To avoid job dissatisfaction, hygiene factors must be maintained at their present levels. To increase job satisfaction, the job motivators must be increased. "The motivators are task factors and thus are necessary for growth; they provide the psychological stimulation by which the individual can be activated toward his self-realization needs" (Herzberg, 1966, p. 78). Both Herzberg's and Maslows perceptions of human motivation are largely interactive with the personal, egoistic and the self actualization needs (see Figure 6).

Job Retention and Job Satisfaction

According to Witt and Hellman (1991), emerging literature has demonstrated that proportionately more dissatisfied employees intend to leave their employing organization, while proportionately more satisfied employees intend to stay with their jobs. Satisfied workers have greater job longevity. Turnover itself has been examined quite extensively, and "... researchers have identified several antecedents of intent to leave: a) global job satisfaction, or total-facet job satisfaction (Hom, et al., 1979;



Figure 6. A Comparison of the Motivational Theories of Maslow and Herzberg

Kraut, 1975; Lachman & Aranya, 1986; Marsh & Mannari, 1977; Martin, 1979; Martin & Hunt, 1980; Mobley, et al., 1979; Price & Mueller, 1981; Shore & Martin, 1989; Wright, 1982); b) group cohesiveness, job autonomy, and personal factors (Marsh & Mannari, 1977); c) supervisor related issues (Hom et al., 1979); d) organizational commitment (Blau & Boal, 1989; Lachman & Aranya, 1986); e) job involvement (Blau & Boal, 1989); f) workload (Jolma, 1990); g) burnout (Lachman & Diamant, 1987); and h) life status factors, such as age and tenure in the organization (e.g., Matin, 1979; Mobley, et al., 1978; Price & Mueller, 1981)" (Witt and Hellman, 1991, p. 1). The most frequent antecedent of intent to leave is job satisfaction. Witt and Hellman conclude in their research that the intent to leave is conceptualized as an

individual phenomenon. However, a frequent anecdote is the comparison of organizations as having employees with different levels of intentions to leave and commensurate turnover rates. "Research on job choice, career choice, and turnover clearly shows that the kind and level of rewards an organization offers influence who is attracted to work for an organization and who will continue to work for it" (Lawler and Jenkins, 1992, p. 1012). Witt and Hellman (1991) note that Staw, Bell, and Clausen (1986) note that employees may bring a positive or negative disposition to the work setting, process information about the job environment in a way that is consistent with that disposition, and then experience job satisfaction or dissatisfaction as an outcome. Witt and Hellman go on to state that it can be likely for an organization and organizational subsystems to engender different levels of job satisfaction and that this may affect the intent of an individual to leave; "...thus, to some extent it is a unit-level phenomenon" (Witt and Hellman, 1991, p. 6). Aggregation of individual job satisfaction enables prediction of organizational or subsystem intent to leave.

An organization in which its employees are satisfied "...will acquire a reputation in its community as being a 'good place to work'" (U.S. Department of Labor, 1974, p. 23). People looking for jobs will tend to go to an organization with this kind of reputation as one of their first choices, rather than being an organization who receives its employees as a last resort. This is a problem with many security companies. "Having more qualified applicants, it can recruit its employees from the ranks of whom it wants, rather than from those it is forced to take. High productivity *sic* (100% detection) may thereby be achieved as a result of the company's ability to

hire qualified employees" (U.S. Department of Labor, 1974, p. 23). The U.S. Department of Labor (1974) notes Harold Wool in his article "What's Wrong With Work in America" (1973) by stating that a full employment condition can create a seller's market for available labor, thus, an organization is obligated to compete for the scarce labor available and therefore provides better wages, hours and working conditions. An employee who is not satisfied with a job may not come to work regularly or promptly.

Predictors of Job Satisfaction

Job satisfaction often seems like an ultimate, perhaps unattainable, goal for both managers and employees. According to Vroom (1964), a substantial amount of research has been done on job satisfaction and its predictors. The term "job satisfaction" refers to effective orientations on the part of individuals toward work roles which they are presently occupying. Job satisfaction is "...typically measured by means of interviews or questionnaires in which workers are asked to state the degree to which they like or dislike various aspects of their work roles" (Vroom, 1964, p. 100). Harris (1974) notes that early attempts to study job satisfaction as a predictor of job performance have proven to be confusing. Experimental trends in this area have emphasized studying job satisfaction as a dependent variable, (i.e., as a phenomenon worthy of studying and understanding in and of itself). These efforts have resulted mostly in job satisfaction being correlated with many other variables, both personal and environmental. Vroom continues to point out that there has been little standardization of job satisfaction measures. "Most investigators 'tailor-make' an instrument for the

particular population they are studying" (Vroom, 1964, p. 100). Job satisfaction is composed of a complex set of variables that has different levels of satisfaction for different individuals. Vroom (1964) notes that the research indicates (and for practical purposes of this Thesis) that job satisfaction can be organized according to work role variables which have been thought to have an affect on job satisfaction (see Table 4).

Table 4. Work Role Variables Affecting Job Satisfaction

-
- ✓ supervision
 - ✓ the work group
 - ✓ job content
 - ✓ wages
 - ✓ proportional opportunities
 - ✓ hours of work
-

There is, in addition, the problem of defining job satisfaction operationally. Harris (1974) notes that Wanous and Lawler (1972) found nine different operational definitions of job satisfaction. "These definitions are really only different approaches to combining facets of the job which may contribute to job satisfaction, and, therefore, are not exhaustive or even identical in content" (Harris, 1974, p. 4). Many of the definitions of satisfaction imply different meanings of what is to be satisfied and are due to the different measures of job satisfaction that have been used (Harris, 1974).

Supervision

Vroom (1964) notes that Putnam (1930) notes that the Hawthorne works of the Western Electric Company, state that supervision is the greatest significant factor in

determining worker attitudes. Vrooms' research has lead him to believe that the "...relationship between first line supervisors and the individual workman is of more importance in determining the attitude, morale, general happiness, and efficiency..." of an employee than any other single factor (Vroom, 1964, p. 105). Quantitative evidence of supervision and the role it plays with employees is inconclusive. Vroom (1964) notes that Hertzberg, Mausner, Peterson, and Capwell (1957) have noted from 15 studies where workers were asked what made them satisfied or dissatisfied with their jobs. Supervision was mentioned more frequently than security, job content, management, working conditions, and promotional opportunities. On the other hand, when supervision was mentioned as a source of dissatisfaction, it appeared fourth in the same list of job factors. Vroom (1964, p. 115) sums up the research pertaining to supervision and job satisfaction by noting that Pelz (1951) states that attempts by "...influential supervisors to help their subordinates achieve their goals will usually succeed and will results in higher employee satisfaction"

The Work Group

Developing an understanding of the characteristics of social interaction within groups which are satisfying and dissatisfying to the individual is a must. Vroom (1964) quotes Elton Mayo's statement, "Man's desire to be continuously associated in work with his fellows is a strong if not the strongest characteristic" (p. 119). Every successful work group must exchange rewards among themselves through interaction. Vroom (1964) notes that there is some data that suggests that workers' satisfaction with their jobs is related to opportunities of interaction with others on the job. Vroom goes

on to state that Kerr, Kopelmier and Sullivan (1951) found that departments which provide the least opportunity for conversations among its workers have the highest turnover rates. Vroom also points out that Sawatski (1951) notes that machine operators, who have restricted opportunity for communication, have a much higher turnover than employees' who do not operate machines. In this case, restricted communication is due to the work environment, and the area in which the employee works. This case is comparable to the hi-tech airport security checkpoints and warrants further investigation. Group attitudes and similarity stimulate satisfaction. Group acceptance is another variable that stimulates satisfaction. "If a person's acceptance by other group members affects the valence of the group for him, it should also affect the probability that he will withdraw from the group" (Vroom, 1964, p. 124).

Job Content

Vroom (1964) notes that relatively little research has been carried out on the motivational consequences of job or task variables. Herzberg, Mausner, and Snyderman found that favorable job-content factors "...such as achievement and the work itself tend to produce satisfaction, but their absence does not tend to produce dissatisfaction" (Vroom, 1964, p. 128). Negative job-context factors (e.g., poor supervision or working conditions), on the other hand, tend to produce job dissatisfaction but their absence does not produce job satisfaction. Vroom goes on to note that Herzberg's own review (Herzberg, Mausner, Peterson, and Capwell, 1957) of the results of 155 studies involving over 28,000 employed personnel in which the employees were asked to denote what made them satisfied or dissatisfied with their jobs

is not consistent with his previous findings that job content can produce job dissatisfaction but not job satisfaction. Vroom concludes Herzberg as noting that a total of five job-context issues (e.g., security, wages, supervision, social aspects of jobs, and working conditions) are more recurrently mentioned as contributing to job satisfaction rather than job dissatisfaction, and one issue that applies at least in part to job-content (e.g., opportunity for advancement) is more frequently mentioned as contributing to job dissatisfaction.

Wages, Benefits, and Current Rates (Compensation Impact)

Compensation is a crucial and eminent support system that will remain a leading influence to an employee's approach to the job environment. Compensation includes any direct or indirect payments to employees, such as wages, bonuses, stock, and benefits. According to Yorks (1976) research has demonstrated that salaries, and the form in which it is administered, are a sound influence on job behavior.

Consequently, salaries emerge as a significant element in any structural approach toward enhancing employee effectiveness. Lawler (1981) articulates that the literature concerning pay and its role in organizational development has a potential impact on an organization and can play an important role in determining employee behavior. "How an organization structures its pay system tends to reinforce certain on-the-job behavior and communicate much to employees regarding management orientation toward them" (Yorks, 1976, p. 145). A change in the salaries offered, to overcome the deficiencies associated with the minimum wage syndrome where this applies, will enable a wider and better qualified labor market to be tapped (Wallis, 1993). Since security

checkpoint personnel are not highly-paid, the selection process is proportionately more difficult and the qualifications for employment are not high, and legal standards are frequently even lower. Yorks (1976) points out one valid generalization which can be made about the relationship between pay and the enriching of jobs that is applicable to the security checkpoint screening job. Employees do not immediately ask for more money as their jobs are made more complete and as they are asked to accept more responsibility. An example of this is a security checkpoint screener, who has been working for a number of months or years, who has not been promoted to a supervisor, but has taken on more responsibility. In addition, an interest in learning new responsibilities is the most typical response given by an employee. Groups of workers are more concerned with job changes and an opportunity for more interesting work than to accept the structural changes without an up-front guarantee of a pay increase (Yorks, 1976).

Compensation includes any direct or indirect payments to employees, such as wages, bonuses, stock, and benefits. Gerhart and Milkovich (1992) note that psychological theories typically specify that pay influences behaviors through its affect on perceptions and attitudes. Heneman (1985) hypothesized that pay satisfaction is a key attitude to be related to behaviors such as turnover and absenteeism. It is hypothesized to be a role of the incongruity between perceived pay and what the pay level should be. Gerhart and Milkovich (1994) note that Heneman (1985) cites research by Weiner (1980) showing that pay satisfaction does predict turnover. Furthermore, pay influences turnover only through the impact it has on pay

satisfaction. Salary can be classified as a hygiene factor. Herzberg (1966) states that salary is the most viable, communicable, advertised factor in all the world of work. In addition, he comments that hygiene factors are connected to salary. "Salary permeates the thoughts and expressions of people when they view their jobs. In such a circumstance, it is hardly surprising that *salary* often seems to be a satisfier to an individual, (Herzberg, 1966, p. 127).

Reward Systems

Achievement, recognition and responsibility are the most consistent motivational factors in producing job satisfaction (Herzberg, 1966). "These three describe accomplishment, reinforcement for accomplishment and increasing challenge -the basic ingredients of psychological growth" (Herzberg, 1966, p. 127). Pay can directly affect the success of job satisfaction in two ways. Yorks (1976) states that first, an employee's job has been enhanced, if significant changes in responsibility have occurred over time. Compensation will become an issue to an employee who verifies that he/she will make a contribution and be able to set and accomplish goals that he/she strive for. Second, Yorks states that "... the manner in which compensation is administered places pressure on managers and supervisors relative to the development of their employees" (Yorks, 1976, p. 147). Job satisfaction related to job withdrawal reactions such as turnover and absenteeism can be solved without deliberately setting out to increase job satisfaction (U.S. Department of Labor, 1974). According to the U.S. Department of Labor (1974), many theories state that good job performance leads to job satisfaction rather than job satisfaction leading to good job performance.

By combining a secure base pay with incentive or merit pay, special achievement employees can balance the intrinsic satisfactions of work with the extrinsic rewards of income and praise. Reward systems to stimulate attention of the security checkpoint job have proven effective in many airports (Wallis, 1993). Incentives tend to reinforce very specific behavior on the job. As the research indicates, an incentive program can lead to significant gains in productivity, and assists in the aspect of the employee doing the job that is expected. Pay is a powerful reinforcer and subtle differences in emphasis can produce significantly different behaviors and attitudes. When rewards are focused on the basis of an employees performance, satisfaction is dependent on performance. The employees that perform the best represent an interesting retention problem. Lawler and Jenkins (1992) point out that to retain the best performers a "...reward system must distribute rewards in a way that will lead them to feel equitably treated when they compare their rewards with those received by individuals performing similar jobs at a similar level of performance in other organizations" (p. 1013). In this situation, external comparisons need to be emphasized because turnover means leaving a company for a more preferable situation at a different company. In addition, Lawler and Jenkins (1992) state that to be satisfied not only must the better performers in an organization receive more rewards than less adequate performers, they must receive significantly more rewards because, as the equity theory points out, the better performing employees feel that they deserve much more.

Motivation and the Expectancy Theory

Blinder, 1990; Lawler, 1971; Lawler and Jenkins, 1992; Nalbantain, 1987; and Vroom, 1964 convey that when certain delineated conditions exist, reward systems have been established to motivate performance. These conditions are distinctive in the "...extensive literature on the expectancy theory: Important rewards must be perceived to be tied in a timely fashion to effective performance" (Lawler and Jenkins, 1992 p. 1013). "Performance motivation depends on the situation, how it is perceived, and the needs of people" (Lawler and Jenkins, 1992 p. 1013). Employees are inherently neither motivated nor unmotivated to perform with competence. Cantor (1994) notes that the 3,000 or so weapons per year among billions of pieces of baggage (one in 260,000 airline passengers) is a daunting challenge to the airline and the contract security companies responsible for safeguarding the flying public. "Adding to the challenge of the job itself is the high turnover among pre-departure screeners...more than 100% per year in some locations, owing to near minimum wages and local job markets" (Cantor, 1994, p. 61).

Research shows that the Expectancy theory attributes the motivation decrement to an upward adjustment of the response criterion and puts forth candid observations about employee behavior. Detections are affected by the expectations of the operator. In fact, expectancy can have a positive effect on an employees motivation to perform in a certain way. "Every behavior has associated with it, in an individuals mind, certain outcomes (rewards or punishments)" (Lawler and Jenkins, 1992, p. 1014). Signal detection experiments also show that bias is affected by payoff. "If screeners are

rewarded for detections, being only human, they will say, 'I see it.' Hits will increase and so do false alarms" (Cantor, 1994, p. 64). If the Expectancy theory holds true for the security checkpoint screener, one might suspect that his/her motivation is prominent when: a) the security checkpoint screener believes that the behavior will lead to a certain outcome; b) the security checkpoint screener feels that these outcomes are appealing; and c) the security checkpoint screener believes that performance at a desired level is possible. If 10,000 carry-on bags in a row contain no threats, the screener is relatively more likely not to detect a weapon when one really does come along. "Given a number of alternative levels of behavior, an individual will choose the level of performance that has the greatest motivational force associated with it, as indicated by a combination of the relevant expectancies, outcomes, and values" (Lawler and Jenkins, 1992, p. 1014). If any one of these elements is missing then there is no motivation. In addition, the Expectancy theory implies that satisfaction is best thought of as a result of performance rather than a cause of it (Lawler and Jenkins, 1992; Locke and Latham, 1990; and Porter and Lawler, 1968). The detection of a threat in an airport security checkpoint operation is an exercise in signal detection. Four possible outcomes are represented by the security screener: (a) if the screener notes a problem then there is either a threat present (hit) or no threat present (false alarm); (b) if the screener does not note a problem then there is either a threat present (miss) or no threat present (correct rejection). Wickens (1984) noted that simple instructions in company policy can adjust beta to an appropriate level. Knowledge of results can also adjust the level of response criterion.

Turnover Issues

It is important to acquire individuals who are efficient and will remain in the occupation with sufficient tenure to develop adequate expertise and experience. Guide, 1991, notes that Salthouse, 1987, suggested that experience is a very important variable in moderating human performance and one that should be considered when attempting to examine any type of individual differences in behavior. Turnover issues have scourged airport security checkpoint security organizations especially at the larger airports and costs the industry dearly. As previously stated, the occupation of airline passenger security screener is plagued by turnover rates that typically exceed 70% annually in most facilities. Air carriers are subject to civil penalties when contraband and incendiary devices are not detected, many security companies react by terminating the responsible employee (Moore, 1991). One study by the U.S. Department of Labor noted that turnover was reliably forecast by a measure of job satisfaction and is instructive in directing attention away from overall job satisfaction to satisfaction with particular job aspects as predictors of turnover. The U.S. Department of Labor (1974) pronounced "...job dissatisfaction may be more likely to contribute to turnover when the employee is single or otherwise not responsible with family responsibilities. The association between job satisfaction and turnover will depend to some extent on the turnover measure used and other mitigating circumstances" (p. 24). Lawler (1971) claims that organizations that give the most rewards tend to attract and retain the most people. High reward levels lead to a higher job satisfaction level, and in turn conveys lower turnover and more job applicants. "Individuals who are presently satisfied with

their jobs expect to continue to be satisfied and, as a result, want to stay with the same organization" (Lawler & Jenkins, 1992, p. 1012). The correlation between dissatisfaction and turnover is likely to be stronger in periods of full employment. Turnover cannot be expected to rise and fall consistently with inclinations in job satisfaction because turnover trends are so strongly influenced by economic factors.

The most obvious reaction of job dissatisfaction is leaving ones job. In addition, job absenteeism and job dissatisfaction are found to be related. However, like turnover, job absenteeism will or will not be related to job dissatisfaction depending on the absenteeism measure employed. According to Lawler and Jenkins (1992) research has shown that absenteeism and pay satisfaction are related, although the relationship between the two is not as strong as the relationship between pay satisfaction and turnover. Beaumont (1945) notes that even among workers who are skilled and efficient absenteeism may occur to cut down their total overall performance. Irregularity of attendance also tends to unfavorably affect moral and motivation of other workers and *teammates*.

Several studies have shown that by utilizing pay bonuses and other rewards to pay attendance absenteeism can be reduced. Job satisfaction is best related to turnover and absenteeism in terms of cross-sectional indicators of job satisfaction of individuals rather than indicators of trends over time in job satisfaction (U.S. Department of Labor 1974). Lawler (1981) points out that financial rewards can have a significant, even dominant effect on the attitudes, motivation, behaviors and performance of employees. Employees consider education, training, seniority, job performance, and the nature of

their jobs when thinking about specific rewards that pertain to them. "There are often substantial differences among people as to which inputs they think should be most important in determining their rewards" (Lawler, 1981, P. 14). If an organization job environment is satisfying and high paying, individuals come to work regularly; if it is not then the employee will not. Reward systems are only one of several ways to influence turnover and absenteeism, however, a reward system is potentially effective if a company is willing to tie important rewards to coming to work. This is often much easier to do than utilizing a reward system with performance because attendance is easily measurable and it is very visible (Lawler & Jenkins, 1992).

Job dissatisfaction and work-related problems can be grouped into three extensive types of causes. These are: a) the workers themselves (motivation, skills, etc.); b) their jobs; and c) the *fit* between what workers want and what their jobs provide. "Each type of causal assumption implies a distinctly different course of action" (U.S. Department of Labor, 1974, p. 31). If the problems source is attributed to the employees, some type of training or re-training is advised as a solution.

