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AN INVESTIGATION OF FACTORS AFFECTING
AIRCRAFT PASSENGER ATTENTION TO
SAFETY INFORMATION PRESENTATIONS

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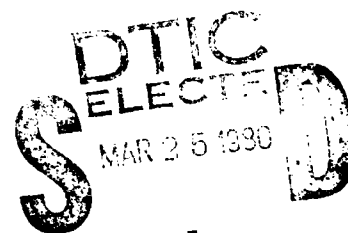
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16. Abstract Many commercial aircraft passengers do not appear to attend to the safety information presentation given prior to takeoff. This presentation, in the form of the oral briefing given by the flight attendant and the safety information cards, supplies information the passenger may need to increase the probability of safely surviving an aircraft emergency. A questionnaire was administered to 255 respondents who had flown at least twice in the previous two years. A number of factors associated with the way the information is presented, the apparent response of other passengers to the presentation, perceived accident probability, relative adequacy of the oral briefing, and situational and demographic variables are related to whether the passenger reports attending or not attending to the safety presentation.					
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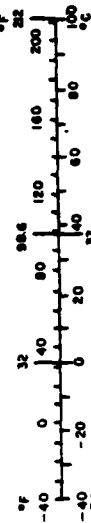
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	When You Know	Multiply by	To Find	Symbol	When You Know	Multiply by	To Find
LENGTH				LENGTH			
in	inches	2.5	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	km	kilometers	1.1	yards
						0.6	miles
AREA				AREA			
sq in	square inches	6.5	square centimeters	sq cm	square centimeters	0.16	square inches
sq ft	square feet	0.09	square meters	sq m	square meters	1.2	square yards
sq yd	square yards	0.8	square meters	ha	hectares (10,000 m ²)	0.4	square miles
ac	acres	2.5	square kilometers			2.5	acres
		0.4	hectares				
MASS (weight)				MASS (weight)			
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons (2000 lb)	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons
VOLUME				VOLUME			
teaspoon	teaspoons	5	milliliters	ml	milliliters	0.03	fluid ounces
tablespoon	tablespoons	15	milliliters		liters	2.1	pints
fluid ounce	fluid ounces	30	milliliters		liters	1.06	quarts
cup	cups	0.24	liters		liters	0.26	gallons
pint	pints	0.47	liters		cubic meters	35	cubic feet
quart	quarts	0.95	liters		cubic meters	1.3	cubic yards
gallon	gallons	3.8	liters				
cubic foot	cubic feet	0.03	cubic meters				
cubic yard	cubic yards	0.76	cubic meters				
TEMPERATURE (exact)				TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature

* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, *Units, Symbols, and Abbreviations*. Price \$2.25, SD Catalog No. C13 10 786.

METRIC CONVERSION FACTORS



PREFACE

I wish to give special thanks for the valuable suggestions of possible reasons why passengers may or may not attend to safety presentations, offered by Ms. Donnell Pollard, Federal Aviation Administration, Oklahoma City, Oklahoma.

Also, for the suggestion and the assistance in the data analysis, I wish to thank David M. Zamarin, Ph.D., Douglas Aircraft Company, Long Beach, CA.

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SUMMARY

A telephone interview of 231 people who had flown on commercial aircraft at least twice in the past two years was conducted to determine the difference between passengers who attend and those who do not attend to the flight attendant's oral briefing and the passenger safety briefing card.

The issue of passenger attention to safety information is important because there is evidence that passenger safety could be increased if passengers were more knowledgeable of what to do, and when to do it in an emergency.

Questions to test a number of hypotheses about why some passengers attend and others do not, were developed and pretested prior to administration.

It is commonly thought that most passengers aboard commercial aircraft do not attend to either the oral presentation given by the flight attendant prior to takeoff of a normal flight, or to the passenger safety information card located in the seatback pocket in front of the passenger. It has been noted that following accidents, some passengers do not seem to know, or are unable to perform, the correct actions to ensure their safety, such as going to the nearest exit, being able to put on the life jacket, using the oxygen mask, etc. Previous research has shown that people who are educated in the correct way to perform these actions, are better able to perform them when required.

It is possible then, that if aircraft passengers were to attend more to the safety briefings, more of them would be able to quickly and correctly perform the behavior required of them if an emergency were to occur.