"Attributing the problem to job characteristics implies that the appropriate solution is one that involves changing working conditions, while attributing the problem to the job-worker "fit" points in the direction of redistribution and reassignment" (U.S. Department of Labor, 1974, p. 31). The identification of such causes is not easy. If the problems source is attributed to the work environment, rather than the employee, distinguishing the particular aspects of an employee's job that are the cause and take

subsequent action. This could range anywhere from salary, hours, management, and level of work.

Scope of the Research

The proficiency and effectiveness of retention and attrition factors can be achieved and evaluated by focusing upon employee job satisfaction and job dissatisfaction. The literature strongly suggests that there are parallel relationships between job satisfiers and dislikes that impact a security checkpoint screener's decisions to stay on, or leave the job. In fact, the literature points out that job satisfaction and turnover are negatively related to one another. It is clearly evident that within an airport security company (contracted by an airline) job retention and attrition factors among the personnel is exceptionally low and exceptionally high, respectfully. Job longevity is important in this kind of work environment to establish both the needed experience and qualifications of becoming a successful screener. The more satisfied an airport checkpoint security screener is towards his/her job the more likely he/she will remain on the job and the less probability of leaving. By identifying relevant satisfiers and dissatisfiers in this population of airport checkpoint security screeners it will be possible to pinpoint the causes of the retention and attrition problems that plague the airport security companies, and ultimately hurt the airlines. The identification of these relevant satisfiers and dissatisfiers will be able to dictate the use of methodologies that focus on the personnel that operate an airport checkpoint security system.

Method

The objective of the research is to solicit expert opinions from the SME's as to those job satisfiers in terms of a reason why screeners try to and want to stay on the job; and to those reasons to dislike the job or quit in terms of wanting to, or actually leaving the company. This phase of *problem-solving* research is often hurriedly passed through, so much that sometimes the results solve the *wrong* problem with the *right* solution. Thus, problem identification will be the main focus of this paper, which will attempt to bring new solutions of the old, perplexing problems of motivation, performance, and retention of airport checkpoint security personnel.

The SME has a real understanding of these answers, and will provide them with consensus through a Delphi workshop. The Delphi process furnishes a means to measure security checkpoint screener job satisfaction and dissatisfaction to portray important implications towards retention and attrition problems current airport security companies are facing. The 1989 President's Commission report emphasized that security deficiencies were found in the investigation of the accident of Pan Am 103 in connections to breakdowns in airline security personnel performance. Simply stated the proficiency and effectiveness of retention and attrition within a security company may be achieved and evaluated by focusing upon employee job satisfaction, motivation, and dissatisfaction. The Delphi workshop identifies an ideal security checkpoint screener environment where employees will be motivated to produce at effective and substantial levels of security as they fulfill their needs of job satisfaction.

Subjects

Subjects for this study were selected from the population of on-line Subject Matter Experts (SME's: airport checkpoint security screeners and supervisory staff) from three major airports in the United States. These were: (a) Orlando International Airport (MCO); (b) John F. Kennedy airport (JFK); and (c) San Francisco International airport (SFO). In all, 34 SME's participated, of which 14 were supervisors. The SME's were preselected by private security companies (i.e., Argenbright Security, and ITS) and the investigation team that headed the Delphi workshops. The SME's were individuals who were noted as: (a) being employees that were noted for being successful at their respective positions by their fellow workers and management; (b) perceived as potential contributors to the process; (c) demonstrating an ability to work in a team environment; (d) being expressive individuals that could communicate effectively in a group; (e) being employed for a minimum of 6 months as a screener within the past 4 years; and (f) a screener who completed the ATA curriculum and any prescribed security firm and/or State and Government training. The SME's have had initial training including both classroom and on-the-job training. Recurrent training and instruction have been given so that the SME's will maintain their knowledge and proficiency. Participants were also selected on the basis of having job longevity to be fully knowledgeable about the job at their particular cite. All participants received \$150 compensation for their services. The SME's being hired to be in the workshop had been given the factual knowledge needed to participate, and they had been made aware of the most practical and efficient manner

in which to use this knowledge. In addition, all work and consensus is based on SME experience and knowledge from being the expert in their job field. The procedural technique to select the sample and sample size was random depending on the geographic location of the airport, airport congestion, airport size, the number of working and available SME personnel, and cooperation with the FAA and security company. The three groups of SME's participating in the Delphi workshops consisted of 14 (MCO), 10 (JFK), and 10 (SFO) airport security checkpoint screeners.

Instruments

All Delphi workshops were conducted off-site from the security checkpoint areas. The typical environment for the workshops was an airline training room within the airport complex, but away from the security firm management and administrative offices.

Delphi Workshop:

An effective scheme should optimally obtain inputs from employees while minimizing distinctive differences. The Delphi technique (Linstone and Turoff, 1975) provides on such avenue to obtain these data. The Delphi technique also furnishes the advantage of generating data that can be converted into a survey format for large scale data collection endeavors at a later time. The Delphi technique is also very versatile, in that, the costs of putting one together is relatively low, with regard to the envisioned benefits. The Delphi techniques were originally developed by the Rand Corporation more than forty years ago for reaching consensus on complex problems (Linstone & Turoff, 1975). The methodology has enjoyed particularly strong use in forecasting and

long-term planning among planners (Linstone & Turoff, 1975; Dalkey, 1967; Helmer, 1967; Pike and North, 1969; Delbecq, 1975; Weaver, 1971). Delphi techniques have become common methodologies for eliciting analysis, expert opinions, and evaluations on a wide span variety of topics. In the following Delphi workshop a revised Delphi method was used to develop SME consensus (explained later). Delphi techniques may be characterized as a method for structuring group process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem (Linstone and Turoff).

During its initial development, the Delphi process used a series of questionnaires for eliciting analysis, subject matter expert opinions, and ratings. The Delphi is a set of procedures eliciting and refining the opinions of a group of people (i.e., SME's). The initial questionnaire typically solicited responses on a broad question. In this study, however, the Delphi Study will be modified. In most cases it is easier to talk about a subject than to write about it" (Delbecq, 1975, p. 107). Each subsequent questionnaire is increasingly more focused since it uses the data from the preceding questionnaire for refinement (Delbecq, 1975). Typically the process requires three interactions for consensus to be reached (Dalkey, 1967). On the other hand, no standard number of iterations are necessary and the process is considered complete when the investigators have obtained the desired level of information.

Throughout the history of the Delphi techniques, many methodological pitfalls have emerged (Linstone, 1975). Primary among these that are germane to this research project are: (a) ensuring against suppression of divergent views;

(b) oversimplification of concepts by participants; (c) ensuing a variability of facilities so as not to obtain a narrow window of expertise; (d) poor execution by inadequate selection of participants or providing little feedback and explanation of the process; and (e) guarding against deception about purpose of the process. Many of these methodological problems are partly caused by anonymous questionnaires where the investigators and participants are not in physical contact with one another. The standard Delphi technique thus provides no opportunity for group training or discussion; the data compiled, the next questionnaire developed, and so on for several iterations. A loss of participants from the initial population can be justified with each iteration from this procedure.

The Delphi process has undergone many changes since it has been developed by the Rand Corporation (Sackman, 1974). The revised Delphi used in this study was a modified methodology technique which is interjected to further structure the group process. For example: (a) it brings the participants physically together; (b) it incorporates formal instruction to the participants in group processes and methods of consensus; (c) it provides and facilitate group exercise in group processes; (d) it utilizes anonymous individual written data as a basis for group deliberations; and (e) it uses group facilitators to guide group interaction and maintain focus toward the Delphi goals. The Delphi process will rely heavily on direct interaction between the facilitators and the SME's. This approach is selected primarily because of the objectives and the requirement to maintain a high level of focus for the group consensus.

Unlike other evolutions of the Delphi technique, this methodology relies heavily on direct interaction between the facilitators and the participants. It requires an interactive approach to generate the data base. All participants are provided training before data development procedures are initiated. Participants are briefed on the purpose of the work shop, its goals and use of all data. Confidentiality of the individual data is assured during the briefing. Given the nature of the population of interest, additional training was provided thru a background briefing during the initial hours of the first day of the workshop. Included with this training are concepts in group dynamics, group think, bias, consensus development, leadership, and psychological traits and abilities, that familiarize the individuals of the roles and rules they are expected to follow to ensure a successful workshop. This technique was utilized primarily because of the complexity of the objectives and the requirement to maintain a high level of concentration for the group consensus.

Design:

Because of the complexity of the issues immersed and the limited time available to conduct the workshops, numerous materials were developed and distributed prior to beginning each Delphi. The process involved putting together a pre-Delphi workshop packet, that was to be given to each SME 3-4 days before the workshop commenced, and was to be used as a guide during the two day workshops procedures (see APPENDIX A). The pre-Delphi workshop packet materials essentially outlined the workshop schedule, briefly described the necessary group processes panorama, and defined the focal issues of the Delphi. In addition, the pre-Delphi workshop packet

was a description of the overall research project. A cover letter conveying appreciation for the SME participation and detailing logistical information was also included (see APPENDIX B). The SME's were instructed to review these materials before the workshop began.

The pre-workshop packets provided a starting point for each individual SME. The pre-workshop packets were color-coded to direct participants to each of the tasks described above (e.g., "First look over the PINK AGENDA to become familiar with the workshop sequence."). Each of the tasks also indicated an estimated amount of time it would take to complete the individual task. All rating scales were simple five or seven point structured likert scales with textual anchor points (see APPENDIX A). Participants enjoyed the freedom to respond to the objectives with only broadly defined goals. The workshop objectives are displayed in APPENDIX C.

In order to establish a foundation for group work on the Delphi issues, the SME's were furnished item pools of factors that were related to the issues. This material was intended to facilitate and guide the inputs on the three major issues (of which the last two are utilized for this Thesis). The SME's were instructed to read the complete pre-workshop packet and individually identify and add or delete to the list to the provided (*screener pre-selected list*) of the reasons why people enjoy or stay on the job; individually identify and add or delete to the list provided (*screener pre-selected list*) of the reasons why people do not like the job or quit. After considering both lists, the SME's were to individually suggest what can be done to improve the job, make it more enjoyable and satisfying, or how the pay and reward system can be made better,

and what is needed to be changed to help people stay on the job. This list of factors were to impact career retention and job satisfaction (see APPENDIX A). Most of the individual items were derived by comments from screeners and supervisors. It is important to note that no attempt was made to be comprehensive. The material was to facilitate discussion and reflection on the specific issue.

There were two major reasons for offering initial data to the SME's. First, this procedure was to accomplish the objectives of the Delphi process within a rigorous time period. Screeners and supervisors are operational personnel and their services are required to maintain adequate staffing at the security checkpoints. A lengthy research protocol would interfere with personnel scheduling. As noted before levels of turnover are abnormally high within airport security companies and utilizing a core group of personnel for a lengthy period of time would impact both the manpower and, thus, the overall security of the airport. This study, consequently, was a descriptive method that determined and derived the job satisfiers and motivators in terms of a reason why screeners try or want to stay on the job; and the job dissatisfiers in terms of reasons to dislike the job or quit.

Procedures:

Each Delphi workshop was conducted identically using a four-stage process. SME's were guided through: a) an introductory stage; b) group process training; c) preparatory stage; and d) Delphi process stage. The initial two stages were only given before the first issue was to begin to eliminate redundant training and overview information. The workshop had four facilitators present to make sure the SME's

stayed focused to the goals of the workshop. They provided an open comfortable atmosphere so that each participant could be of impact and equality in the consensus of each goal.

In the introduction to the workshop there was a welcome and introduction of participants and staff. The participants were then briefed on the project overview. For example: the purpose, the goals and use of all data, sincere interest in the FAA, appreciation for their expertise, convey the facilitators role and the basic concepts of the Delphi workshop. Particular emphasis was placed on the importance of the data and the value of using the participants as subject matter experts. Confidentiality of the individual data was assured during the introduction briefing and throughout the workshop. It was made sure that everyone understood that they would only know their individual ratings and the group mean. Every effort was made to convey to the participants that they were the experts and only they, as a group, had the knowledge of the job satisfiers and dissatisfiers that were necessary to want to stay or leave the job. The facilitators further explained that the reasons and motivation to remain in the career field required close examination, and had thus far been an mystery to the research team. The Delphi process was presented and emphasized as a *team effort*, and that a cooperative and open interaction was necessary among and between participants and facilitators.

During the introductory stage of the workshop, participants completed a pre-workshop survey and a background/biographical form (see APPENDIX A). The pre-workshop survey assessed initial attitudes and expectations about the workshop process,

whereas the biographical data focused on related job experience factors (e.g., time at the current job, length of time with the company, position, and X-ray systems used). Both surveys had self-contained instructions. All returned forms were assigned a code and placed into a database by a single facilitator as the process continued by the other facilitators, thus conserving valued time. The codes were to ensure the SME's anonymity. The introductory stage concluded with the dispersement of administrative and logistical information (e.g., background forms, payment vouchers, and room locations to be used in the airport during study). This initial stage ordinarily took 60 minutes for completion.

The group process stage was initiated after a short break period. Additional training was provided that familiarized the SME participants with the methods of group processes. Included with this training are concepts in group dynamics, the recognition and avoidance of group think phenomena, bias, consensus development, leadership, psychological traits and abilities. Group interaction techniques were the spotlight of this stage. All material was presented using a combination of lecture, class room type question and answer, media presentations, and demonstrations.

The first objective (not utilized for this thesis) (i.e., personality items and abilities) was in actuality a practice and/or training exercise, since the scientific literature does not bear much weight on personality tests as accurate performance predictors. This training exercise was a pertinent foundation for the following issues to be presented. The next two objectives were viewed imperative to the airport checkpoint security screeners occupation. The objectives were a list of job satisfiers

and motivators, and a list of reasons to dislike their job or quit (these lists are all job satisfiers, motivators, reasons to dislike or quit that were given from airport security checkpoint screeners) (refer to APPENDIX C). Participants were re-assured that the facilitators were not part of the group and would guide the process during group interaction. Considerable effort was directed to guarantee that all participants felt comfortable with the process. This stage of the process averaged about 60 minutes for completion.

The preparatory stage began with a review of the objectives, goals, and individual responsibilities. The bulk of this stage, however, centered around presentation and clarification of the issues. The facilitators re-emphasized how the data is obtained and used. The SME's were informed that individual evaluations of the items are required for the next stage of the process. The SME's were briefed on the intangible framework of each technique. With the assistance of a facilitator, a selection of a scaling technique that is best suited for the follow-on evaluations were chosen. Scale values will be dependent on the technique selected. The data and the data's uses was reiterated to ensure that both small groups and the bringing together of the large group completely for consensus completely understood the value of their contribution and to assist in providing a clear focus to the group process. Instructions for group work were clarified with particular attention devoted to the comprehension of the concepts underlying the likert scales that would be utilized in the judgement evaluations. The difference between *judging* items and ratings was repeated to review specific reference to the distributed item pools and likert scales.

Once the facilitators responded to all questions and concerns, the SME's were released to begin their small group work. The intact Delphi group was separated into two small groups, these two groups were isolated into two different rooms in their respective airports. Since adequate numbers of SME's were available at each site, two intact groups were assembled to function independently. The separation was devised to facilitate in-depth exploration of the objectives and forthcoming issues. Establishment of two independent databases provided a means to conduct split-half reliability analysis. Small groups had either five or seven members and were assigned from the larger intact group by the facilitators and station managers in order to avoid any personality conflicts, bias, and to keep friendship relationships or supervisor/screener relationships from keeping everyone in the group from being equal. The preparatory stage averaged 30 minutes to complete.

The final stage of the Delphi process re-convenes the group to develop consensus on the importance of individual items with each content area. This stage was the predominate component of the work group sessions. SME's were initially tasked to work in a small group setting, and were provided an item pool for each of the Delphi precincts that addressed the issues of job retention and attrition factors (concerning the areas which would make a screener want to stay on the job or leave the job). Several scaling options are presented to the group. The data then was accumulated and provided to the group as feedback and as basis for group discussion and consensus. The SME's were briefed that their individual data and their judgement ratings were collapsed and presented to the small work group anonymously to use in group

discussion. Individual inputs are not identified within this feedback only their own initial evaluations and the group mean for each item. Participants were free to input new concepts, review, modify existing ideas, delete items, and prepare commentary for each item pool where they saw fit. There were no restrictions placed on extending the item pools. The initial factors were a compendium of initial factors that were developed from screener and supervisor comments. While reviewing and extending the qualitative content of the item pools, SME's were also asked to reach consensus as a small group and scale each of the items by evaluating them for importance. The SME's were addressed several fundamental areas before they were allowed to begin their work. These were: (a) SME's were ensured that the item pools were only an initial starting point, and that it was decisive for them to add or modify the items based on their own unique perceptions; (b) SME input and their comprehensiveness of the item pools was the most important facet of the workshop; (c) facilitators re-iterated that all individual data, both qualitative and quantitative, were combined and presented to the group as grouped data without individual identification; (d) the SME's were briefed that the small group consensus data would be the basis for further intact group work, and that it would be beneficial for them to maintain *private* notes to use during the intact group discussions; (e) the SME's were briefed on the job of the facilitator, including time management and their roles.

The initial focus of the work groups was to extend the item pool through facilitated exploration of the issues. Individual input was encouraged to clarify and modify each item as necessary. The facilitators promoted group discussion by

challenging or provoking inquiry into the ratings provided for each item. Through this open process of iteration and structured reflection and thought, the item pool and individual item ratings were modified. This led to the development of an intact group consensus from the two smaller work groups.

The SME's and facilitators reconvened to conduct the intact group process work. The initial input to the intact group process work was computer generated (Lotus 123) and evaluations compiled from both of the small groups. Once consensus was consummated within the individual small groups, all participants were reconvened into the larger intact group. This process generated the finalized item pool and evaluations for each Delphi. These data would later be collapsed across all Delphi's and be retained as the foundation for the survey. The survey would be utilized to extend the generalizations of the findings and allow a more diverse input to the research. Typically this process requires three to six hours for completion and is dependent on the complexity and size of the database. The process generates an extensive and exhaustive item pool.

The Delphi workshops concluded with SME's completing two post-workshop surveys, then a question and answer debriefing was held to further gather any concerns the screeners had with the Delphi workshops. A group process survey of seven items, using a 5-point scale (see APPENDIX A), required participants to evaluate the group process with respect to goal clarity, group relationships, resource management, and decision-making processes. The second workshop assessment survey asked participants to evaluate workshop products (see APPENDIX A). SME's evaluated satisfaction with

the workshop, effectiveness of feedback, and personal contribution to the process. This helped provide feedback to the facilitators.

Analysis

The Delphi workshops had thirty-four screeners participate from two security companies (Argenbright, and ITS). Of those 34, 14 were supervisors (41%) and the other 59% were screeners. Twenty-one were female (62%) and 13 (38%) were male. The screeners "time at current job" ranged from 6-168 months (Mean = 34.9 months; and the standard deviation = 31.7 months) and "time with company" ranged from 11-168 months (mean = 42.8 months; and the standard deviation = 34.2 months) (see APPENDIX D).

All screeners (N=34) were grouped into six categories by 12-month increments. This was done for simplistics of getting an overall rating of screeners on the job in one year increments. A histogram showing the number of months employed (i.e., time at current job) is shown in Figure 7. All screeners who participated in the delphi (as mentioned previously) have completed the ATA-approved training course and were considered to be a good-to-superior screener by their company.