The purpose of this telephone interview was to determine what differences there are between passengers who normally attend to safety presentations (attenders) and those who seldom or never attend (non-attenders). An attender was distinguished from a non-attender by responding in the positive to both the question of whether the person had attended to oral briefings and safety cards on previous flights, and whether the person had intentions of attending to these presentations in the future.

Of the 231 people interviewed, 70% (162) were classified as attenders with the remaining 30% (69) classified as non-attenders. This ratio seems to belie the common observation that most passengers don't attend. There are three possible explanations:

- 1) The randomly chosen sample reached in this study was somehow biased.
- 2) People in the study lied about attending.
- 3) The common observation is incorrect; people attend covertly.

The third possibility has important ramifications considered with some of the results of this study, and will be discussed later.

Both attenders and non-attenders reported the safety cards and the oral briefings seldom, if ever, made them nervous; however, attenders did report a slightly (but statistically significant) greater amount of nervousness toward the safety presentations than non-attenders. But, in this type of study, it is impossible to determine if the more nervous passenger attends more or if attending causes more nervousness.

Similarly, respondents thought there was not much new information given in the presentation (low in complexity) and what was presented on one aircraft was similar to what was presented on the next (low in novelty). Non-attenders thought the presentations were even lower in novelty and complexity than attenders.

Compared to non-attenders, attenders reported that the briefing cards were easier to locate. It may be that non-attenders reported greater difficulty in locating the cards as a sort of justification for not attending to them.

About half of the non-attenders, and a majority of the attenders, reported they would attend more to the safety presentation if they noticed fellow passengers attending.

Compared to attenders, non-attenders were more likely to report the time spent attending was wasted because there is very little chance an accident will occur on a given flight. However, the perceived probability of an accident occurring was not significantly different for the two groups. Also, both groups thought the chance of surviving the accident was the same. Both groups agreed, as well, that an accident situation need not be hopeless; that passengers can take steps to protect themselves.

Both attenders and non-attenders agreed that safety information presentations are useful because crewmembers may not be available to assist the passenger following an accident. There was only slight agreement with the idea that crewmembers are trained and capable of assisting all passengers in any kind of emergency.

When asked to estimate the amount of time there would be available for most people to get out of a burning aircraft, the average response was 5.5 minutes; there was no statistically significant difference between the attenders and non-attenders. On the other hand, most respondents thought there would not be enough time to get instruction from the crew or the briefing card following an emergency.

Both groups, but especially attenders, agreed that the information in the oral briefing was not adequate, and the information on the safety card was also needed. Yet, both viewed studying the briefing card as less important than using seat belts and indicated they would study the card if they thought it were as important as the seat belt.

Both groups felt they already knew the information shown on the briefing card, even before boarding the plane. This may explain why the non-attenders, while agreeing to the need for the information on the card and recognizing that passengers can take precautions for their own safety in an accident, nonetheless fail to attend. But, it doesn't explain why the attenders, while holding the same feeling of already knowing the safety information, do attend.

Both attenders and non-attenders agreed that fearful passengers are more likely to attend to safety information. Interestingly, both groups were indecisive about whether or not it was important to conceal fear. Both groups of respondents agreed however, that it was preferable to be thought of as an experienced air traveller.

There were significant demographic differences between attenders and non-attenders. Non-attenders were more likely to be men, younger, and more educated than attenders. They also were more likely to have had more flight experience. In addition, non-attenders were more likely to fly alone and on business trips, while attenders were more likely to fly with someone they knew and on pleasure trips.

A discriminant analysis identified seven significant factors which, together, could correctly identify 81.2% of the non-attenders and 75.3% of the attenders, with an overall accuracy rate of 77.1%.

The multiple regression selected 12 significant factors, 5 of which were also selected in the discriminant analysis. These 12 factors yielded a multiple R of .703. The 5 factors common to both the multiple R and the discriminant analysis are:

Oral Briefing Conformity - Fewer non-attenders than attenders reported they would attend more in the future if they noticed others starting to attend more to the oral briefing.

Oral Briefing Complexity - Compared to non-attenders, attenders report a greater difference in the information presented in the oral briefing from one flight to the next.

Low Probability of Accident - Non-attenders were more likely to report that attention to safety information is wasted because of the perceived low probability of an accident. Attenders also thought the accident probability was low, but the time spent attending was not wasted.

Briefing Card Fear - Though overall very low, the nervousness associated with briefing cards was higher for attenders than non-attenders.