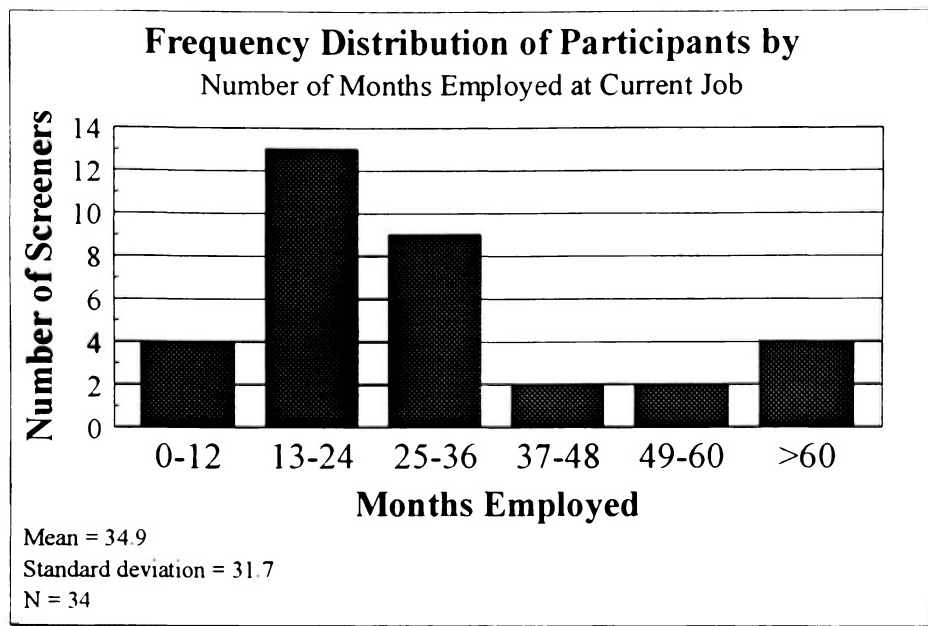


Figure 7. Frequency Distribution of Participants by Number of Months Employed at Current Job.

Pre-Workshop Survey

This section consisted of six questions inquiring about screeners' opinions and attitudes toward the workshop and fellow co-workers. Screeners responded on a seven-point scale with anchors varying from question to question. A figure is exhibited for each of the six questions that were asked to the screeners in the Pre-Workshop Survey. The figures illustrate the frequency of screener responses. APPENDIX E presents the data from the Pre-Workshop Survey in tabular format.

Question 1 asked screeners to rate their job skills and understanding comparable to their fellow co-workers. Ratings ranged from (Very Highly Skilled = 1) to (No Skill = 7). The mode was 2 and the median was 2 which signified that the majority of the

screeners felt very skillful in understanding and evaluating the job as compared to their fellow workers. The frequency histogram of the seven possible ratings for this item is shown in Figure 8.

1. As a pre-board x-ray screener (in this group of screeners), my skills in understanding and evaluating the job put me about here, relative to the others.

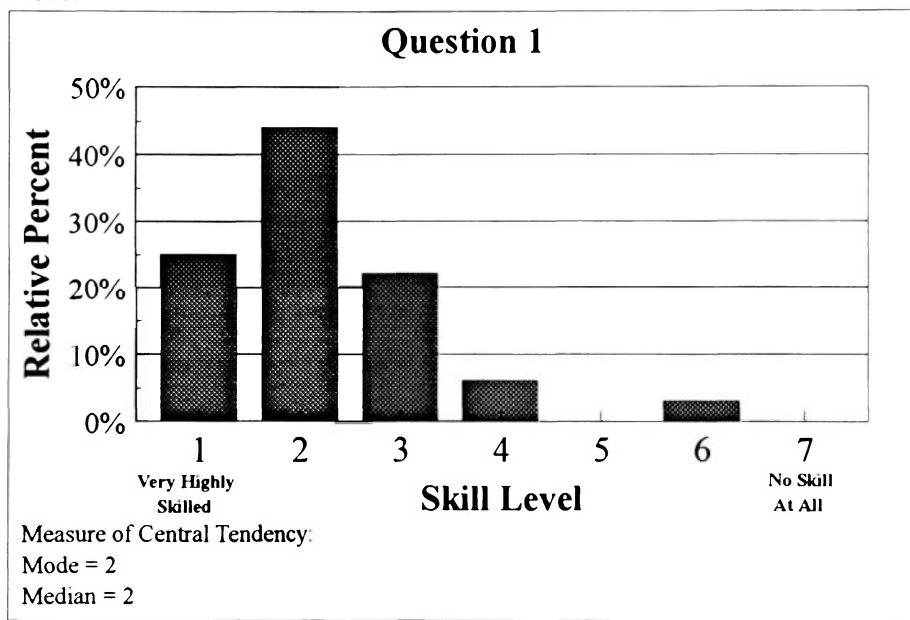


Figure 8. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 1.

Question 2 asked for a rating of how screeners felt their ideas would be accepted by their co-workers. Rating ranged from (Yes, absolutely = 7) to (No, not at all). The mode was 2 and median was 3 indicating that the majority of screeners were confident that their ideas were in agreement with fellow workers. The frequency histogram of the seven possible ratings for this item is shown in Figure 9.

2. I think my ideas will be in agreement with the rest of the screeners in the group.

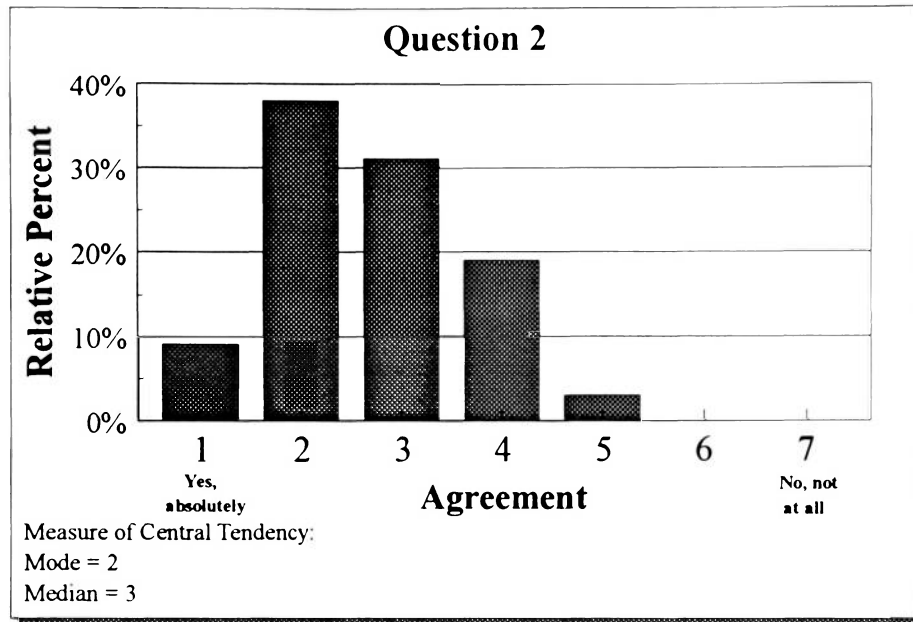


Figure 9. Frequency Distribution of Screeners' responses to Pre-Workshop Question 2.

Question 3 asked for a rating of how well screeners knew their fellow co-workers. Ratings ranged from (Yes, pretty much = 1) to (No, none at all = 7). The mode was 1 and the median was 2 indicating that most of the screeners knew their fellow workers well. The frequency histogram of the seven possible ratings for this item is shown in Figure 10).

3. I know most of the screeners very well.

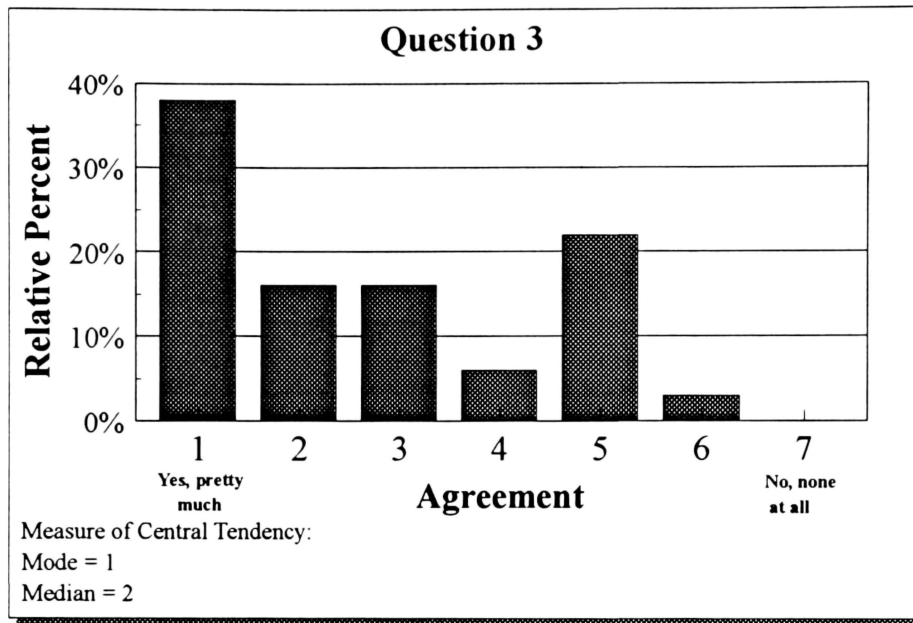


Figure 10. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 3.

Question 4 asked for a rating of screeners' knowledge of the necessary skills and abilities required for successful performance as a screener. Ratings ranged from (Yes, lots = 1) to (No none = 7). The mode was 2 and the median was 2 indicating that most of the screeners know what the required skills and abilities are for success as a screener. The frequency histogram of the seven possible ratings for this item is shown in Figure 11.

4. I have some definite ideas about what the necessary skills and abilities are for success as a screener.

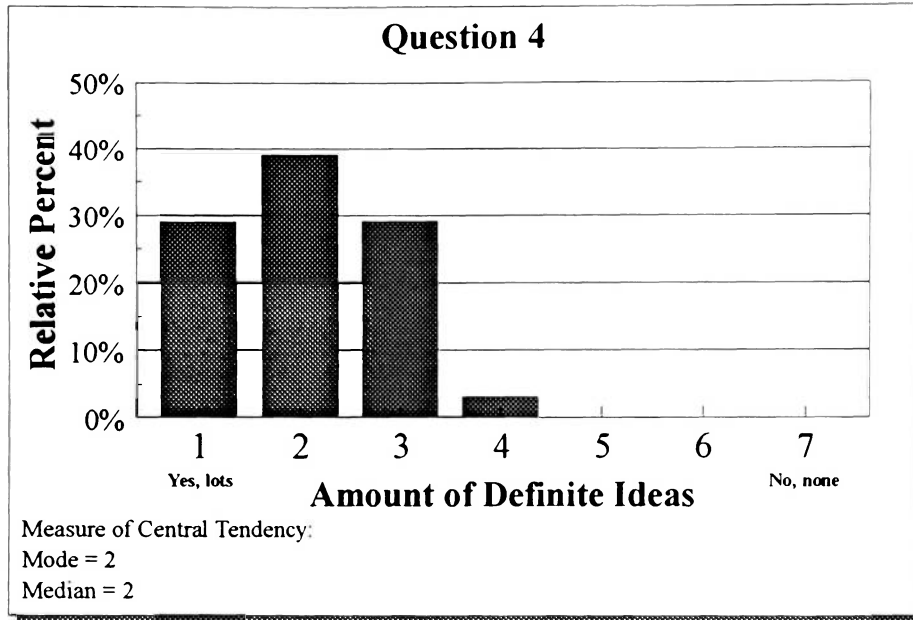


Figure 11. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 4.

Question 5 asked for a rating of screeners' experience relative to others participating in the workshop. Ratings ranged from (Yes = 1) to (No = 7). The mode was 2 and the median was 2 indicating that there was a variety of experience levels present at the workshops. The frequency histogram of the seven possible ratings for this item is shown in Figure 12.

5. I have been in airport screening longer than most of the other screeners here.

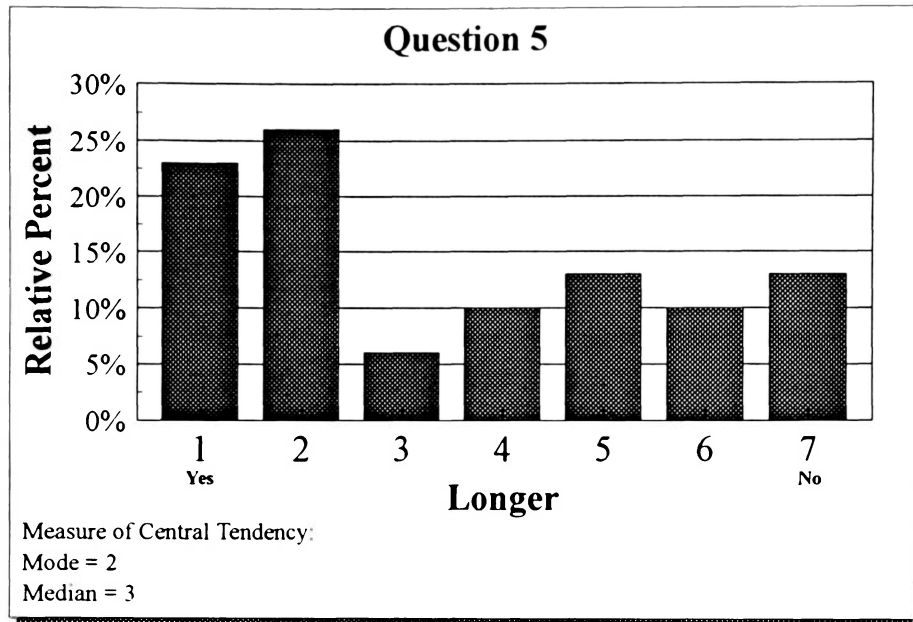


Figure 12. Frequency Distribution of Screeners' Responses to Pre-Workshop Question 5.

Question 6 asked for a rating of the screeners' perceptions as to what the workshop will accomplish. Ratings ranged from (Yes, I think it will be = 1) to (No, I think it may be a waste of time = 7). The mode was 1 and the median 1 indicating that the majority of the screeners felt the workshop would be successful and worthwhile. The frequency histogram of the seven possible ratings for this item is shown in Figure 13.

6. I am anticipating that the workshop is going to be a good experience and will accomplish what we need to do.

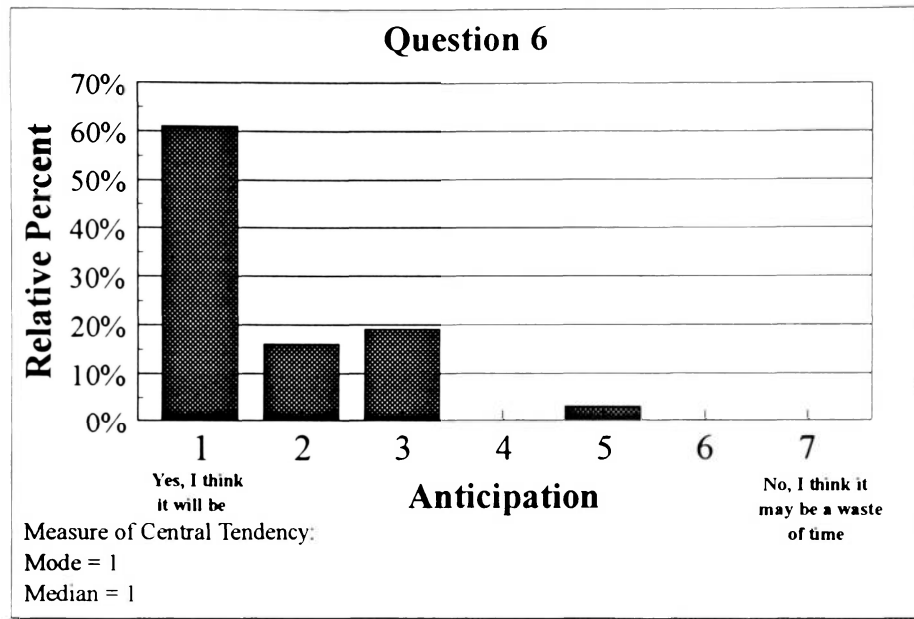


Figure 13. Frequency Distribution of Screeners' responses to Pre-Workshop Question 6.

Workshop Objectives

This section of the survey was divided into three parts. The first part (personality items and abilities of successful screeners) is not included in this Thesis due to the fact that it does not reflect the attrition and retention problems that plague the aviation security industry today. The other two sections (job satisfiers and motivators, and reasons to dislike the job or quit) are included as beneficial facets to this Thesis. Several items were presented in this part of the workshop (a total of 65 items in all). The airport checkpoint security screeners rated each item by their level of perceived importance according to their respective 5-point scale. A table was generated

from these data for the two objectives portraying the intact group rating by site. It should be noted that in each of the following tables for the two objectives, the data was collected and then analyzed, and are presented in order of perceived importance. They are not in the order in which they were presented to the screeners during the workshops.

The majority of the workshop was spent discussing these two objectives to reach a small group consensus and then ultimately an intact group consensus. To achieve this consensus particular attention was placed on the item meaning (i.e., how the group defined the word). This was essential in many cases before evaluating the individual items. In some instances, for example, item lists were modified to include new items not part of the original list, and, screeners might have merged other items or collapsed the item to systematically eliminate redundancies, whereas other items were deleted, indicated by an ✖, because of their obscurity, ambiguity, or irrelevance.

Job Satisfiers and Motivators

Job satisfiers and motivators asked each screener to rate each item in terms of "a reason why I try to/want to stay on the job." ratings ranged from (1 = Absolutely Unnecessary) to (5 = Absolutely Necessary). Those factors that appear to have a serious impact on career retention and attrition factors, and job satisfaction were rated a [5], whereas those rated a [1] or [2] were viewed as not nearly as important (see Table 5).

Table 5. Job Satisfiers and Motivators - Intact Group Ratings by Level of Perceived Importance (N = 34).

Job Satisfiers and Motivators	MCO Intact Rating (n = 14)	JFK Intact Rating (n = 10)	SFO Intact Rating (n = 10)
1. Medical benefits	5.0	5.0	5.0
2. Retirement benefits	5.0	5.0	4.5
3. Appreciation "by" supervisors	✘	4.0	5.0
4. Importance of the work I do	4.0	5.0	4.0
5. Desire to protect people	5.0	4.0	4.0
6. Pride in my work	5.0	4.0	4.0
7. Flexible hours and days	4.5	4.0	4.0
8. The hours of the job (the shift work)	4.0	4.0	✘
9. Appreciation "of" supervisors	4.0	4.0	4.0 ^o
10. Opportunities for rewards	3.0	4.0	5.0
11. Enjoyment of helping people	3.5	4.0	4.0
12. High responsibility of the job	3.0	4.0	4.0
13. Comfortable place to work	3.0	4.0	4.0
14. Good general work experience	3.0	4.0	4.0
15. Wages job pays	5.0	4.0	2.0
16. Being around people	3.0	4.0	4.0
17. Job is challenging	3.0	4.0	4.0
18. Wanted to learn something new	3.0	4.0	4.0
19. Like working with co-workers (companionship)	3.0	3.5	4.0
20. Doing airport security work	✘	4.0	3.0
21. Enjoy being busy	3.0	4.0	3.0
22. Thrill of finding targets	2.0	4.0	4.0
23. Wanted to work in airports	4.0	3.0	3.0
24. Recognition by company	1.0	4.0	5.0
25. Fast pace of the job	2.5	4.0	✘
26. Want to stop terrorist acts	1.5	4.0	4.0
27. Chance to move into supervisory positions	2.0	4.0	3.0
28. Others think my job is important	3.0	3.0	✘
29. Potential job contacts	2.0	3.0	4.0
30. Makes a good second job	3.0	2.0	4.0
31. Dislike other jobs that were available	2.5	1.0	5.0
32. Difficulty of the job	2.0	3.0	✘
33. Doing a job few others can do	1.0	4.0	✘
34. My family thinks the job is important	1.5	4.0	2.0
35. Appreciation "from" manager	1.0	4.0	✘
36. Enjoy controlling people	2.0	1.0	4.0
37. Job is easy	1.5	2.0	3.0
38. To make friends	1.5	2.0	3.0
39. Opportunity to find weapons	1.5	2.0	✘

Dissatisfiers and Dislikes

Dissatisfiers and Dislikes asked screeners to rate each item that "best represents your feeling about why people quit and/or dislike being a screener." Ratings ranged from (1 = No effect what-so-ever) to (5 = Major reason). Many factors were rated either [4] or [5] indicating that this item is of "important" or a "major reason" for leaving the occupation (see Table 6).