Mode of Interview - Non-attenders were more likely to be selected on a random digit dialing basis, a method which contacts people whether listed or not in the phone book, while more attenders were in a group selected from a telephone directory, and who had received a cover letter prior to the telephone contact.

In the initial investigation of an area, the correlational studies are conducted to determine which factors are associated and which are not. Follow up studies of an experimental nature are needed to determine the actual causal link. For example, are attenders those who notice the differences in oral briefings from one flight to the next, or do they notice the difference between briefings because they attend more? Do nervous people attend more to the safety card, or does the safety card make people nervous? Can methods be devised to increase attention to safety presentations without increasing nervousness, or producing other adverse effects? Experimental laboratory and field tests are needed to answer these types of questions.

AN INVESTIGATION OF FACTORS AFFECTING AIRCRAFT PASSENGER ATTENTION TO SAFETY INFORMATION PRESENTATIONS

Aircraft passenger safety could be increased if passengers were more aware of, and able to perform, the appropriate behaviors during emergency situations. Passengers who are, prior to an emergency, unaware of correct actions to take are less likely to perform them in a stressful situation than passengers who are aware of the correct behaviors. This statement is corroborated by experimental data, reports of inflight incidents, and investigations of survivable accidents.

Experimental data indicate subjects, representing passengers who have been instructed on using emergency equipment, perform better than subjects not given instructions. This has been found when the emergency equipment has been life jackets (Altman, 1974; Johnson, 1973), oxygen masks (Johnson, 1974a, 1974b), location of emergency exits and appropriate use of the escape slide (Johnson & Altman, 1973).

Inflight incidents also support these findings. Passengers who have attended safety instructions reported they were better able to cope with emergencies than if they had not paid attention. In one decompression two passengers who, before the decompression, had read the briefing cards and attended to the flight attendant's briefing, were able to don the oxygen mask while the other passengers (over 180) had to be assisted in getting the oxygen to flow (Eastburn, 1975). In a similar occurrence, only 2 of 53 passengers were able to don their masks and start oxygen flowing (NTSB-AAS-76-1).

Following an accident in Pago Pago the few survivors attributed their survival to knowledge of the location of the overwing exits. "All the survivors reported that they listened to the pretakeoff briefing . . . and read the passenger information pamphlet. These actions prepared them for the evacuation by stressing the location of the nearest exit and the procedures to be followed in an emergency," (NTSB-ARR-74-15, p. 14). Of course many of the non-survivors may also have attended to the safety briefing but, for some reason, were unable to follow the instructions.

But these findings should not be surprising. All crew training is based on the assumption that emergency procedure training results in appropriate behaviors under stress. The same principle applies to the passenger: the more knowledgeable passengers would be better able to perform required tasks during emergencies.

PASSENGER SAFETY INFORMATION CARDS

Not all safety information presentations are equally good. An evaluation of several domestic and foreign passenger safety information cards revealed large variations in both content and presentation style (Johnson, Altman, Fowler and Blom, 1970). There were consistent preferences by judges for certain presentations over others. For example, perspective drawings were preferred over abstract drawings; displays with many words were less preferred than those with few words, etc. At that time many briefing cards used design principles which the judges reported to be least desirable.

However, improved passenger safety information cards have recently been developed. Several airlines are using safety information cards that have been tested for understandability to insure that the primarily pictorial presentations are understood by a large percentage of the people tested. Many airlines have gone from using a one or two color format to a full-color safety card that appears to be more attractive than the previous card.

FILMS

The use of films for instructing people have been the topic of considerable research for decades. Films have been found to be valuable aids for learning a variety of tasks (Lumsdaine, A.A., 1953; Hoban, C.F., 1953; May, M.A., 1946). However, films have not been extensively used for providing safety information to aircraft passengers.

An experimental study was conducted to find out if a nonverbal film could increase the ability of subjects to don a standard-type life jacket. It was found that if an appropriate use of close-up scenes for providing detailed information was used in conjunction with medium shots for perspective, the donning and inflation of life jackets could be significantly improved, both in time and error reduction, as compared to the standard life jacket donning presentation (Johnson, 1973).

In a later study, with a cross-cultural sample of the U.S. domestic population, it was found that all the information necessary for an overland flight could be presented nonverbally to the subjects. The information on what to do, and what not to do, together provided the necessary information; addition of information on why the actions should be taken appeared to have little effect on subjects' knowledge of what to do and what not to do. Telling passengers just what to do, or what not to do, were least effective. (Johnson, Blom and Altman, 1975)

Apparently only two operators show passenger safety films to their passengers. In 1973, safety information films were produced for the Air Transportation Department of the Chrysler Corporation for viewing aboard their Grumman Gulfstream II. These films have recently been updated to conform with new equipment and procedures used in the G-II, which has been certified for FAR 121 operation. The films show both overland and overwater information, including operation of exits, oxygen masks, life jackets, life rafts, and emergency locating signals.

American Airlines has started showing a passenger safety information film to its DC-10 passengers. Both the Chrysler and American Airlines films are used in lieu of the usual oral briefing given before takeoffs.

ORAL BRIEFINGS

Oral briefings are given prior to takeoff and usually consist of information on oxygen masks, seat belts, briefing cards, and the general location of emergency exits.

In many cases, the oral briefings are given live; one flight attendant recites the information over the PA, while other flight attendants in the aisle demonstrate certain actions in concert with the oral briefing. Actually, this is a live audio visual briefing.

One of the problems with a live oral briefing is the person giving the briefing may become bored with the presentation because of having given it so many times in the past. Boredom in giving the presentation could also occur because the response of the audience might seem lackadaisical. No systematic research has been conducted to determine the relative effectiveness of taped vs. live verbal presentation of information during the non-emergency phase of the flight.

However, one study found that taped briefings presented during an emergency may facilitate subject's ability to correctly don an oxygen mask. A study was conducted to determine if oral briefings presented following the sounds of decompression, and the dropping of oxygen masks, could a) increase the percent of successful donnings, and b) reduce the time subjects took to put the mask to face and to get oxygen flowing. Results indicated the subjects could understand and follow the instructions, even when presented in two languages simultaneously. It was recommended that taped oral briefings be played following decompressions (Johnson, 1976).

Further research is needed to find out what variables related to normal briefings could affect passenger behavior in case of a later emergency.

PROBLEM

Now that improvements in presenting safety information have been made in the form of safety information briefing cards, motion pictures, and probably taped oral briefings, the next step would be to increase the proportion of passengers who attend to the presentations. It is commonly believed that most passengers seldom attend to the safety presentations. While no systematic field studies have been conducted to either confirm or disprove this belief, personal observation on a number of flights, as well as testimony from flight attendants, indicates that few passengers display an active interest in safety information presentations (Uzzell, 1977).

To increase passenger safety, by increasing passenger attendance to safety information presentations, two questions must be answered:

1. Why don't passengers currently attend to safety instructions?
2. What can be done to induce passengers to pay more attention to the information presentations?

If the reasons why passengers do not attend to safety instructions could be determined, methods of inducing more passengers to do so could possibly be devised. The task of this study was to determine why some passengers attended to safety information presentations and others did not.

POSSIBLE FACTORS AFFECTING PASSENGER SAFETY INFORMATION PRESENTATIONS

There are many factors which could affect the attention-attractiveness of safety information presentations: Characteristics of the Message; Characteristics of the Presenter; Characteristics of the Audience; Situational Factors; and Demographic Variables.

Characteristics of the Message

Three characteristics of the message which can affect its attention-attractiveness are; a) Its fear-arousing content, b) Its novelty, and c) Its complexity.

Fear-Arousing Appeals

The effects of fear-arousing messages on attitude and behavior have been, over the past 25 years, the subject of numerous investigations having somewhat ambiguous results. Two diametrically opposed theories have each received some experimental support. One theory, advanced by Janis and his colleagues (Janis & Feshbach, 1953; Janis & Milholland, 1954), is that with increasing levels of fear content in the message, there will be an increasing acceptance of the proposed recommendations for avoiding the threatening agent -- up to a point. After this point is reached, an increase in the fear content results in a decrease in accepting the recommendations. Janis believes this reduction in acceptance of the recommendations is the result of defensiveness on the part of the audience. In other words, if safety presentations of low to moderate fear content were made, passengers would probably pay more attention to them and follow their recommendations (i.e., read the briefing cards, visually locate the exits). However, if the presentations were of a high fear content, passengers would react with possible hostility to the presentation and go out of their way to ignore the recommendations (See Figure 1).