Table 6. Job Dissatisfiers and Dislikes - Intact Group Ratings by Level of Perceived Importance (N = 34).

Job Dissatisfiers and Dislikes	MCO Intact Rating (n = 14)	JFK Intact Rating (n = 10)	SFO Intact Rating (n = 10)
1. Poor Pay	5.0	5.0	5.0
2. Little or no medical benefits	5.0	5.0	5.0
3. Found "better" job	5.0	5.0	5.0
4. Too much work for amount of pay	5.0	4.5	5.0
5. No longer need second job	5.0	4.0	✖
6. No retirement program	5.0	4.0	4.0
7. Doing job temporarily to earn extra money	4.0	4.0	5.0
8. Criticism by supervisors	4.0	4.0	5.0
9. Stressful	4.5	5.0	3.0 *
10. No opportunities for advancement	4.5	4.0	4.0
11. Not told upfront what to expect	5.0	4.0	3.0
12. Supervisor problems	3.5	4.0	✖
13. Job is causing physical discomfort	4.0	4.0	3.0
14. Afraid to make a mistake or be wrong	3.0	4.0	4.0
15. Management not listening to suggestions and/or complaints	2.0	4.0	5.0
16. Not appreciated	4.5	4.0	2.0
17. Passenger hostility	4.0	4.0	2.0
18. Job was not what I thought it was	4.5	2.0	3.0
19. Job is too difficult	4.0	2.5	3.0
20. Having to work holidays	3.0	4.0	2.0
21. I do not find job important	1.5	2.0	5.0
22. Hard to get to work	2.0	4.0	2.0
23. Dislike co-workers	3.0	2.0	3.0
24. Fear of finding weapons	2.0	4.0	2.0
25. Work is tiring and exhausting	3.0	3.0	2.0
26. Not being kept abreast of what's going on	2.0	3.0	3.0
27. Working with passengers	2.0	3.0	✖
28. Family and/or spouse wants me to quit	2.5	3.0	2.0
29. Confronting passengers	2.5	3.0	2.0
30. Decisions have to made to fast	2.5	3.0	2.0
31. Job is not challenging	2.5	2.0	✖
32. Dislike hours	3.5	1.0	2.0
33. Do not like working weekends	2.5	4.0	2.0
34. Job is boring	2.0	2.0	2.0
35. Job is too fast paced	2.0	2.0	2.0
36. Breaks/lunch time not enough	1.0	3.0	2.0
37. Don't want to work in airports	1.5	2.0	2.0
38. Not appreciated by company	✖	✖	4.0
39. Criticism by supervisors	✖	✖	3.0

Post-Workshop Survey

This part of the survey was administered at the end of each Delphi workshop. It focused on group goals and was divided into two sections: a) process and b) products. The data is presented in tabular format (see APPENDIX F, process; APPENDIX G, products) and a figure is shown for each of the seven questions. The figures portray the frequency of the screeners' responses.

Group Goals ~~and~~ Process

The Group Goals -Process section embodied seven questions where screeners responded on a five-point scale with anchors varying from question to question. Question 1 asked the screeners to rate the clarity of their group's goals. Ratings ranged from (No apparent goals = 1) to (Goals very clear = 5). The mode was 4 and the median was 4 indicating that the majority of screeners felt the group goals were very distinct. The frequency histogram of the five possible ratings for this item is shown in Figure 14.

1. How clear are the group goals?

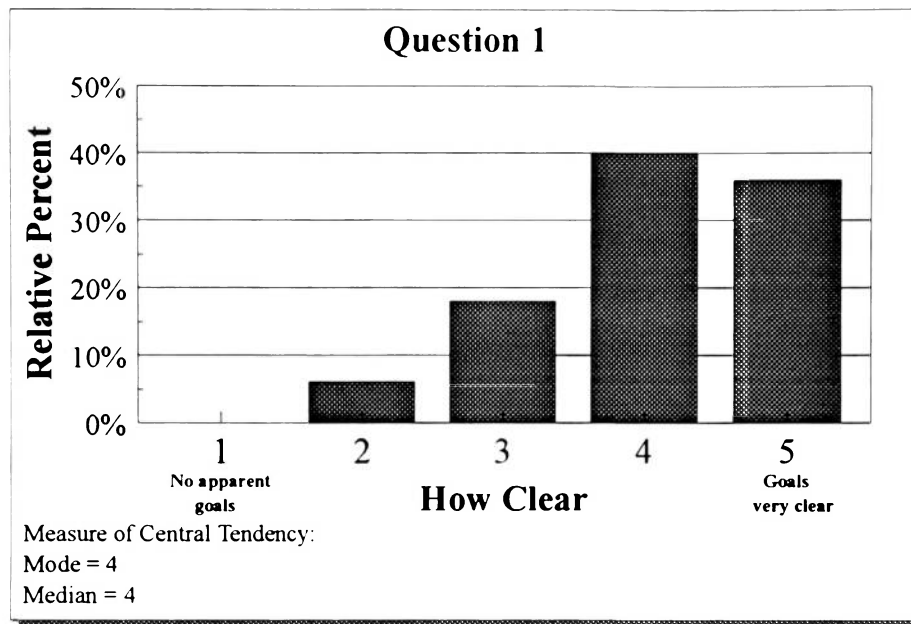


Figure 14. Frequency Distribution of Screeners' to Post-Workshop "Process" Question 1.

Question 2 asked screeners to rate how much trust and openness was in their group. Ratings ranged from (Distrust = 1) to (Strong trust and openness = 5). The mode was 4 and the median was 4 indicating that there was much trust and openness in the groups. The frequency histogram of the five possible ratings for this item is shown in Figure 15.

2. How much trust and openness in the group?

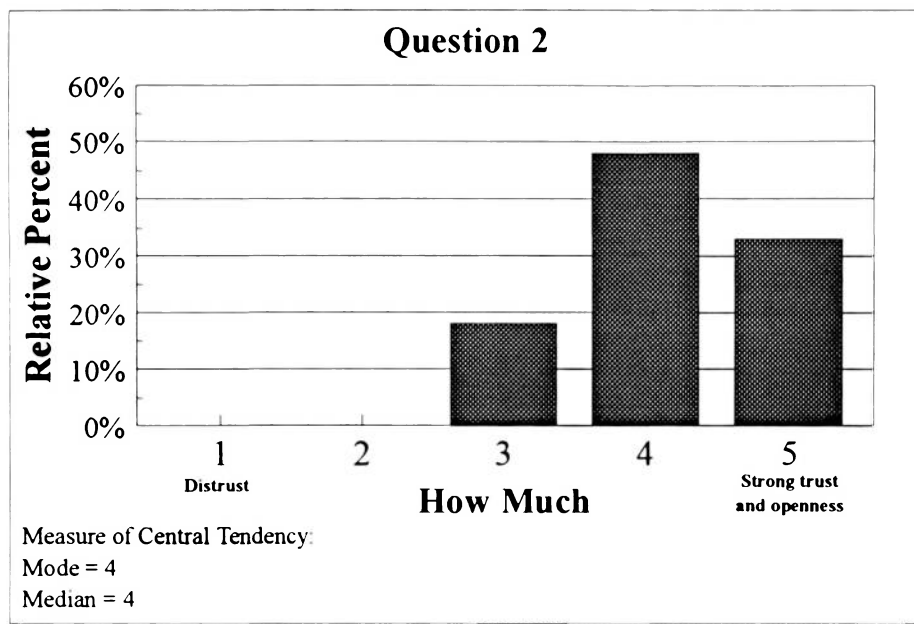


Figure 15. Frequency Distribution of Screeners' responses to Post-Workshop "Process" Question 2.

Question 3 asked screeners to rate how sensitive and aware were the group members during the process. Ratings ranged from (No awareness or listening in the group = 1) to (Outstanding sensitivity and awareness to others = 5). The mode was 4 and the median was 4 indicating that the sensitivity and awareness of the group members was slightly better than average. The frequency of the five possible ratings for this item is shown in Figure 16.

3. How sensitive and aware are group members?

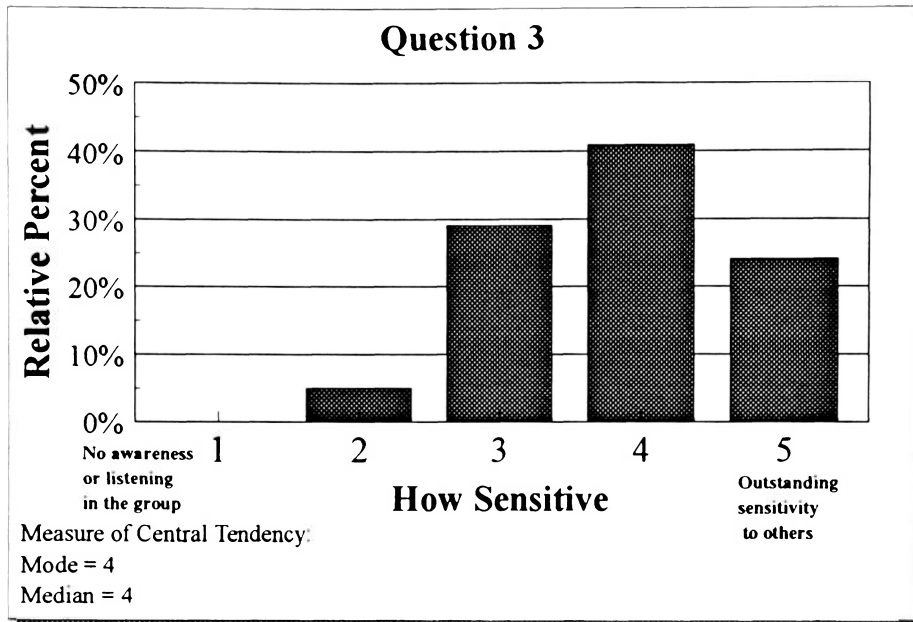


Figure 16. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 3.

Question 4 asked screeners to rate how group leadership needs were met. Ratings ranged from (Not met, drifting =1) to (Everyone helped lead the group = 5). The mode was 5 and the median 5 indicating that the leadership functions were evenly distributed among group members. The frequency histogram of the five possible ratings for this item is shown in Figure 17.

4. How were group leadership needs met?

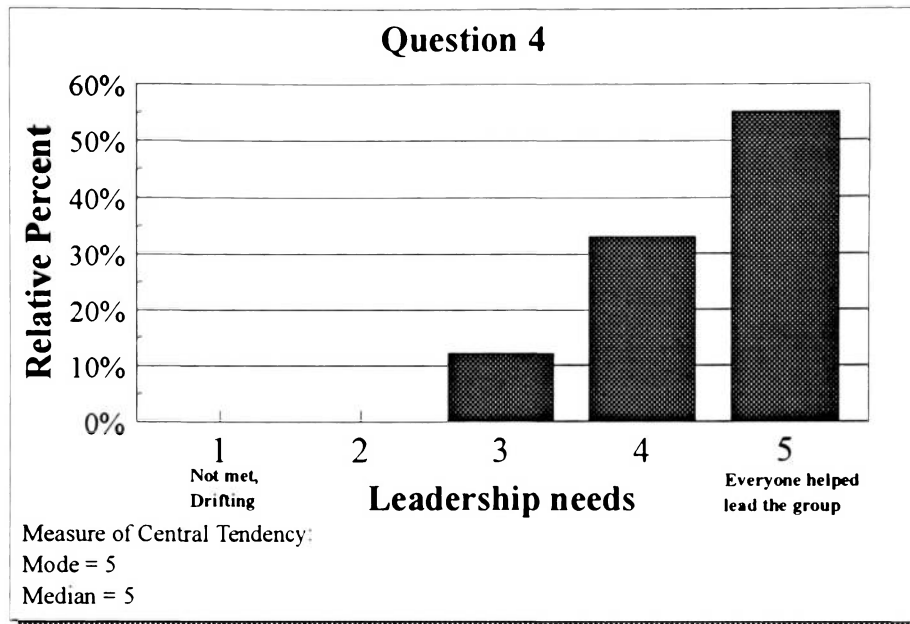


Figure 17. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 4.

Question 5 asked screeners to rate how group decisions were made. Ratings ranged from (No decisions could be reached = 1) to (Full participation and consensus = 5). The mode was 4 and the median was 4 indicating that the groups made considerable attempts to look at all points of view and participate while coming to consensus. The frequency histogram of the five possible ratings for this item is shown in Figure 18.

5. How were group decisions made?

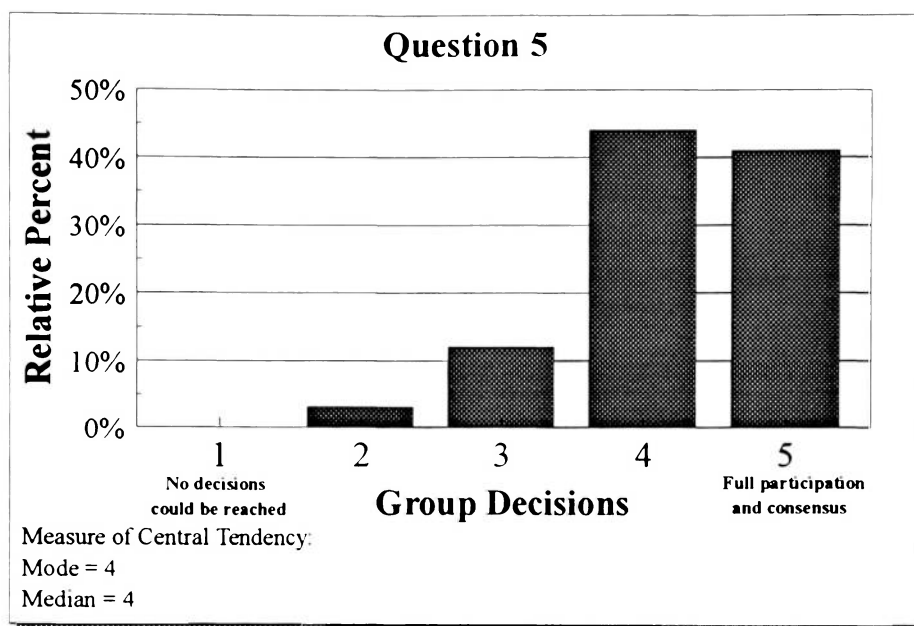


Figure 18. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 5.

Question 6 asked screeners to rate how well the group resources were used.

Ratings ranged from (One or two contributed =1) to (Individual opinions were fully and effectively used = 5). The mode was 4 and the median was 4 indicating that the groups utilized all resources well and encouraged different opinions. The frequency histogram of the five possible ratings for this item is shown in Figure 19.

6. How well were group resources used?

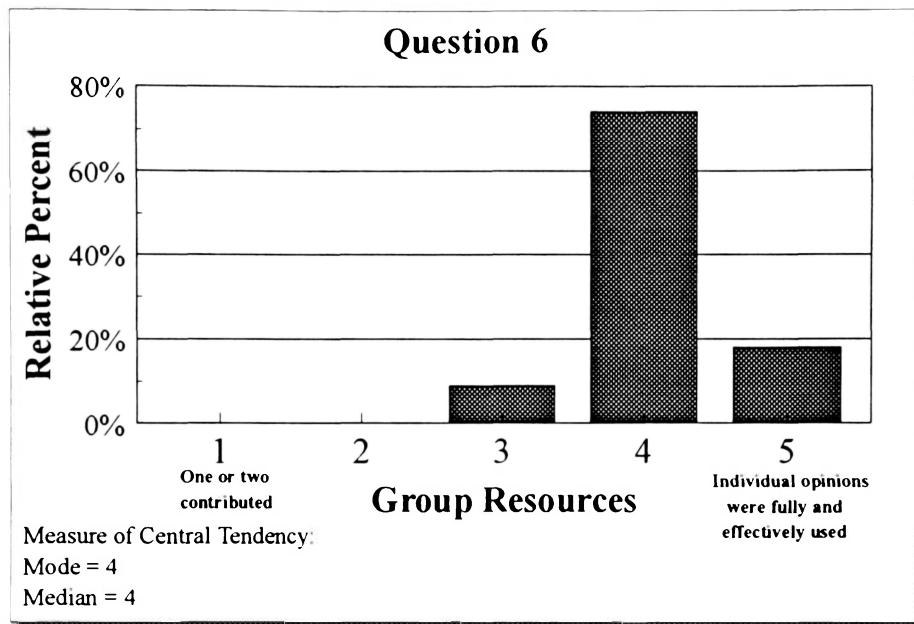


Figure 19. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 6.

Question 7 asked screeners to rate how much loyalty and sense of belonging there was in each group. Ratings ranged from (Members had no group loyalty or sense of belonging = 1) to (Strong sense of belonging among members = 5). The mode was 5 and the median was 5 indicating that there was a strong sense of belonging in the groups. The frequency histogram of the five possible ratings for this item is shown in Figure 20.

7. How much loyalty and sense of belonging to the group?

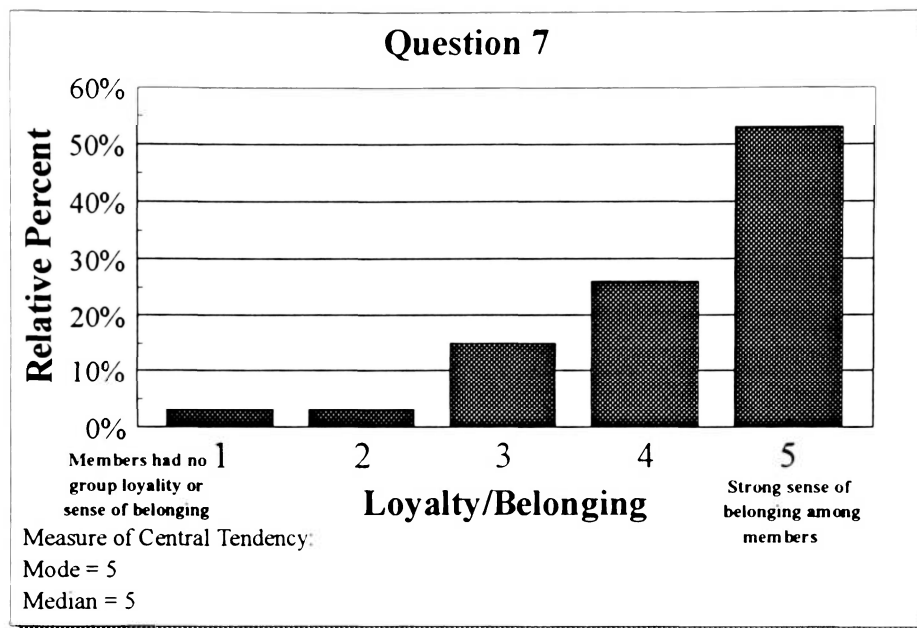


Figure 20. Frequency Distribution of Screeners' Responses to Post-Workshop "Process" Question 7.

Group Goals - Products

This section consisted of seven questions where screeners responded on a seven-point scale with anchors varying from question to question (see APPENDIX E for Products' Questions Screener Responses). Question 1 asked screeners to rate their satisfaction with the workshop. Ratings ranged from (I feel satisfied with the results = 1) to (I'm not really happy with the results at all = 7). The mode was 1 and the median was 2 indicating that most of the screeners were exceptionally satisfied with the workshop results. The frequency histogram of the seven possible ratings for this item is shown in Figure 21.

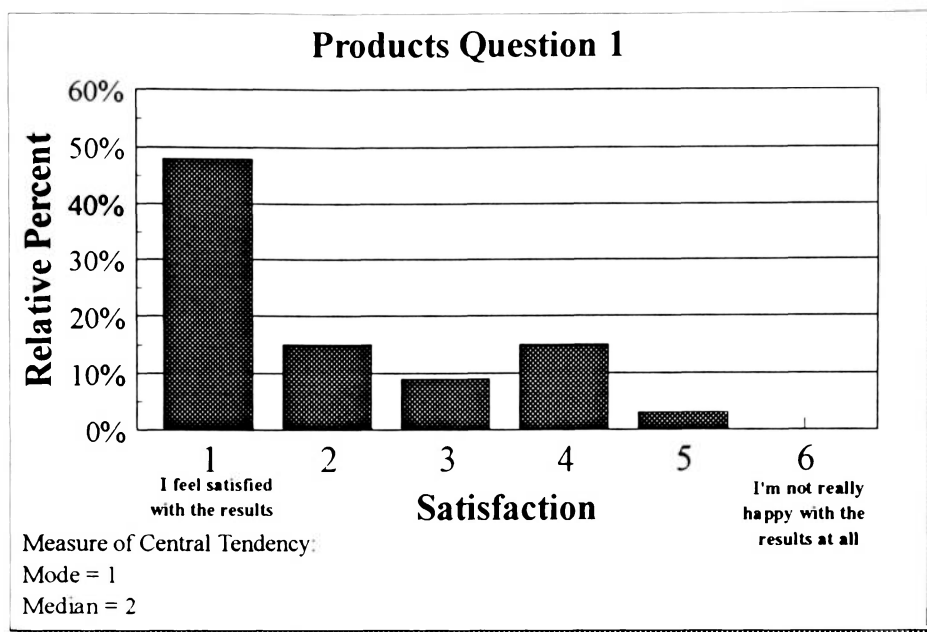


Figure 21. Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 1.

Question 2 asked screeners to rate their opinion about lessons learned from the various feedback. Ratings ranged from (I learned ideas from the feedback = 1) to (I didn't learn a thing from the feedback = 7). The mode was 1 and the median 1 indicating that the majority of the screeners learned various ideas from the feedback. The frequency histogram of the seven possible ratings for this item is shown in Figure 22.

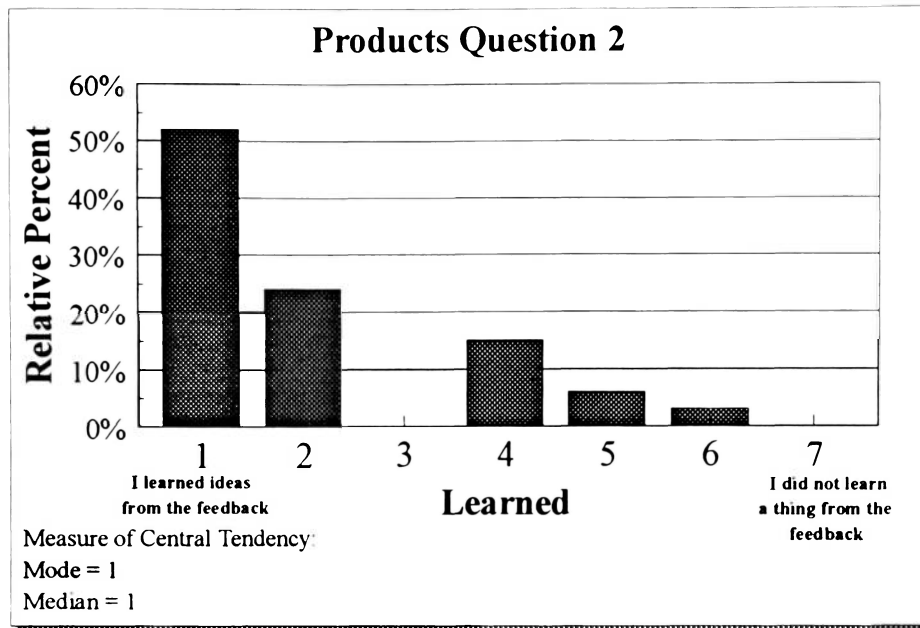


Figure 22. Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 2.

Question 3 asked screeners to rate whether or not each screener agreed with the ideas in the feedback. Ratings ranged from (I agree with the ideas in the feedback = 1) to (I disafreed with everything in the feedback = 7). The mode was 1 and the median was 2 indicating that the majority of the screeners agreed with the ideas in the feedback. The frequency histogram of the seven possible ratings for this item is shown in Figure 23.

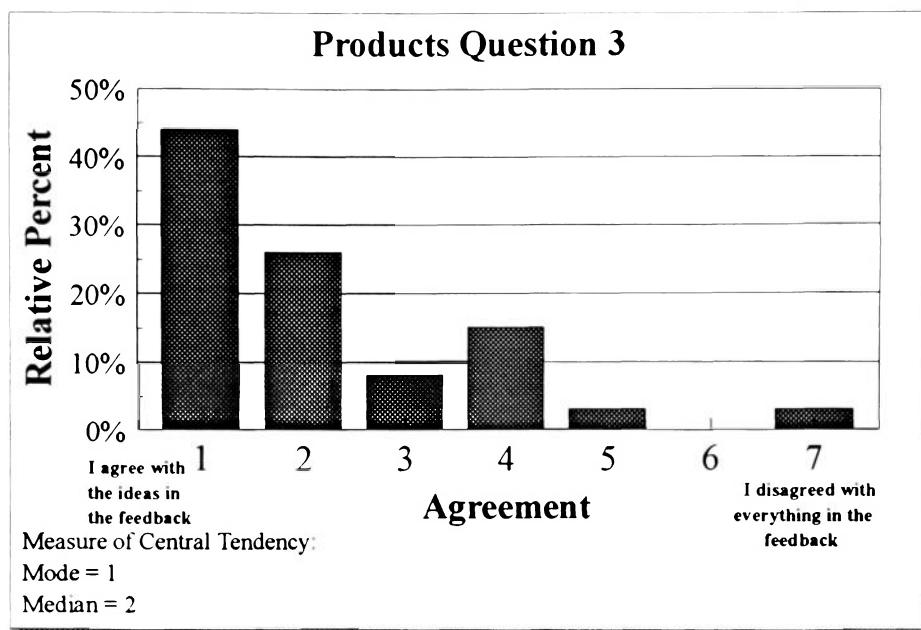


Figure 23. Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 3.

Question 4 asked screeners to rate their opinion on how easy it was to express their ideas. Ratings ranged from (I could express my ideas OK this way = 1) to (I could not really say what I wanted to say = 7). The mode was 1 and the median was 1 indicating that most of the screeners had little difficulty expressing their ideas and opinions. The frequency histogram of the seven possible ratings for this item is shown in Figure 24.

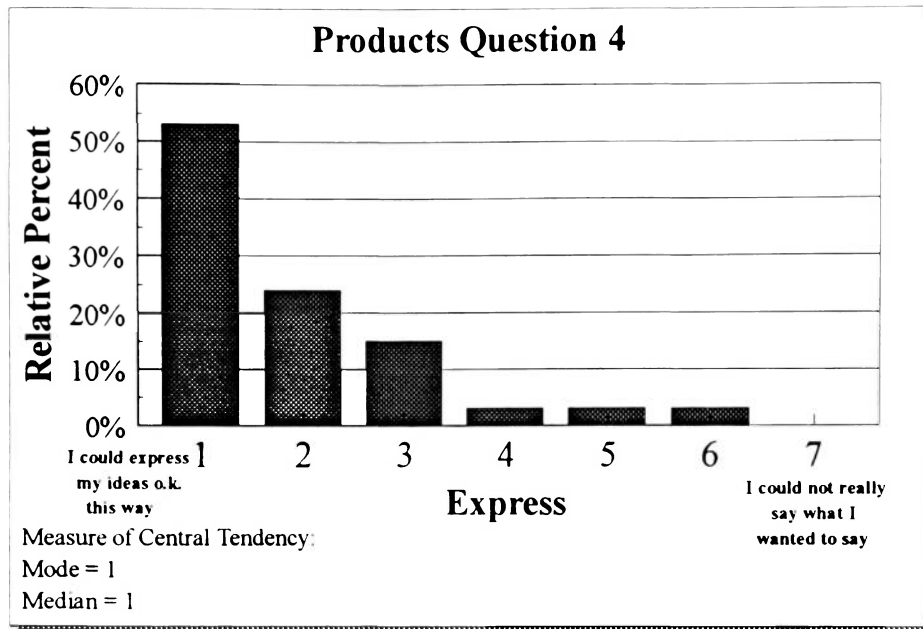


Figure 24. Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 4.

Question 5 asked screeners to rate their willingness to speak during the workshop. Ratings ranged from (I feel as if I really wanted to talk to people = 1) to (I did not feel the need to talk at all = 7). The mode was 1 and the median was 1 indicating that most of the screeners had no problems discussing their thoughts. The frequency histogram of the seven possible ratings for this item is shown in Figure 25.

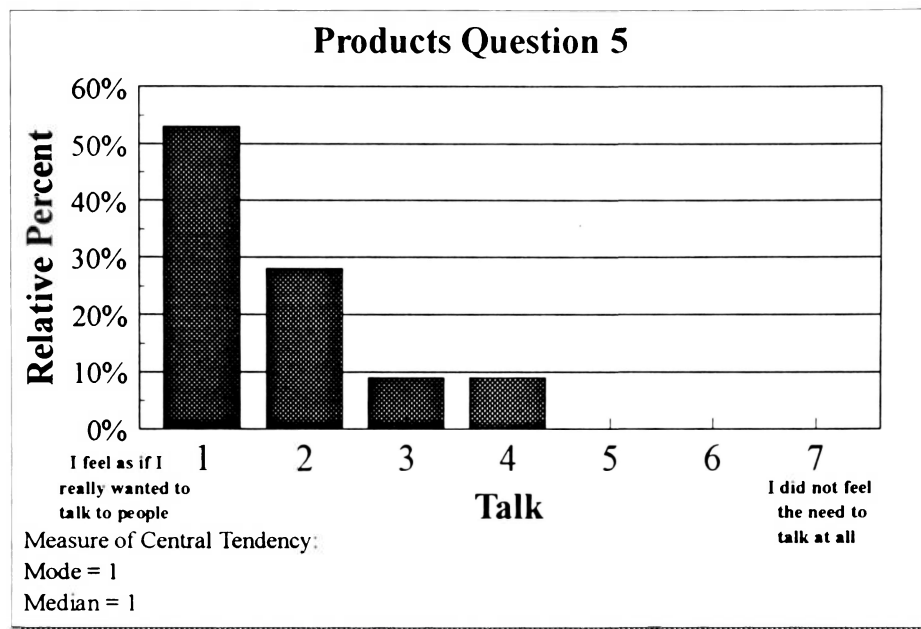


Figure 25. Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 5.

Question 6 asked screeners to rate their opinion on how well the group understood their viewpoint. Ratings ranged from (I have a feeling people did not understand or think about my reasons = 1) to (I think people understood my reasons pretty well = 7). The mode was 6 and the median 6 indicating that many of the screeners felt comfortable with how well the group understood their viewpoint. The frequency histogram of the seven possible ratings for this item is shown in Figure 26.

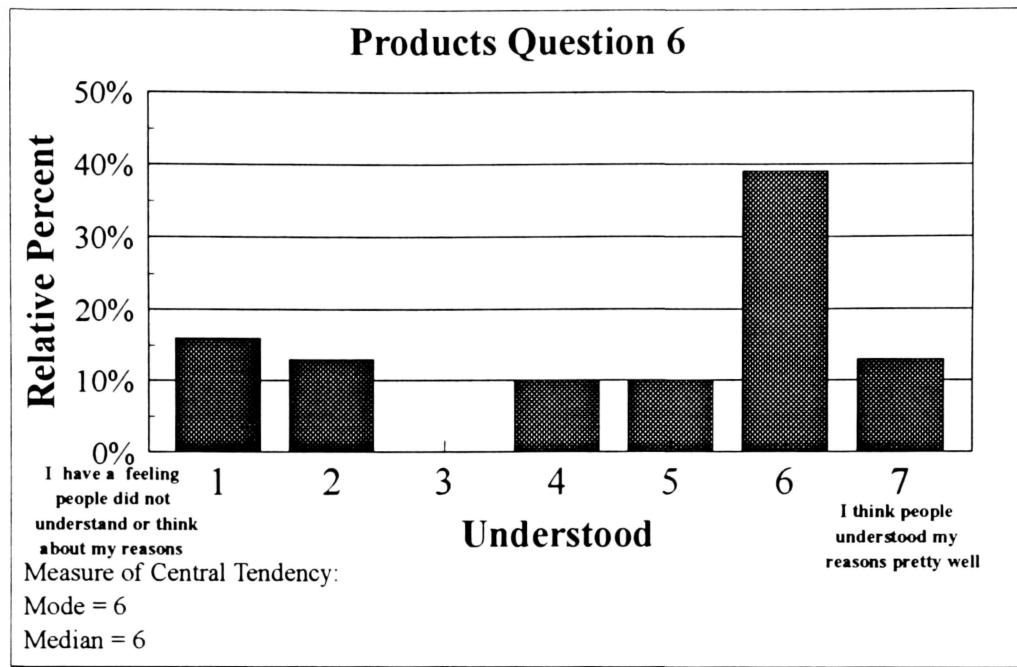


Figure26. Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 6.

Question 7 asked screeners to rate the speed at which ideas and topics were discussed. Ratings ranged from (I think it went to quickly = 1) to (I think it went to slowly = 7). The mode was 2 and the median was 2 indicating that the majority of the screeners felt the workshop went fairly quick. The frequency histogram of the seven possible ratings for this item is shown in Figure 27.

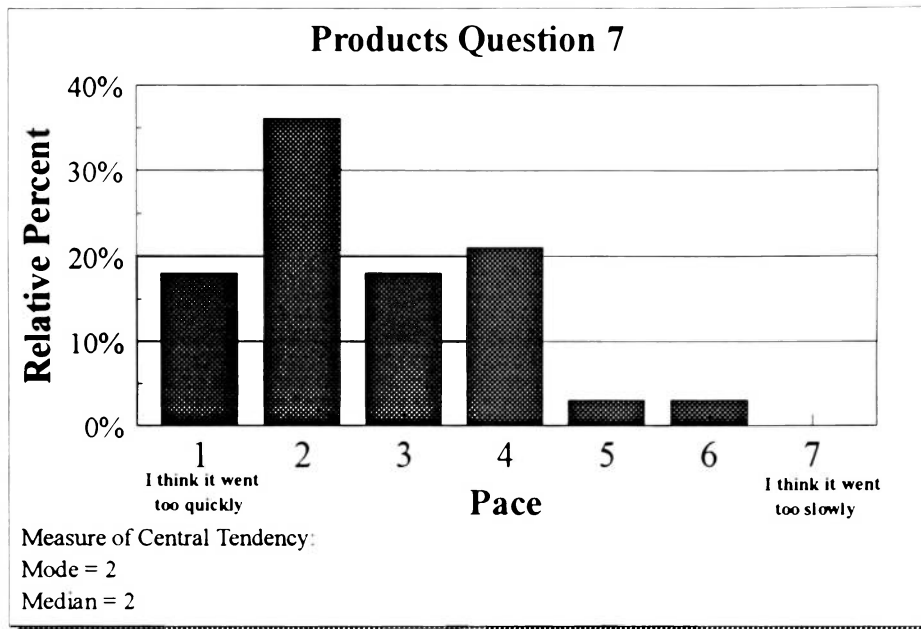


Figure 27. Frequency Distribution of Screeners' Responses to Post-Workshop "Products" Question 7.

Conclusions and Recommendations

General Findings

The most striking general observation that can be seen in the data is the relatively similar findings found across all three facilities. This finding is important in that all three facilities are widely different in the cultural and ethnic backgrounds of the workforce, and the facilities are geographically dispersed. Additionally, the facilities are operated by different security firms with different policies and procedures. These findings are encouraging as they indicate the sources of job satisfaction and dissatisfaction are related specifically to the nature of the job vice being attributed to the demographic biases within the workforce (i.e., relative time it takes airport security checkpoint screeners at JFK to get to work versus airport security checkpoint screeners at MCO or SFO).

From an organizational viewpoint, the data supports the development of interventions that can be applied industry-wide. Interventions that are directed toward improving job satisfaction while mitigating or eliminating the causes of job dissatisfaction would be expected to enjoy similar degrees of success regardless of the facility. This significantly simplifies the development of intervention programs because it avoids the requirement of tailoring the programs to be site specific. If the site can adjust to the needs of the screener there probably will be a screener who is satisfied with the job and committed to the job. Such an approach aids the evaluation process of the effectiveness of the implemented programs, as well, by allowing a comparison of performance of facilities (i.e., turnover rates, job satisfaction, inventories) both with and without intervention programs applied. A comparison of the individual effectiveness of intervention techniques

can also be achieved by differentially applying the techniques among facilities. Perhaps the government stepping in to lead this approach would intermittently aid all contractors and all airlines equally.

The Delphi workshop facilitators remarked about the level of enthusiasm and enjoyment expressed by the participants. There was a feeling shared among the facilitators that the workshop was a great success and how the workshop had a uniform flow. The author was amazed of the amount of information that was shared, expressed, and came to successful consensus. The determination of the screeners to come to a clear consensus on each issue and the sincerity of the screeners to better their job environment were distinct features that were present during the workshop.

It was also interesting to note that although there were 34 airport security checkpoint screeners each having their own different personalities, input was optimally shared from all participants while equally minimizing distinctive differences. The success was eminent by the clarity of the interaction between the facilitators and the participants (the quality of the data is contingent upon how effective the group members inter-relate). It is for this reason that post-workshop surveys that assess both process and product dimensions were conducted. The pre-workshop survey was also conducted as a means to view what preconceived expectations the participants had, and to give them a feel for what was to come. Furthermore, it was also obvious that the training at the beginning of the workshop on the concepts of group dynamics, group think, bias, consensus development, leadership, and psychological traits and abilities, that familiarized the individuals of the

roles and rules that they were expected to follow was an excellent guide to aid in the requirement to maintain a high level of concentration for the group consensus.

The degree of appreciation demonstrated by the screener participants at the conclusion of all workshops was sincere and explicitly indicated the success of the workshop process. Post workshop data presented in Figure 21 (page 91) and personnel letters of feed back written to the author (see Text Box 1) convincingly support these observations.

Text Box 1. Follow up Letter from Mrs. Ferrell (SME, JFK)

"Mr. Mark St. Laurent

Let me start by thanking you and your staff once again, for that two day session. It really felt good to have someone listen to our grief, being able to speak honestly and openly was a great release...Thanks for you and your staffs consideration. I hope that your input can change some of these things"

Mrs. Ferrell

The Delphi process was conducted, in part, for the purpose of identifying and evaluating the factors that lead to an employee leaving his/her job. In this regard, the process was productive in identifying issues that interventions could be directed toward. The Delphi process was not used, nor would it have been appropriate to use, as a means to develop solutions to problems. A word of caution is also advised in reviewing the data. The factors that were identified may not be individually responsible as a reason for leaving

employment, but must be acknowledged as a set of satisfiers and dissatisfiers with relative valences. A decision to quit a job is a complex one that may include any number of consideration factors. The intact group consensus values are also just that, they are a product of group consensus and are an agreement among participants. An individual's personal decision may weigh these factors differently depending on their own circumstances and other available options.

Post-Workshop Survey - Process

The process survey indicated that participants had positive perceptions regarding all aspects of the Delphi process including goal clarity, group openness and sensitivity, group decision making and shared leadership, and group loyalty. Process evaluations were consistently toward the extreme positive range of the scale with little variance between facilities or within groups. Six of the seven process ratings exceeded 4.0 on the 5-point scale with the variance never exceeding 25 percent of the mean after the data was collapsed across all three facilities. An additional finding of interest is the consistent trend toward more positive evaluations across the three facilities when viewed in chronological order in which they were conducted. This probably reflects the increasing level of experience of the facilitators. As the facilitators become more comfortable with their roles and refine their skills, facilitation of the group process was more effective.