On the other hand, there has been experimental data to suggest there is not a curvilinear relationship between fear content and reported behavioral change. Levanthal and his associates report data that support a linear interpretation of the relationship; the greater the fear content, the greater the adherence to the recommendations by the audience (Levanthal & Niles, 1964).

Novelty and Complexity

Novelty is defined as a discrepancy between what the individual expects and what actually occurs. In experiments with both animals and man, the amount of time spent investigating or attending to a novel stimulus is greater than the time spent investigating a stimulus which is familiar (Dember, 1965; Hummel and Altman, 1966). Based on this theory, passengers should attend to a safety presentation if it presented new information, or used a different presentation method.

Even though two stimuli may be equally familiar, or equally novel, one may be more attractive than the other. One variable which affects attention is stimulus complexity. A general definition is that "the more complex stimulus is the one the individual can do more with," (Dember, 1965, p. 352). For example, a complex passenger safety information card would provide more information the longer it was studied, as compared to a briefing card low in complexity. Complexity can be designed into a presentation by: a) altering the arrangement of the information display; b) increasing the amount of information displayed; c) increasing heterogeneity of the characters; and d) using more complex shapes.

While both novelty and complexity have been found to increase attention attractiveness, too much novelty or complexity can have a reverse effect. There is an optimal level of novelty and complexity above which attention attractiveness decreases. This level depends on the individual's previous experience, especially with the type of stimulus presented.

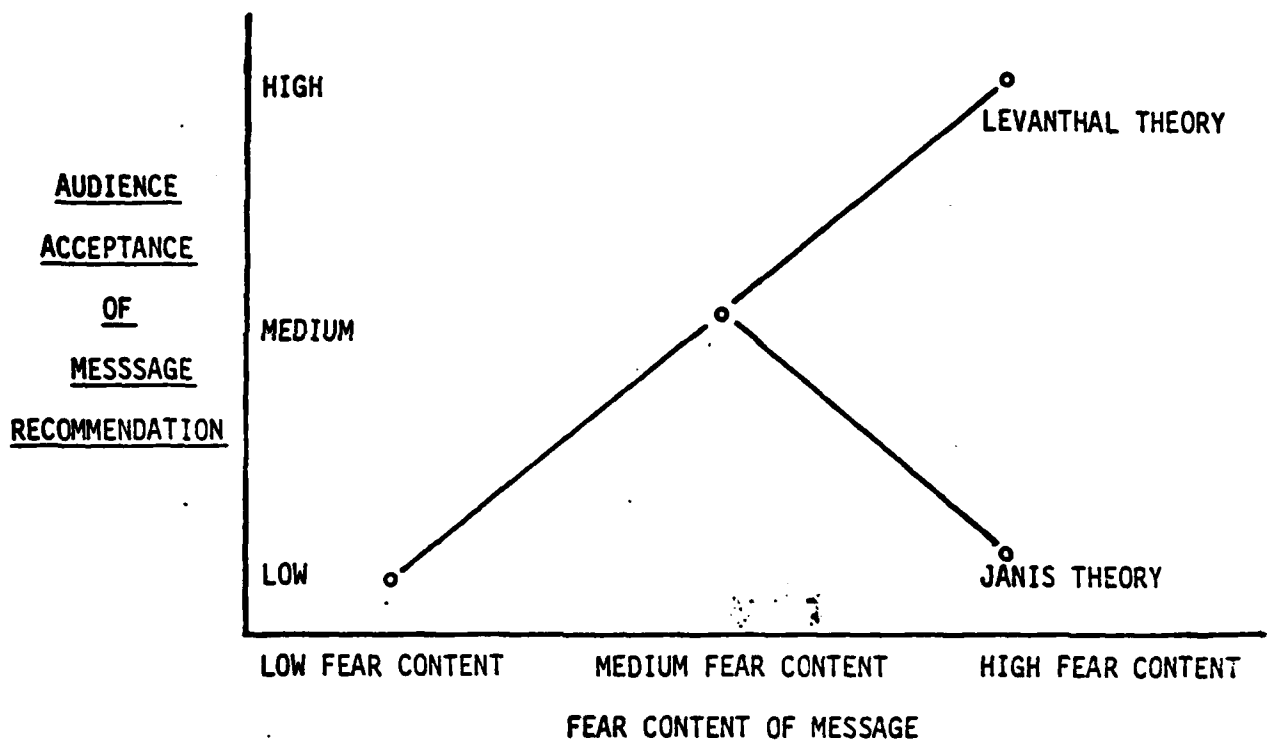


Figure 1. Both Janis' and Levanthal's theories predict increased acceptance of the recommendations in messages as the fear content of the message increases -- up to a point. After that point, Janis found the acceptance decreased, while Levanthal found that acceptance continued to increase. The fear content of current safety presentations may be low, so that there is low acceptance of the recommendation to read the briefing card.