Post-Workshop Survey - Products

The post-workshop survey regarding workshop products was also very encouraging. Of the seven factors evaluated, five were rated toward the extreme positive anchor of the 7-point scale. Participants were very positive about the results, feedback, capability to express ideas, and the willingness to communicate during the workshop. Although rated moderately positive, participants were comparatively less positive regarding their perception of how well other screeners understood their ideas. This in effect could have been a factor of the amount of time there was to discuss each individual topic with additional examples. Again, it is important to note, that there was a trend toward more positive ratings across facilities when view in chronological order. Most notable is with regard to the pace that the workshop proceeded. The initial workshop was perceived as moving too quickly, but with the second and third Delphi workshops the ratings for the pace of the process progressively were rated close to the ideal.

Thesis Objectives in Workshop

Two issues need to be addressed before examining the data. First, participants evaluated these factors with regard to their importance for the future, future expectations, and outlook of their jobs. At the time this work was conducted, medical and retirement benefits were usually nonexistent or only minimally provided for by the union (e.g., medical benefits for JFK screeners). Wages as a standard were at minimum wage or within 25 percent of the federal minimum for screeners and only slightly higher for supervisor personnel. Cash rewards for identifying FAA targets or actual targets were only of a token nature (\$25 to \$50) and were infrequent. Two screeners at two separate

sites noted that they were promised cash rewards for their detection of a target, and to this day have never been rewarded. Many of the screeners admitted to never have seen a reward given to a screener for a successful detection. However, many airport checkpoint screeners outspokenly admitted that the airlines and the security companies were quick to administer negative penalties to fellow workers for missing a target. The literature strongly suggests that negative reinforcement of this nature is a good way to increase unwanted employee turnover. On rare occasions, small gratuities were received from passengers for an extra service provided (e.g., transporting a handicapped passenger from one concourse to another or helping an elderly woman with her luggage across the airport). Participants therefore evaluated these issues as the way they would like to see them rather than as they currently exist.

The second major issue that needs to be addressed before examining the data is the relationship of these factors to one another. The job satisfiers and the job dissatisfiers both had a unidimensional effect towards the participants. Medical and retirement benefits were considered more crucial than wages and the opportunity for rewards as motivators to remain on the job. This is probably due to the considerable increase in public attention given to both health care and the status of the social security system (i.e., retirement), or due to the fact that the majority of the screeners were aware of the high cost of medical treatment and have families to support. Regardless of the source of concern, the airport security checkpoint screeners valued medical and retirement benefits more than monetary compensation. This is not easily differentiated from the data due to the limitations of the scale values used.

This discussion was provided to heighten the awareness of the reader to the issues beyond compensation. It is important to keep in mind Herzbergs' views (and other researchers) on the categories of motivators that accomplish satisfaction and dissatisfaction when reviewing the data. This will ultimately help put ideas and findings into perspective. The *hygiene* needs which prevent dissatisfaction and the feelings of achievement, recognition for accomplishment, challenging work, increased responsibility, and growth and development that produce job satisfaction. A comparison and contrast of Hertzberg's motivators along with the Delphi workshop conclusions give a good prospective of research methods that have been studied throughout the past few decades and relate them to the current findings on satisfiers and dissatisfiers found among airport security checkpoint personnel.

Satisfaction and Motivation

The proficiency and effectiveness of retention and attrition factors can be achieved and evaluated by focusing upon employee job satisfaction and job dissatisfaction. Data generated by the Delhi workshops for purposes of this Thesis focused on the issues: (a) job satisfiers and motivators; and (b) reasons to dislike job or quit. Literature strongly suggests that there are parallel relationships between job satisfiers and dislikes that impact a security checkpoint screeners decisions to stay on, or leave the job. Interesting findings from this study on job satisfiers and motivators that are noteworthy and contribute to career retention for airport security checkpoint screeners can be classified into several categories: (a) compensation/benefits; (b) social/intrinsic; (c) job convenience factors; and (d) recognition. Unlike Herzberg, all the factors involved in producing job satisfaction

were not *separate* and *distinct* from all the factors that prompted job dissatisfaction. In fact, many of the issues that came to consensus were contributors to both job satisfaction and job dissatisfaction. Within each of the four categories of motivators, several factors were consistently rated as absolutely necessary or job dissatisfaction would increase and job satisfaction would decrease. Not surprisingly, medical benefits, retirement benefits, and wages were all evaluated as major compensation/benefit contributors (related to Herzberg's *hygiene factors*) that contributed to both job satisfaction and job dissatisfaction. The opportunity for rewards (e.g., FAA and authentic targets), achievement and recognition were consistent motivational factors in producing job satisfaction. It is important to note Lawler and Jenkins (1992) in that the kind and level of rewards an organization offers influence who is attracted to work for an organization and more importantly who will continue to work for it. These factors received among the highest evaluations of the 32 factors identified as contributing to job satisfaction (see APPENDIX D).

Social and intrinsic motivators and satisfiers were also found to contribute considerably to the checkpoint screener remaining on the job. Like Herzberg's theory, it was also found that the nature and purpose of the airport checkpoint screener jobs offered strong determinants of job satisfaction. Most importantly, airport checkpoint security personnel found considerable gratification in the importance of their work, were very proud of the work they perform, and had a true desire to protect people. To the participants, these motivators were nearly as important to job satisfaction as compensation and benefits, thus, providing the information that can lead to better satisfaction and

fulfillment on the job. The participants in the Delphi workshops noted that if the security companies matched these needs with the job itself the outcome would be a security screener who is satisfied with the job and committed to the job. As a result the airport security checkpoint personnel will call in sick less, be less likely to leave the job, and will produce higher quality work (i.e., better detection rates). These goals all add up. For the security screener it means a satisfied work environment and for the company (both the security company and the airline) it means higher profits. If a security screeners needs are not satisfied by the job itself, they will end up frustrated (as clearly noted by the delphi workshop and seen by the high turnover rates) and either will quit or do poor work. Poor work directly relates to the significance of the role each airport security checkpoint screener has in controlling the increasing problem of aviation terrorism and providing the needed level of safety for each passenger.

To a lesser degree, it was found that the participants derived considerable job satisfaction in helping people (i.e., passengers), wanting to learn a new skill, and in the perceived high level of responsibility that came naturally with the job. Equally important was the social environment provided by their work atmosphere. The participants enjoyed their work because it allowed them to be around people, and offered them companionship through their co-workers. This was noted especially true for the older screener age group. The job environment offered them companionship and an environment that might be hard to find elsewhere. It was the participant's perception that the job offered older screeners "a good way to pass time with friends". These factors grouped together were important considerations in the decision to remain on the job. Along the same line, friendliness

appears to be one of the distinguishing characteristics of a good work environment for the participants. A relaxed attitude and relative lack of a social hierarchy between management and screeners would be more effective in this situation. Given the lack of compensation and benefits provided, these factors were crucial in comparing their current jobs to other available opportunities.

Many participants felt that management did not share an atmosphere of mutual respect. This has a negative effect on how everyday work conflicts (which are inevitable in every work environment) are handled. Participants noted social aspect that affected job satisfaction. Specifically noted was the fact that management was not fair to the employees and took advantage of them. One example given from a screener was a time when she was asked to work longer because of a shortage of employees due to snow. She agreed to help out. However, the public transportation she depended on to get home had been delayed do to the weather. At the end of the night after her extra hours she could not get home. The company had a van at the airport that gave management rides home in situations like this. However, the company would not take her home. Listening to the examples during the workshop made it clear that many unfair situations like this occur on a day to day basis for these employees.

Most participants agreed that changing the social environment to one that limited contact with people would cause them to become dissatisfied and be a reason to want to leave. A number of examples of *isolated* work situations in airport security were provided by participants, and these positions were considered as the least desirable roles in the company.

Job convenience factors, work experience, and the airport environment also played a significant role in remaining on the job. Participants evaluated the flexibility of the work schedule as a primary reason to continue airport security work. The ability to change work days or schedule work hours, even on short notice, was a key element in remaining on the job. It became readily apparent that changes to this freedom of flexibility, or procedures to limit or restrict the ease of changing scheduled work hours (i.e., for management to obtain a more reliable and predictable workforce), would have a detrimental effect on retention. The jobs of an airport checkpoint security screener and supervisor were also perceived by participants as good work experience and could lead to potentially better opportunities. The high responsibility of the job and perspective job contacts at the airport played a major role in this outcome. In addition, the airport environment was considered a comfortable place to work and was also evaluated as a source of job satisfaction.

The final general category of job satisfaction (i.e., recognition), was an area of considerable discussion in each of the three workshops. Lack of appreciation and recognition for the roles they play was a primary concern for the workshop participants. In an earlier FAA study conducted by L.A. Witt and C. Hellman (1992), they noted Eisenberger, Huntington, Hutchison, and Sowa (1986) for their suggestion that employees are more inclined to commitment and satisfaction when they feel that their organization values their input and cares about their well being. The study also noted that employees form global beliefs concerning the extent to which the organization is supportive of them and that perceived organizational support is related to increased commitment and

innovation and reduced absenteeism. One screener remarked, "...no ones character is taken into consideration. You are spoken to in a degrading manner. Your word has no bearing. There is no right when the employees are concerned". One example (of many) that a screener gave of a situation where a lack of respect is given towards her and her employees is shown in Text Box 2.

Text Box 2. Example Given of Lack of Respect.

"Example: The Director's Wife came through the screening checkpoint area 'which was very busy at the time'; there was only one hand scanner. The CSS asked if she minded if she was hand searched? She replied 'Yes I mind'. So following regulations she was informed that she would have to wait and be searched before she could enter the sterile area. The search was conducted and she went on her way. A while later the CSS was called to the office and told that there was a complaint made that she touched the Director's wife's breast. The allegations were denied and the CSS told what had happened at the checkpoint. Management replied that they new she did not do it, however, because it was the Director's wife something needed to be done. The action taken: the supervisor was suspended for two days with out pay".

Comparatively, recognition was almost as important as compensation and benefits and was a greater contributor to job satisfaction than the social or intrinsic rewards associated with the job. However, the recognition factors were rated as job conditions they would like to have, rather than job features as they currently have. Few participants perceived they were receiving adequate recognition for their performance; and as the data indicate, recognition by supervisors, managers, and the security firm were valued highly as

a source of job satisfaction. Recognition by passengers was considered a potential source of job satisfaction, however; screeners acknowledged that this was not expected of passengers, nor could any intervention change this job element.

Vine (1982), however, in his article "Airport Security tips (for those new to the screening game)" points out some interesting facts that can reduce the frustration of the passenger and ultimately improve the relationship between passenger and screener. One example given was to utilize guide rails or ropes and stanchions that direct first time passengers and experienced air-travelers who may not be familiar with a specific airport layout. These devices narrow groups into single file lines and eliminate the need to shout directions. Vine also indicates that the use of signs at the exiting end help reduce congestion and eliminate repeated questions. If everyone is allowed down the concourse, it is estimated that the number of people screened will be three times the number of passengers. If there are no concessions on the concourse, passengers will return to the terminal and increase the screening workload by 50 percent. This causes a delay and can cause frustration for both the customer (passenger) and the employee (screener).

On the occasions where passengers did express their appreciation, participants did feel it added to their enjoyment of the job, even if only temporarily. Interactions with passengers was more likely to contribute to job satisfaction. It is apparent from the data and some of the issues presented here that there are considerable number of job satisfiers and factors that contribute to a screener's decision to remain on the job.

Dissatisfiers and Dislikes

The reader is referred to Table 6 (page 82) for a complete description and evaluation of Dissatisfiers that were derived through the Delphi process. The following discussion will provide clarification to those factors that contribute significantly to the turnover problem, and to provide some additional illustration for the factors.

The major reasons to quit airport security work were clearly focused on monetary issues. Poor pay, little or no medical benefits, absence of a retirement program, and a perception that the amount of work required was considerably in excess of that appropriate for minimum wage, were all strong sources of job dissatisfaction. However, the data from this section was hard to group because there was a less concordance between facilities than that observed with the satisfaction and motivation objective. Additionally, it was observed that it was not uncommon for individuals to accept employment on a temporary basis (i.e., for a second income and a college student between semesters) and then terminate their employment when their needs were met. The Delphi workshops clearly identified that "pre-planned" limited employment was a major cause of turnover. Given the extensive array of negative elements of airport security work, and the comparatively poor compensation package, most screeners could be considered as actively involved in the job market. Most personnel are searching for opportunities that provide better benefits. Found a *better* job was evaluated as one of the primary reasons for the high turnover problem.

Several other factors that were considered important sources of job dissatisfaction or reasons to terminate employment voluntarily can be described as management problems

and management practices. Problems with supervisors (e.g., public and improper disciplinary techniques), supervision criticism (i.e., imbalance between disciplinary and recognition/positive interactions), lack of appreciation, management not responsive to complaints or suggestions (i.e., little or no input sought from screeners and supervisors on technical or procedural matters), and little opportunity for advancement with the organization were strong contributors to job dissatisfaction. Considerable discussion and screener input throughout the Delphi workshops attributed much cause for turnover and job dissatisfaction to management practices. There was a predominant attitude that compensation and benefit issues were also directly related to management. The overwhelming "(mis) perception" that exists portrays the security firms as highly profitable companies that generate revenues by underpaying employees. It was apparent that screeners and supervisors have little or no understanding of the organization's structure or the contractual relationships (including the underbidding process of winning a contract) that exist between airline carriers and their company.

Intervention can achieve desirable effects on these two additional yet significant factors that contribute to job dissatisfaction. First, company policies and consequences for "making a mistake or being wrong" (e.g., missing an FAA test object, passenger/aircrew complaint) were perceived as harsh and punitive. The concern that led to this factor being evaluated as an important job dissatisfier was not the consequences of making a mistake but rather it was related to the lack of recognition for outstanding performance. All participants were deeply concerned and dissatisfied that good performance was never rewarded, or only minimally rewarded (e.g., \$25 bonus for FAA target detection). If a

reward was given it was to a select few that were friends with management. The politics involved were noted as being very discriminatory and unfair. To be motivated to perform well, an individual must first of all value the rewards offered. Defining appropriate rewards for good performance is an issue that management needs to deal with. Defining appropriate rewards becomes easier when management can compare their similar needs with that of the airport security checkpoint screener. Perhaps the best way to determine what rewards are important to a screener would be simply just to ask them.

Ramifications for an error were exceedingly severe (i.e., suspension, termination, re-training). The ratio of rewards to punishments, and the relationship of acknowledgments to admonishment were the focus of many discussions. The second issue that was rated as a key element of job dissatisfaction and can be company controlled is a complaint of "not being told up-front what to expect." The workshop participants felt company procedures during the interviewing/hiring process need to be improved to more accurately portray the job and duties. Participants felt many new hires quickly terminated their employment because they were not aware of pertinent job requirements until actually physically working the checkpoint. A clear understanding that must exist between management and individual screener of job demands and expectations so that role perceptions are completely clarified. Continuous feedback is necessary between supervisors/management and the screener in an open, trusting, and truthful manner so that expectations on both sides can remain clear and even be changed if necessary. Feedback is a necessary, but not sufficient, condition of success.

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Other important factors that lead to job dissatisfaction, but are less easily mitigated as they are elements inherent in the work include: stressful conditions, physical discomfort caused by lifting and remaining in a standing position throughout the shift, physical discomfort to the employees eyes, and passenger hostility. These factors in and of themselves are not likely to cause self-termination, although they do contribute to job dissatisfaction.

A work environment that meets an organization's objectives and satisfies the job-related needs of the security screener has much influence on the productivity and stability of the group. A positive, long-lasting, productive, work environment focuses around the image and impression that the screeners have about the dynamics of the security firm. A high degree of clarity must exist so that each individual screener knows exactly what his/her job entails and how his/her assignment contributes to the success of the screening team. Recognition is needed for a screener when he/she does good work. Good work should be rewarded more often than bad performance is criticized. Lastly, teamwork involves a feeling of belonging to an organization completely. The screeners at the checkpoint should be characterized ultimately by cohesion, commitment, mutual warmth, support, trust, and pride.

Initial Recommendations to Improve Employee Job Satisfaction, Decrease Employee Job Dissatisfaction and Increase Career Longevity

The findings from the Delphi workgroups indicate that several interventions can be considered to improve employee tenure while consequently increasing the experience base of the workforce. Several suggested measures require extensive work in the development of training seminars and are more appropriately suited for a separate publication. The recommendations are as follows:

1. Increase the starting wages of screener personnel to be competitive with current market conditions in order to attract more qualified applicants. Below market wages create a workforce that is continually involved in job-seeking activities.
2. Improve salary advancement schedules to compensate screener personnel for increased experience and tenure on position. This measure is intended to retain personnel who perform effectively. Wage increases should be of small magnitude, but on frequent intervals. Frozen salary schedules promotes increased job seeking activities.
3. Consider company contributions to health coverage benefits in order to curtail the job seeking activities of quality personnel. A significant number of workshop participants were actively exploring the employment market primarily to acquire health coverage. Company contributions are suggested to increase with tenure to retain desirable employees. Gradual increases in company contributions that reduce the employee's share of medical coverage can be promoted as wage increases that do not increase the employee's taxable income. Current IRS laws also permit employees to set aside non-taxable income for use in covering medical expenses. An initial step in providing health coverage might be to establish such an individual fund on a voluntary basis.
4. Improve staffing levels at security checkpoints to mitigate high workload levels during peak passenger traffic periods. This can be accomplished indirectly by improving employee tenure. Employee staffing levels become problematic since the number of personnel on any given day are uncertain due to high turnover rates. High turnover rates characteristically create an unstable workforce with high proportions of inexperienced PBS personnel.

Experienced personnel are further diluted to provide training on tinuous basis because of the constant influx of new hires.

5. Consider the possibility of an employee contribution retirement program with a graduated scale of company contributions that is dependent on length of employee tenure. Eligibility can be established after six months with a low company contributions that is determined by length of tenure. Several options are currently available through financial and brokerage institutions that have little or no administrative cost to the participating employer. The benefit can be offered on a voluntary participation basis. Regardless, the facilitators found the preliminary findings indicated retirement benefits are an issue of high importance.
6. Provide internal supervisory skills training and recurrent leadership/organization skills training to checkpoint supervisors. Considerable job dissatisfaction due to supervisor-screener relationships was identified in the Delphi workshops, as checkpoint supervisors had no opportunity to learn appropriate techniques. Although CSS personnel were technically competent and experienced with security operations, most were not provided with formalized and recurrent training in supervisory skills. Role modeling and management exercises are necessary components of this process. The U.S. military offers an excellent model of this type of training.

Offering basic and advanced training in these skill areas further improves the value of the employee to the company while concurrently increasing the marketability of the individual for positions external to the company. It is anticipated that many supervisors would increase their company tenure if they improved their management skills and experience base as an avenue to broaden their opportunities outside the company. The company would therefore be providing no-cost training to employees in return for greater tenure, with the expectation of the individual eventually leaving the firm to advance their careers. The opportunity for professional growth would be perceived as an employee benefit while the company would enjoy the services of higher quality personnel during their employment. An indirect company benefit would be greater responsibility for CSS personnel to handle conflict resolution.

It should also be pointed out that "no opportunity for advancement" was a major factor of perceived importance in contributing to self-termination. Advancement within security companies is limited, and expansion of external opportunities is warranted. Training and education in related areas

English as a second language) can also be offered internally as a benefit to both employee and the company.

7. "Not told up front what to expect" was another major issue of job dissatisfaction. Briefly, extensive discussion focused on the lack of information provided about job requirements during the application/hiring process. General consensus among participants identified lack of understanding among personnel officers and interviewers as the basis for this problem.

It is strongly recommended that company personnel responsible for the recruitment, hiring, interviewing, and processing of applicants undergo the ATA training curriculum to the level of certification. The selection process can be significantly improved by offering applicants expanded information about job demands, expectations, and requirements. This intervention will permit the opportunity for applicants to de-select themselves from further consideration before considerable company training resources are invested.

8. Provide basic training and demonstration to all employees in job related areas (i.e., lifting heavy/bulk articles, human inter-personal communications) to reduce job-related stress and physical discomfort. Much of the job-related stress evolves from passenger and aircrew interactions. Clearly a seminar-formatted training program with periodic recurrent training is required in group dynamics, patterns of communications, conflict resolutions, and similar areas. Additional training in these areas benefits the company in reduced aircrew/passenger complaints, improved employee-employee relationships, and passenger compliance. Consequently, improving the marketability of the employee for external opportunities.
9. Several areas and issues centered on management communications and responsiveness. The research team noted that screener and CSS personnel held widespread misperceptions and attitudes toward management that were not based in fact. As an example, misperceptions ranged from benefit issues (i.e., calculations of annual vacation/leave time) to promotion issues (i.e., profit margins of security firms). Much of these widespread misperceptions were based on a lack available accurate information and the development of alternate explanations by employees.

Management interface and accessibility to all subordinate company employees is a readily apparent intervention. We suggest at least a periodic physical presence of management personnel at the checkpoints to gain first

hand awareness of potential problems and to observe screener/CSS performance directly.

In consonance with these activities, it is also suggested that relevant company information is relayed to employees on a regular basis. This may be accomplished several ways such as through monthly newsletters briefings. Sharing all company issues and concerns with employees is not advocated, but addressing areas of misperceptions to a level sufficient for dispelling false information and attitudes, is recommended.

10. A major source of job dissatisfaction for screener and supervisory personnel can best be described as an imbalance in the relationship between performance and consequences. Indeed, "fear of making a mistake or being wrong" and several reward issues were central to the Delphi objectives for career satisfaction and dissatisfaction. While consequences or failing tests or missing targets ranged from remedial training, suspension, or termination; rewards for successful performance were perceived as minimal and highly infrequent. One participant even remarked that passenger gratuities (i.e., for assisting handicapped travelers) generated more additional income than rewards from the company.

The following potential incentive programs will recognize successful performance and act as a guide for employee incentives and rewards:

- company contributions to a local award fund to acknowledge superior employees on a monthly basis. The fund should focus on employee recognition as the primary goal with awards consisting of retail and restaurant gift certificates, saving bonds, or small cash awards.
- service pins or other uniform designations to acknowledge company tenure.
- certificated and training record entries to document the completion of the previously identified training courses. Employees should be aware that these accomplishments will be documented on letters of recommendations.
- company non-cash awards (i.e., paid day off) for successful performance in FAA tests.
- air carrier provided incentives for outstanding critical performance:

- cash awards
 - use of amenity lounges for specified time periods
 - standby or restricted airline seats for domestic travel
 - amenity coupons (i.e., \$5.00 airport food establishment vouchers)
- competitive selection and recognition of screener and CSS of the quarter and year.

Although the incentives have a monetary value on their own, the primary objective for such programs is to convey supervisor and company recognition for performance. Recognition of desirable performance is an integral component of employee satisfaction and will contribute to career tenure.

The suggestions provided above were not meant to be exhaustive, but were given only to demonstrate the broad range that incentives can cover. Air carrier participation was suggested as an important element of this process since security personnel represent and act on behalf of carriers. It is to the benefits of the carriers to support such programs. Beyond the obvious responsibility and obligation of the carriers under FARs to maintain adequate security measures by employing qualified personnel, screener and CSS personnel directly impact passenger satisfaction and comfort. Improvements in employee tenure provides a more experienced, stabilized, well-trained, and reliable workforce. A dependable and experienced workforce directly impacts passenger flow by reducing passenger processing time that results from inadequate staffing levels and the comparatively slower performance that is characteristic of novice workers.

If security personnel are provided the training seminars identified earlier, a significant decline in aircrew/passenger complaints could be realized. Professional and

courteous service by security personnel would reflect positively on the carrier as passengers experience less delays and confrontations. It is to this end that air carrier support and cooperation is needed.

In summary, numerous recommendations have been offered with the goal to improve job satisfaction and increase employee tenure on the job. These interventions would have a direct impact on reducing employee turnover, increasing the experience base of the workforce, decreasing the demand on training resources, lowering the cost of recruitment and selection, and providing stability to the workforce. Given the effective security at airport facilities is by its very nature a team effort, improved workforce stability and longer employee tenure should increase performance of the overall security system. These interventions are based entirely on the work completed. The suggested interventions are just that "suggested". They have been proposed in response to those item/issues that were evaluated by security personnel as having the greatest impact on job satisfaction and reasons to leave the job.

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APPENDIX A
Small-group Delphi Workshop
Pre-board Security Screeners
Packet

Small-group Delphi Workshop: Pre-board Security Screeners

Embry-Riddle Aeronautical University

and

The FAA Technical Center

July 19-20, 1994
AIRPORT NAME

INDEX

- **Agenda**
- **Small-Group Delphi Overview**
- **Introduction To Screener Hiring**
- **Workshop Objectives**
- **Workshop Step-By-Step Instructions (Protocols)**
- **Participant Background Sheet**
- **Pre-Workshop Survey**
- **Personality Characteristics (Objective 1)**
- **Reasons To Remain Or Leave The Job (Objectives 2 & 3)**
- **Group Goals Survey — Process**
- **Post-Workshop Survey — Products**

PRE-BOARD X-RAY SCREENER SELECTION**WORKSHOP AGENDA****DAY 1**

- 8:00 - 9:00** Welcome and Introduction of Participants and Staff
Brief Overview of Project, Goals, and Objectives
Complete Participant Background Sheet, Pre-Workshop Survey and Pay Voucher
- 9:00 - 9:30** **COFFEE BREAK**
Distribute Workshop Materials
Question & Answer Session on Workshop Objectives & Techniques
Administrative & Payroll Items
- 9:30 - 10:30** Workshop Training Session
- 10:30 - 12:00** Discuss & Begin Objective I (Personality Items & Abilities)
- 1200 - 1:00** **LUNCH**
- 1:00 - 3:00** Objective I Work Session
- 3:00 - 3:15** **BREAK**
- 3:15 - 4:45** Complete Objective I (Consensus)
- 4:45 - 5:00** Day 1 Wrap-Up

DAY 2

- 8:00 - 9:30** Discuss & Begin Objective II (Job Satisfiers and Motivators)
- 9:30 - 9:45** **COFFEE BREAK**
- 9:45 - 10:45** Objective II Work Session
- 10:45 - 12:00** Complete Objective II (Consensus)
- 12:00 - 1:00** **LUNCH**
- 1:00 - 2:30** Discuss & Begin Objective III (Reasons to Dislike Job or Quit)
- 2:30 - 2:45** **COFFEE BREAK**
- 2:45 - 3:30** Continue Objective III Work Session
- 3:30 - 4:45** Complete Objective III (Consensus)
- 4:45 - 5:00** Post-Workshop Surveys and Workshop Wrap-Up

SMALL GROUP DELPHI OVERVIEW

Delphi methods help the way we communicate within and between groups of people. The purpose of "having a Delphi" is to deal with a complex problem by bringing together a group of people who have the skills and expertise required, and to provide you with a structured way to communicate with one another to solve the problem. The Delphi methods help us to keep our attention on coming together with good solutions. We will be using a modification of Delphi techniques. This modification is one that uses small group techniques like feedback, information sharing, help from trained group leaders, acceptance of everybody's ideas, working as a group, and more. This way, the good ideas of each member of the group are used. The group develops a team spirit which leads to good and valuable results.

We take this opportunity to welcome you to the Workshop. We look forward to working with you and coming up with ideas that will help the FAA and us with putting together a test to hire new screeners.

PRE-BOARD X-RAY SCREENER SELECTION

Introduction

The job of pre-board x-ray screener is an extremely important one. Your efforts are responsible for the protection of the lives and safety of millions of travelers each year. Your presence at airports helps to discourage would-be terrorist actions. How well you perform your job makes this possible. The amount of pay you receive to do this job does not reflect upon its importance. The job is so important that it is necessary that we only hire those who are best able to do the job, and who are willing to continue as screeners. That is the purpose of this workshop... to ask your help in finding the right people.

In order to be able to hire the right people for the job of airport security screening it is necessary to make proper tests. Those who do well on the tests should do well on the job; those who do poorly on the tests we would expect to do poorly on the job. For instance, if someone does poorly on some sort of math test, we would not expect them to be good cashiers or bookkeepers. The tests have to be accurate in order to work. This means we should also expect some people to do well on the tests while others do just OK or poorly. The entire idea is to figure out who will be successful and who won't be successful as a security screener by using the results of the tests we give them.

One way to create these tests is to have successful and experienced screeners and CSS's, such as yourself, give the abilities, and rate them for importance, that are necessary to be a successful screener. It is also very important to know what things about the job cause you to want to keep the job, and for what reasons others quit. So, we really need to find out what it takes to be a successful screener, and why you and others like you want to keep this kind of job. Then it is simply a matter of finding other people who are like you.

But how do we know if the tests work? We can be sure of two things. One, that you know what abilities and personality is needed to be a successful screener. And two, that we are pretty capable of making tests to measure what you say are important characteristics. But we still need to be sure we are both right....we wouldn't want to make mistakes and hire people who can not do the job because they aren't capable, or who will quit soon after getting the job. We also do not want to not hire people who would be good screeners because the tests are not accurate.

We can do this by hiring people for the job and then giving them the tests. After training and a few weeks on the job we can see how well they detect targets. If we all did our job right; those who are not very good at screening, or who quit, would not have done very well on the tests we made. We would also expect that those who are good at performing the test also did well on the job.

Now, back to where you fit in. You will be participating in the workshop to give your ideas on what skills, abilities, personality traits, and reasons to stay on the job are important for being a successful screener. Only you have a real understanding of this since you do the job. You are the EXPERTS. You will also be asked during the workshop to judge and rate those abilities, skills, reasons, and personality traits that are the most important to being a successful screener.

We will also ask you for your opinions and ideas on how to measure how well a screener does the job. Since you are the experts, you are the people best able to decide if a person can do the job or not. This is only if time permits.

WORKSHOP OBJECTIVES

The work will be based on your experience, knowledge, and some materials that we will provide. As a group, we will:

- Objective 1:** Develop a list of the personality traits, characteristics, and abilities that YOU feel that an x-ray screener has – and needs to have – to be a superior screener. We want to know what makes the best screeners the BEST screeners. This will be done by:
- A. Changing or “scrubbing” the list that will be provided to you by adding things you think are important and are not on the list, or by removing items that you feel are not needed. The final list should only have items you feel are truly important to being a successful screener.
 - B. Using a “critical incident methodology” to consider the list carefully and making any final changes. We will explain this during training. For now, consider it as thinking of really unusual and great screener targets detected and why they happened — what is it about the incident that made it happen.
 - C. Rate the final list of items using the scales we provide to you.

- Objectives 2 & 3:** Develop a set of job satisfiers and dislikes that impact screener decisions to stay on, or leave the job.
- A. Identify, discuss and make a list of the reasons why people enjoy or stay on the job. We want you to consider what is there about the job that keeps you and your fellow workers returning to the job each week.
 - B. Identify, discuss and make a list of the reasons why people do not like the job or quit. What are the reasons others have told you they are quitting.
 - C. Considering both lists, what do you suggest, can be done to improve the job, make it more enjoyable and satisfying, or how the pay and reward system can be made better. What will need to be changed to help people decide to stay on the job.
- NOTE:** We do not want to discuss only the negative aspects of the job; we also want to discuss how to keep yourself and others on the job and with the company.
- D. For each of the two lists you created, rate the items using the scales provided.

PROTOCOLS FOR OBJECTIVE 1A

We have prepared an initial list of characteristics and abilities which may be important to being a good screener. Part of this list comes from interviews we have conducted with screeners at various airports. Some of the list also comes from standard lists of abilities and traits that are used in this type of research. Still other traits and characteristics come from our looking at the X-Ray screeners job tasks.

STOP - ANY QUESTIONS?

What we need now is for you, our experts, to take this list and go through it. In going through it, see which items **you** think are not really important to being a good screener. (By "good screener" we mean a top-of-the-line, "best you have ever seen" screener). We also need you to think about which traits and abilities are not on the list - but need to be.

STOP - ANY QUESTIONS?

The way we will do this is to break up into two smaller groups and evaluate the list provided. Then we will rejoin as one group and get one final list by using the two smaller group lists as the basis.

We need real discussion (yes, even disagreements) in the smaller, as well as, the whole group. We want consensus and that won't happen unless each of us is part of the discussion and each of us can say whatever we think. OK, at this point we can start the ball rolling.

PROTOCOLS FOR OBJECTIVE 1B

We have now modified our initial list of abilities and characteristics which are important to being a **good** screener. We have added items **you** thought were relevant and were not on the list, and we have removed items you felt were not needed. The final list should have only items **you** feel are truly important to being a good screener.

STOP - ANY QUESTIONS?

What we need to do now is make additional refinements to our list of **positive** abilities and characteristics. We will utilize the "Critical Incident Methodology" we briefed you on during training. Remember to think of really unusual and great screener targets detected - and most important, why **you** think they happened.

STOP - ANY QUESTIONS?

Now we will divide up into two small groups so that you can discuss "Critical Incidents" that you have experienced. Following this step, join together again in one group to share your experiences and to develop a final list of **positive** abilities and characteristics.

Remember, any incident **you** believe significant needs to be considered. Listen carefully, also, to what the other group members have to contribute. **Strive for consensus!**

PROTOCOLS FOR OBJECTIVE 1C

At this point we have developed a highly refined list of characteristics and abilities which are important to being a **good** screener. We have added items **you** thought relevant and removed items not needed. We have discussed "Critical Incidents" which have demonstrated **good** screener performance qualities. There is one more vital step remaining in our evaluation process.

STOP - ANY QUESTION?

What we will do now is rate the final list of **positive** characteristics and abilities. We will be using the rating scales and instruments we provided for you in training. This step is very important, so we want you to focus on what abilities **you** believe are crucial - and rate them accordingly. Please make sure you clearly understand the rating scales before proceeding.

STOP - ANY QUESTIONS?

Now we will divide up into two small groups so that you can work on the rating scales. Following this step, join together again in one group to develop the final rating scales.

Remember the importance of meaningful discussion and group consensus. This final step is what we have been working towards in this workshop, so let's get to work!

PROTOCOLS FOR OBJECTIVE 3A

We have prepared an initial list of reasons which may be why you enjoy the screening job or choose to remain in this career field. All of the reasons came from screeners that were interviewed while doing the job. Many of the reasons show what several screeners said about each item. Remember, these are reasons screeners said why they enjoyed the job.

STOP - ANY QUESTIONS?

Would like you to look over the list and see which items **you** think are **not** really important reasons for enjoying your work or for staying on the job. (By important we mean that the reason does make a difference to you). We also want you to think about what reasons are personally important to you and are not on the list - but **you** think they need to be. It doesn't matter if you think the reason is only important to yourself and no other screeners - if it is important to **you**, it needs to be on the list.

STOP - ANY QUESTIONS?

As you have been doing, you will break up into your groups again and discuss the list provided. After you finish your discussions, we will come back into the whole group and put together the final list by using the lists you developed in you workgroups as the basis.

As before, we need real discussion and challenging items during all group work. Add items as you see fit. Don't worry about what the other group might think. We need consensus, but that won't happen

unless each of us participates in the discussion and says what they think.

STOP - ANY QUESTIONS?

Back to your workgroups again. Remember if it's important to **you**, it may be important to the workshop.

PROTOCOLS FOR OBJECTIVE 3B

We have also prepared an initial list of job qualities which may contribute to an X-Ray screener **disliking** the work and/or choosing to leave this career field. This list was prepared in the same manner as the initial list in Objective 3A. Remember, these are comments from actual screeners.

STOP - ANY QUESTIONS?

We would like you to look over this list and determine which items **you** think are **not** the really important reasons for disliking the work as an X-Ray screener. We also want you to consider what qualities are not on the list - but should be. Remember, if it is important to you, then it should be on the list.

STOP - ANY QUESTIONS?

Now we will break up into two smaller groups and evaluate the list we provided. Following this step, join together again in one group and generate a final list for this objective.

Remember the key elements of this step: meaningful discussion and group consensus. What **you** have to say is very important, even if a group member disagrees. Be willing to listen to what other group members have to say - then everyone will be encouraged to participate.

PROTOCOLS FOR OBJECTIVE 3D

We have now generated two lists of job qualities which are part of screener decisions to stay on the job, or leave. We have developed a group consensus on why people enjoy X-Ray screener work, and on why people dislike the work. We have accomplished these objectives through meaningful discussion in your group.

STOP - ANY QUESTIONS?

What we need to do now is to rate the final list of job qualities. We will be utilizing the rating scales and instruments that were provided for you in training. This step is very important, so we want to concentrate on what job qualities **you** believe are significant - and rate them accordingly. Please ensure that you clearly understand the rating scales before we proceed.

STOP - ANY QUESTIONS?

Now we will break up into smaller groups and work on the rating scales. After this step, we will gather together in our large group to generate the final rating scales.

Remember, again, the value of meaningful discussion and group consensus.

Pre-board X-ray Screener Selection:
Participant Background

Name

1. Company working for: _____
2. Time at current job: _____ months
3. Current airport assigned: _____
4. Total length of time with company: _____
5. Position (Check all that apply):

_____	:	CSS
_____		Screener
_____		Instructor
_____		Management
6. X-ray screening system you use: _____
- 6a. Other systems you have used: _____

7. Other airport screening companies you have worked for: _____

8. Training received and when (month, year): _____

PROTOCOLS FOR OBJECTIVE 3C

We have now generated two lists of job qualities which are part of screener decisions to stay on, or leave, the job. We have developed a group consensus on why people enjoy X-Ray screener work, and on why people dislike the work. We have accomplished these objectives through meaningful discussion in your group.

STOP - ANY QUESTIONS?

What we need to do now is develop suggestions for improving X-Ray screener work. Considering both lists, what can be done to make the work more enjoyable and satisfying. Are changes necessary in the pay and reward system, and so on. This is an opportunity for **you** to make suggestions that could improve the quality of **your** working environment.

STOP - ANY QUESTIONS?

Now we will divide up into two small groups and evaluate these two lists. After completing this step, we will gather together in one group to develop two final lists for this objective.

Remember we don't want to discuss only the negative aspects of the job - we also want to discuss how to improve the working environment and encourage employees to stay on. So let's get on with it.