Hypothesis Number 1

Those people who attend to safety presentations (attenders), as well as those who do not (non-attenders), will report oral briefings and briefing cards are low in fear arousal. Compared to non-attenders, attenders will report that the safety presentations do produce more fear.

Currently, passengers may not attend to the oral briefings because: (a) they are typically of low novelty (i.e., they are repetitious, being virtually identical from one flight to the next); and (b) they are low in complexity, providing little (new) information, even to a naive passenger.

Hypothesis Number 2

Respondents will report oral briefings and briefing cards are low in novelty and complexity. Attenders will report oral briefings and briefing cards are higher in novelty and complexity than non-attenders.

Characteristics of the Presenter

A major characteristic of the presenter (person or organization that presents information) which affects the attention-attractiveness of the presentation, is clarity of presentation.

Clarity of Presentation

An oral briefing could be poorly understood by passengers in case of a low signal to noise ratio (S/N) due to either a faulty PA system, or to high ambient noise levels. Oral briefings below a certain S/N may result in decreased passenger attention.

Passenger safety information cards not visible to the passenger, because the card was hidden behind a magazine, or had slipped sideways in the seat back pocket, would not attract the passenger's attention either. A recent industry recommendation from the Society of Automotive Engineers, ARP 1384, states that the briefing cards should be designed such that they cannot slip from the passenger's view; however, there is still the possibility that a magazine could be placed in front of the card.

Hypothesis Number 3

Passengers who attend will report oral briefings are easier to see, and the briefing cards easier to find, than non-attenders.

Characteristics of the Audience

Audience characteristics which could reduce effectiveness of passenger safety presentations may have social, cognitive, and emotional components.

Social Components

Many times people respond to stimuli differently when alone than when in the presence of others. One social factor which could affect how safety information presentations are received is conformity.

Conformity

Conformity in groups, even in groups where members have no previous ties, has been found to be very strong under certain circumstances (Asch, 1951, 1956; Mouton, Blake & Olmstead, 1956). Asch found that many individuals in a group conformed to the judgment of the other group members, even when the individual perceived the other members' choice to be wrong.

In a typical experimental scenario, the group members, except for the subject, were all confederates of the experimenter. On certain trials in a task which required judgments of lengths of lines, all the confederates would give identical, but wrong, responses. Asch put 50 subjects through this procedure and found that almost a third conformed at least half the time. Most of the conformers said they had believed their own perceptions to be correct, but had yielded to group pressure so as not to appear different from, or inferior to, the others. They felt that if they had not followed the group's lead, they would have been revealing some basic weakness in themselves.

which they preferred to hide. Interestingly, Asch (1956) found that when unanimity of the group's behavior was broken by even one confederate, the conformity by the subjects was greatly reduced.

Aboard an aircraft, it seems apparent that there is some pressure expected by the flight crew members to have the passengers attend to the safety presentation. The oral briefing itself is an attempt to elicit passenger attention, and the flight attendant demonstrating the oxygen mask and seat belt are attempts to get the passengers to pay attention. On many flights, the flight attendant directs the passenger to pick up the briefing card and read it for more information. Those passengers who are more likely to conform to what is expected of them will be more likely to attend to the safety presentation than non-conforming passengers.

Hypothesis Number 4

Attenders are more likely than non-attenders to conform to what is expected of them.

Sophistication

Many times people fail to display certain behaviors which could be interpreted to signify a socially undesirable cognitive or emotional state. Goffman (1959) has conducted studies in this area, and concludes that people go to great extent to "save face," their effort in this regard is called "face work". In that there are many positive values people may associate with being an air traveller (adventure, apparent affluence and importance, etc.), many people might wish to appear to be sophisticated air travellers. So, to behave as an unsophisticated air traveller would be avoided. In other words, air travellers, whether actually sophisticated or not, might do the face work necessary to appear sophisticated.

It is possible many passengers believe only a naïve air traveller would attend to the safety information presentations, either live or printed. After all, passengers may reason, a sophisticated traveller would already know the safety information -- to indicate ignorance by actively looking for it (especially pulling out the safety information card and studying it), might appear to be the actions of a novice.

Hypothesis Number 5

Non-attenders will report greater preference for being thought of as experienced air travellers than attenders.

Fearlessness

Attending to safety information presentations might also indicate the undesirable emotional state of fear. There is the possibility that others might believe a person who indicates fear is weak either emotionally, physically, or mentally; being weak is probably not a desirable condition, especially for men in our society. In studies dealing with behavior in disasters, Dill (1954) found that men

consistently reported lower levels of affective reactions than did women. While it is possible that men may experience less fear in a given situation than do women, it is also possible men are less prone to admit to such fear. Attending to the flight attendant when safety information is being presented, and picking up a briefing card for study, may be considered by many people as signs of fear, and as such, to be avoided.

Hypothesis Number 6

Respondents will believe fearful passengers are more likely to attend than not attend. Attenders will also believe this is more likely to occur than non-attenders.

Hypothesis Number 7

Non-attenders will believe it is more important not to display fear than attenders.

Rational Component

A number of incorrect opinions held by passengers could account for some of them not attending to safety instructions. Below are listed some of the assumptions which could result in a person not attending to the safety information presentations. Following each is a specific hypothesis to be tested.

Accident Probability

Since very few commercial aircraft accidents occur, there is a very low probability of the safety information being needed on a given flight. Therefore, the passenger who does not attend may believe the time spent learning such information would be wasted.

Hypothesis Number 8

Non-attenders will believe there is less need of safety information than attenders because non-attenders believe there is less chance of an accident.

Probability of Survivable Accident

Some passengers may believe that few survivable aircraft accidents occur; news reports probably contain a greater percentage of fatal accidents than actually occur. The non-attending passengers may conclude, therefore, that since the probability of being in a survivable accident is low, the probability that the safety information would be useful would also be low.

Hypothesis Number 9

Non-attenders will believe there is less need of safety information than attenders because the chance of surviving an accident is low.

Availability of Capable Crew

Non-attending passengers may believe that crewmembers are trained and able to assist passengers during and following an emergency. The non-attending passenger may believe, therefore, that since the crewmembers are able and available during and following an emergency, it is unnecessary for the passenger to have to learn anything about emergency equipment and procedures.

Hypothesis Number 10

More non-attenders will believe trained crews will be available to assist them following an accident.

Safety Information Already Learned

Some passengers may believe the safety information presentations on each airplane are the same. This may be because the superficial characteristics of the live presentations across airlines and aircraft are similar. Non-attending passengers may think they have already learned the required information on a previous flight, and further attention to safety information would be unnecessary.

Hypothesis Number 11

Non-attenders will be more likely than attenders to believe they already know, before boarding, what safety information is to be presented.

Time Available After Accident

Non-attending passengers may believe there will be time, during and following an emergency, to read the briefing card or to get instructions from the crew. And therefore, they may believe it would be unnecessary to attend to the safety presentations prior to the emergency.

Hypothesis Number 12

Attenders will be more likely than non-attenders to believe there will be less time after an emergency for taking safety precautions, reading briefing cards, and following directions of the crew.

Oral Briefing is Adequate

Non-attending passengers may believe the information provided by the airlines in the live briefing is adequate and the additional information as provided on the briefing card is unnecessary. These passengers may attend to the live presentation, but fail to search for, and study, the passenger safety information cards located in the seat pocket.

Hypothesis Number 13

Non-attenders will be more likely than attenders to believe the oral briefing is adequate and the briefing card information is not necessary.

Passenger Self-Protection

If a passenger believes there is little that can be done for protection after an emergency, that passenger may be less likely to attend to information on what to do after the emergency occurs.

Hypothesis Number 14

Non-attenders are more likely than attenders to believe there is little that passengers can do for protection after an emergency occurs.

Comparison of Safety Presentations with Seat Belt Use

Passengers may not attend a safety presentation because they do not think it as important, perhaps, as wearing seat belts. If they thought they were of equal importance, and since they wear seat belts, then more passengers would pay attention to the safety presentations.

Hypothesis Number 15

Passengers would attend to the safety presentations if they thought doing so was as important as wearing the seat belt.