PRE-WORKSHOP SURVEY

- | | | | |
|----|--|--|---|
| 1. | As a pre-board x-ray screener (in this group of screeners), my skills in understanding and evaluating the job put me about here, relative to the others. | <u>Very Highly</u>
<u>Skilled</u>
1 2 3 4 5 6 7
_____ | <u>No Skill</u>
<u>At All</u>
6 7
_____ |
| 2. | I think my ideas will be in agreement with the rest of the screeners in this group. | <u>Yes,</u>
<u>absolutely</u>
1 2 3 4 5 6 7
_____ | <u>No, not</u>
<u>at all</u>
6 7
_____ |
| 3. | I know most of the screeners very well. | <u>Yes,</u>
<u>pretty much</u>
1 2 3 4 5 6 7
_____ | <u>No, none</u>
<u>at all</u>
6 7
_____ |
| 4. | I have some definite ideas about what the necessary skills and abilities are for success as a screener. | <u>Yes,</u>
<u>lots</u>
1 2 3 4 5 6 7
_____ | <u>No,</u>
<u>none</u>
6 7
_____ |
| 5. | I have been in airport screening longer than most of the other screeners here. | <u>Yes</u>
1 2 3 4 5 6 7
_____ | <u>No</u>
6 7
_____ |
| 6. | I am anticipating that the workshop is going to be a good experience and will accomplish what we need to do. | <u>Yes, I think</u>
<u>it will be</u>
1 2 3 4 5 6 7
_____ | <u>No, I think</u>
<u>it may be a</u>
<u>waste of time</u>
6 7
_____ |

Objective 1
(Personality Items and Abilities)

Directions: Referring to the following *personality items and abilities*, please circle the number that best represents your feeling. Answer quickly — your first impression is often your best. Please rate each of the following qualities regarding their contribution to superior performance:

	Absolutely Unnecessary	Somewhat Helpful	3	Important	Absolutely Necessary
1. Persistent	1	2	3	4	5
2. Suspicious	1	2	3	4	5
3. Assertive	1	2	3	4	5
4. Trusting	1	2	3	4	5
5. Confident	1	2	3	4	5
6. Dependable & Responsible	1	2	3	4	5
7. Forceful	1	2	3	4	5
8. Observant, Alert, & Attentive	1	2	3	4	5
9. Curious	1	2	3	4	5
10. Cooperative & Team Player	1	2	3	4	5
11. Outgoing	1	2	3	4	5
12. Enthusiastic & Energetic	1	2	3	4	5
13. Motivated	1	2	3	4	5
14. Thorough	1	2	3	4	5
15. Tactful	1	2	3	4	5
16. Courteous & Respectful	1	2	3	4	5
17. Cautious	1	2	3	4	5
18. Sensitive	1	2	3	4	5
19. Helpful	1	2	3	4	5
20. Calm	1	2	3	4	5
21. Positive Mental Attitude	1	2	3	4	5
22. Concerned	1	2	3	4	5
23. Tolerance	1	2	3	4	5
24. Honest	1	2	3	4	5

Objective 2
(Job Satisfiers and Motivators)

Directions: Referring to the following *job satisfiers and motivators*, please circle the number that best represents your feeling. Answer quickly — your first impression is often your best. In terms of a reason why I try to/want to stay on the job, I would say that this reason is:

	Absolutely Unnecessary	Somewhat Helpful	3	Important	Absolutely Necessary
1. Importance of the work I do	1	2	3	4	5
2. High responsibility of the job	1	2	3	4	5
3. Enjoy helping people	1	2	3	4	5
4. Like working with co-workers (companionship)	1	2	3	4	5
5. Enjoy being busy	1	2	3	4	5
6. Comfortable place to work	1	2	3	4	5
7. Medical benefits	1	2	3	4	5
8. Enjoy controlling people	1	2	3	4	5
9. Retirement benefits	1	2	3	4	5
10. Chance to move into supervisory jobs	1	2	3	4	5
11. Good general work experience	1	2	3	4	5
12. Wages job pays	1	2	3	4	5
13. Being around people	1	2	3	4	5
14. Doing airport security work	1	2	3	4	5
15. Appreciation "by" supervisors	1	2	3	4	5
16. Job is challenging (doing a job few others can do)	1	2	3	4	5
17. Wanted to learn something new	1	2	3	4	5
18. Dislike other jobs that were available	1	2	3	4	5
19. Desire to protect people	1	2	3	4	5
20. My family & friends think the job is important	1	2	3	4	5

Objective 2 – continued

	Absolutely Unnecessary	Somewhat Helpful		Important	Absolutely Necessary
21. Appreciation "of" supervisors	1	2	3	4	5
22. Pride in my work	1	2	3	4	5
23. Thrill of finding targets	1	2	3	4	5
24. Job is easy	1	2	3	4	5
25. Wanted to work in airports	1	2	3	4	5
26. Flexible hours and days	1	2	3	4	5
27. Opportunity for rewards	1	2	3	4	5
28. To make friends	1	2	3	4	5
29. Want to stop terrorist acts	1	2	3	4	5
30. Recognition by company	1	2	3	4	5
31. Potential job contacts	1	2	3	4	5
32. Makes a good second income	1	2	3	4	5

Objective 3
(Reasons to Dislike Job or Quit)

Directions: Referring to the following items, please circle the number that best represents your feeling about why people quit and/or dislike being a screener. Answer quickly — your first impression is often your best.

	No Effect Whatsoever	Little Effect If Any	3	Important	Major Reason
1. Stressful	1	2	3	4	5
2. Poor pay	1	2	3	4	5
3. Dislike hours	1	2	3	4	5
4. Don't like working weekends	1	2	3	4	5
5. Hard to get to work	1	2	3	4	5
6. Job is boring	1	2	3	4	5
7. Dislike co-workers	1	2	3	4	5
8. Little or no medical benefits	1	2	3	4	5
9. Job is too difficult	1	2	3	4	5
10. No retirement program	1	2	3	4	5
11. Not appreciated	1	2	3	4	5
12. Too much work for amount of pay	1	2	3	4	5
13. Found "better" job	1	2	3	4	5
14. Having to work holidays	1	2	3	4	5
15. Job is causing physical discomfort (backache, headache, eye strain, etc.)	1	2	3	4	5
16. Family and/or spouse wants me to quit	1	2	3	4	5
17. Job is too fast paced	1	2	3	4	5
18. Breaks/lunch time not enough	1	2	3	4	5
19. No opportunities for advancement	1	2	3	4	5
20. Just doing job temporarily to earn extra money	1	2	3	4	5
21. Don't want to work in airports	1	2	3	4	5
22. Criticism by supervisors	1	2	3	4	5

Objective 3 – continued

	Absolutely Unnecessary	Somewhat Helpful		Important	Absolutely Necessary
23. I don't find job important	1	2	3	4	5
24. Confronting passengers	1	2	3	4	5
25. Fear of finding weapons	1	2	3	4	5
26. Job wasn't what I thought it was	1	2	3	4	5
27. Decisions have to be made too fast	1	2	3	4	5
28. Afraid to make a mistake or be wrong	1	2	3	4	5
29. Passenger hostility	1	2	3	4	5
30. Work is tiring and exhausting	1	2	3	4	5
31. Not told up front what to expect	1	2	3	4	5
32. Not being kept abreast of what's going on	1	2	3	4	5
33. Management not listening to suggestions and/or complaints	1	2	3	4	5

GROUP GOALS SURVEY — PROCESS

1. How clear are the group goals?

- | | | | | |
|------------------------|--|------------------------------|----------------------------|--------------------------|
| 1
No apparent goals | 2
Goal confusion,
uncertainty, or conflict | 3
Average goal
clarity | 4
Goals mostly
clear | 5
Goals very
clear |
|------------------------|--|------------------------------|----------------------------|--------------------------|

2. How much trust and openness in the group?

- | | | | | |
|---------------|-------------------|------------------------------------|---|-----------------------------------|
| 1
Distrust | 2
Little trust | 3
Average trust and
openness | 4
Considerable trust
and openness | 5
Strong trust
and openness |
|---------------|-------------------|------------------------------------|---|-----------------------------------|

3. How sensitive and aware are group members?

- | | | | | |
|--|--|---|-------------------------------------|--|
| 1
No awareness or
listening in the group | 2
Most members only
interested in their
own views | 3
Average sensitivity
and listening | 4
Better than usual
listening | 5
Outstanding
sensitivity
to others |
|--|--|---|-------------------------------------|--|

4. How were group leadership needs met?

- | | | | | |
|------------------------|--------------------------------------|--|--|---|
| 1
Not met, drifting | 2
Leadership was by
one person | 3
Some leadership sharing
among a few group
members | 4
Leadership functions
distributed among
everyone | 5
Leadership needs
met creatively
and flexibly.
Everyone helped
lead the group |
|------------------------|--------------------------------------|--|--|---|

5. How were group decisions made?

- | | | | | |
|---------------------------------------|--------------------|--------------------|--|--|
| 1
No decisions could
be reached | 2
Made by a few | 3
Majority vote | 4
Attempts at considering
all points of view | 5
Full participation
and consensus |
|---------------------------------------|--------------------|--------------------|--|--|

6. How well were group resources used?

- | | | | | |
|---|---|--------------------------------------|--|--|
| 1
One or two contributed,
but everyone else was
silent discouraged | 2
Several tried to
contribute, but were | 3
Average use of group
members | 4
Group resources well
used and all opinions
encouraged | 5
Individual
opinions fully
and effectively
used |
|---|---|--------------------------------------|--|--|

7. How much loyalty and sense of belonging to the group?

- | | | | | |
|---|---|--|--------------------------------------|--|
| 1
Members had no group
loyalty or sense of
belonging | 2
Members not close but
some friendly relations | 3
About average sense
of belonging | 4
Some warm sense of
belonging | 5
Strong sense of
belonging among
members |
|---|---|--|--------------------------------------|--|

- | | | | |
|----|--|--|---|
| 1. | I feel satisfied with the results. | <hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 1 2 3 4 5 6 7 | I'm not really happy with the results at all. |
| 2. | I learned ideas from the feedback. | <hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 1 2 3 4 5 6 7 | I didn't learn a thing from from the feedback. |
| 3. | In general, I agreed with the ideas in the feedback. | <hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 1 2 3 4 5 6 7 | I disagreed with everything in the feedback. |
| 4. | I could express my ideas o.k. this way. | <hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 1 2 3 4 5 6 7 | I couldn't really say what I wanted to say. |
| 5. | I feel as if I really wanted to talk to people. | <hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 1 2 3 4 5 6 7 | I didn't feel the need to talk at all. |
| 6. | I have a feeling people didn't understand or think about my reasons. | <hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 1 2 3 4 5 6 7 | I think people understood my reasons pretty well. |
| 7. | I think it went too quickly. | <hr style="border: 0; border-top: 1px solid black; margin: 0;"/> 1 2 3 4 5 6 7 | I think it went too slowly. |

APPENDIX B
Cover Letter



EMBRY-RIDDLE
AERONAUTICAL UNIVERSITY

600 S. Clyde Morris Blvd. Daytona Beach, FL 32114-3900 (+1) (904) 226-6385 FAX (+1) (904) 226-7050
Center for Aviation/Aerospace Research

July 11, 1994

Dear Participant:

On behalf of the Federal Aviation Administration and Embry-Riddle Aeronautical University, welcome to the Delphi Workshop for Airline Passenger Pre-board Security Screeners. You have been carefully selected from among your colleagues because of your experience and skill. Your personal contribution and enthusiasm is greatly appreciated and will make a difference. The input and ideas you bring to the workshop will help decide the course of how to select future applicants for this vital career field.

Most of your efforts will take place during the actual workshop. However, to be productive and allow the workshop to run smoothly, some preparation is needed. We think this will assist you in getting more out of the workshop and will make the experience more enjoyable.

Attached is a rather substantial amount of information. Don't panic! These are all the materials we will use during the two day workshop — only a small portion is completed by you before we begin. We wanted to ensure there were no surprises for you on the day of the workshop.

To ease you through this package we color-coded the materials you need to complete before the workshop. We also developed a set of steps to take you through the process. After each step the approximate time to complete the step is provided.

BEFORE THE WORKSHOP:

1. First, look over the **PINK** Agenda to become familiar with the workshop sequence. (3 minutes)
2. Read the **GREEN** Overview information to understand what a Delphi Workshop is. (3 minutes)
3. Read the **BLUE** Introduction to acquaint yourself with the project. (5 minutes)

4. Look over the **GOLD** pages. These pages list personality and ability descriptions and has a rating scale. The descriptions are words screeners used to describe themselves. Using the rating scale, choose a rating for **EACH** of the descriptions. Please write your rating next to each personality description. **CHOOSE THE RATING YOU PERSONALLY FEEL IS MOST ACCURATE IN DESCRIBING SUPERIOR SCREENERS.** Remember, these are your ratings, there are no right or wrong answers. (20 minutes)
5. Look over the **YELLOW** pages. These pages list reasons from fellow screeners why they enjoy the job and includes a rating scale. Once again, using the rating scale, select the rating you feel is most accurate based on your personal opinion, and write your rating next to **EACH** reason. (20 minutes)
6. Finally, look over the **GRAY** pages. These pages list reasons from fellow screeners why they dislike the job or want to quit and a rating scale. As before, using the rating scale, select the rating that best fits your personal opinion and write the rating next to each reason. (20 minutes)

All your ratings **ARE CONFIDENTIAL!** Only you, and the project team, knows your answers. The security company you work for, the FAA, and the airline has no access to your individual answers.

The workshop will focus entirely on these topic areas — what makes for a good screener, and what is it about the job that is enjoyable or causes people to quit. During the workshop these issues are the center of all group discussions.

Again, thanks for your assistance. We want this to be a fun and rewarding experience for all....so please help out and “**complete your homework**”.

Sincerely,

The Embry-Riddle Project Team Members

P.S. Most of us were trained to screen and worked the positions a little ourselves.

APPENDIX C
Objectives

Objective. Develop a set of job satisfiers and dislikes that impact screener decisions to stay on, or leave the job.

A. Identify, discuss and make a list of the reasons why people enjoy or stay on the job. We want you to consider what is there about the job that keeps you and your fellow workers returning to the job each week.

B. Identify, discuss and make a list of the reasons why people do not like the job or quit. What are the reasons others have told you they are quitting.

C. Considering both lists, what do you suggest, can be done to improve the job, make it more enjoyable and satisfying, or how the pay and reward system can be made better. What will need to be changed to help people decide to stay on the job.

D. For each of the two lists you created, rate the items using the scales provided.

APPENDIX D
 Screener Information

**Screener Information
 APPENDIX D**

Airport	Screener ID #	Gender	Time with Company In Months	Time at Current Job In Months
MCO	1	FEMALE	13	13
MCO	2	MALE	18	18
MCO	3	MALE	44	44
MCO	4	FEMALE	46	22
MCO	5	FEMALE	18	18
MCO	6	FEMALE	60	48
MCO	7	FEMALE	19	19
MCO	8	FEMALE	22	11
MCO	9	FEMALE	15	15
MCO	10	FEMALE	60	60
MCO	11	MALE	12	12
MCO	12	FEMALE	93	93
MCO	13	MALE	13	13
MCO	14	FEMALE	93	93
JFK	1	FEMALE	69	31
JFK	2	FEMALE	60	31
JFK	3	MALE	22	22
JFK	4	FEMALE	82	31
JFK	5	MALE	30	30
JFK	6	MALE	18	18
JFK	7	FEMALE	72	24
JFK	8	FEMALE	72	31
JFK	9	MALE	31	31
JFK	10	MALE		31
SFO	1	FEMALE	168	168
SFO	2	FEMALE	12	6
SFO	3	MALE	36	36
SFO	4	MALE	31	31
SFO	5	FEMALE	15	15
SFO	6	FEMALE	46	46
SFO	7	MALE	17	17
SFO	8	FEMALE	24	24
SFO	9	FEMALE	72	72
SFO	10	MALE	11	11

APPENDIX E
Pre-Workshop Survey
Question Ratings

Pre-Workshop Survey Question Ratings
 APPENDIX E

Airport	Screener ID #	QUESTIONS					
		1	2	3	4	5	6
MCO	1	3	2	5	3	5	2
MCO	2	2	4	5	2	5	3
MCO	3	2	3	5	2	7	1
MCO	4	2	2	3	2	2	1
MCO	5	2	3	4	2	2	2
MCO	6	2	2	3	3	2	3
MCO	7	2	3	1	2	4	1
MCO	8						
MCO	9	3	3	3	2	5	2
MCO	10	2	2	5	3	1	1
MCO	11	3	3	3	3	5	2
MCO	12	3	4	2	2	1	2
MCO	13	6	5	5	3	6	5
MCO	14	2	2	1	2	1	1
JFK	1	2	1	2	2	2	1
JFK	2	1	1	1			
JFK	3	3	2	1	3	7	1
JFK	4						
JFK	5	1	1	1	1	7	1
JFK	6	2	4	1	2	6	1
JFK	7	1	2	1	1	1	1
JFK	8	1	2	1	1	1	3
JFK	9	4	4	1	3	6	1
JFK	10	1	2	2	1	4	1
SFO	1	1	3	4	1	1	3
SFO	2	2	2	2	3	3	1
SFO	3	3	4	5	4	3	3
SFO	4	3	2	5	2	4	1
SFO	5	1	3	1	1	2	1
SFO	6	2	3	1	1	2	1
SFO	7	1	3	1	2	1	1
SFO	8	2	2	2	1	2	1
SFO	9	2	3	3	1	2	3
SFO	10	4	4	6	3	7	1

APPENDIX F
Post-Workshop Survey-
Process Question Ratings

Post-Workshop Survey - Process Question Ratings
 APPENDIX F

Airport	Screener ID #	QUESTIONS						
		1	2	3	4	5	6	7
MCO	1	5	5	4	5	5	4	5
MCO	2	2	4	4	5	3	4	4
MCO	3	3	4	5	5	5	4	5
MCO	4	4	5	5	4	5	4	5
MCO	5	4	3	3	4	4	4	3
MCO	6	4	4	4	5	5	4	5
MCO	7	3	3	3	4	4	5	5
MCO	8	2	3	2		4	3	2
MCO	9	4	4	3	3	4	4	5
MCO	10	3	4	2	4	3	4	3
MCO	11	5	4	4	5	4	4	5
MCO	12	4	3	4	5	4	4	3
MCO	13	3	4	4	4	4	3	3
MCO	14	5	5	5	5	4	5	5
JFK	1	4	4	4	5	5	4	4
JFK	2	5	4	4	3	2	4	1
JFK	3	4	4	4	3	4	4	5
JFK	4	4	5	5	5	4	4	4
JFK	5		3	3	4	3	4	5
JFK	6	5	5	5	5	5	4	5
JFK	7	4	4	5	5	4	4	5
JFK	8	5	4	3	4	4	4	5
JFK	9	4	4	3	3	5	3	3
JFK	10	3	5	3	4	4	4	4
SFO	1	5	5	5	5	5	5	4
SFO	2	5	4	4	5	5	4	5
SFO	3	5	5	3	5	5	5	5
SFO	4	4	5	3	5	5	4	5
SFO	5	5	5	5	5	5	5	5
SFO	6	4	4	3	4	4	4	4
SFO	7	4	3	4	4	3	4	4
SFO	8	5	5	4	5	5	4	5
SFO	9	3		4	4	4	5	4
SFO	10	5	4	4	5	5	4	4

APPENDIX G
Post-Workshop Survey-
Products' Question Ratings

Post-Workshop Survey - Products' Question Ratings
 APPENDIX G

Airport	Screener ID #	QUESTIONS						
		1	2	3	4	5	6	7
MCO	1	1	1	1	1	1	7	4
MCO	2	4	4	4	1	1	5	2
MCO	3	2	1	1	1	1	5	4
MCO	4	3	1	3	2	2	6	5
MCO	5	4	5	4	3	4	4	2
MCO	6	1	2	2	3	2	2	1
MCO	7	2	1	3	1	3	6	3
MCO	8	5	5	3	3	3	2	1
MCO	9	3	2	2	1	1	6	3
MCO	10	5	2	2	3	2	6	2
MCO	11	2	2	1	2	1	6	1
MCO	12	5	4	4	2	3	6	2
MCO	13			4	2		5	3
MCO	14	3	1	2	1	1	6	3
JFK	1	1	2	2	1	2	6	4
JFK	2	1	1	1	1	1	7	2
JFK	3	1	1	1	1	1	2	4
JFK	4	6	6	7	6			
JFK	5	1	1	1	1	1	1	1
JFK	6	1	1	1	1	1	7	2
JFK	7	1	1	1	1	1		2
JFK	8	4	1	1	1	1	2	3
JFK	9	2	1	2	3	2	4	6
JFK	10	1	2	2	1	1	6	2
SFO	1	1	1	1	1	1	6	2
SFO	2	5	4	5	4	4	4	4
SFO	3	1	4	1	2	2	1	2
SFO	4	1	2	1	2	1	7	2
SFO	5	1	1	1	1	1	1	1
SFO	6	5	4	4	5	4	1	1
SFO	7	1	1	1	1	2		4
SFO	8	1	1	1	1	1	1	4
SFO	9	2	2	2	2	2	6	2
SFO	10	1	1	1	2	2	6	3