Situational Variables

An extensive amount of literature has been generated on the situational influences on behavior. Generally, it has been found that the situation itself exerts a strong effect on the behavior of a person. In some cases, the actual behavior of a person seems to be more strongly influenced by the situation than by the behavior one would infer from the person's attitudes, opinions or knowledge.

Business/Pleasure Trips

Passengers who are on a business trip may differ significantly from those flying for pleasure on the variable of attending to safety presentations. It is difficult to predict whether a person on a business trip will pay more or less attention to safety presentations than a person on a pleasure trip. On the one hand, the business person may be busy preparing for the business ahead, and place more priority on that business than someone flying for pleasure. If flying with another person on the business trip, business, rather than safety, may be the topic of interest.

Hypothesis Number 16

Attention to safety presentations will be affected by whether the person is on a business or pleasure trip.

Flying Alone or With Someone

A second situational variable which could affect whether a person attends the safety briefing is whether the person is flying alone or with someone. If the person is with others, conversation or other types of social interaction may act to reduce the person's attention to the safety presentation. On the other hand, a person may attend to the safety information if flying with relatives, such as spouse or children. It is not possible beforehand to hypothesize whether flying with someone will increase or decrease attention to safety presentations.

Hypothesis Number 17

Attention to safety presentations will be affected by whether the person is flying alone or flying with someone known before the flight.

Demographic Variables

A number of demographic variables could affect whether or not a person attends to the safety presentations. Since there are no apparent theoretical reasons why they should influence whether a person will attend, no hypotheses are offered. The following demographic variables were collected and analyzed:

Age
Sex
Education
Income
Flight History

METHOD

Respondents

Questionnaire respondents were people randomly selected from telephone books in the Los Angeles and Orange County areas. Cover letters were sent to several hundred potential respondents explaining that someone would be calling them in the near future to interview them regarding the area of aircraft passenger safety. (See Appendix A.)

Other respondents were called randomly, using the Random Digit Dial (RDD) system. This insured that everyone having a telephone would stand an equal chance of being called, and not only those listed in telephone books.

Respondents were limited to those adults who had flown at least twice on commercial aircraft within the past two years.

Interviewers

Ten interviewers were used in the development and administration of the questionnaire. They were selected from local universities and all had previous experience interviewing. Half of them were men. Their ages were between 20 and 30 years.

Procedures

After interviewers were trained on administering the questionnaire (See Appendix B.), they selected a number of potential respondents from phone books of the Los Angeles/Orange County area. Approximately 400 people selected in this manner were sent the cover letters. A random number table containing 500, four-number sets was constructed. The first three numbers of the prefix were later selected in such a manner to insure that a large area of Los Angeles and Orange Counties were sampled.

Interviewers called the respondents from their home telephones. If no one answered, the interviewers were instructed to call back at least twice. When the person answered the phone, the interviewer ascertained if the person was an adult and had flown at least twice in the past two years aboard a commercial airline. If so, the interview, which took approximately 15 minutes, was conducted.

Approximately 1000 people were contacted in order to reach the goal of 255 interviews. This interview took place during March, 1979.

Distinguishing Attenders From Non-Attenders

Considerable research has determined that one of the best ways of determining what a person will actually do in a given situation is simply to ask the person how he or she will behave in that specific situation. That is, one should determine the person's behavioral intentions (Ajzen and Fishbein, 1973). It has been found that this method even correlates quite highly (.60) with behavior when the person did not know that the behavior had been recorded, and when the behavior in question was possibly illegal (Johnson, 1974c). In situations where the behavior is more socially acceptable, correlations between behavioral intentions and actual behavior have been as high as .90 (Ajzen and Fishbein, 1973).

In the current study, a respondent was classified as an attender or a non-attender based on answers to the questions of whether the person had attended to oral briefings and safety cards, and whether the person intends to attend to these safety presentations in the future. In other words, both behavioral intentions (future oriented safety attention) and past behavior were considered in distinguishing attenders from non-attenders.

A small number of respondents (9) reported they had not attended to the safety presentations in the past, but that they would attend in the future. Since this was reported at the beginning of the interview (so that the respondent should have had no suspicions that perhaps his or her knowledge of safety procedures was lacking), it was assumed the person was perhaps giving a socially desirable response. If so, this tendency to give the socially desirable answer could bias the results of the study and so these nine cases were dropped from further analysis.

RESULTS

Of the original 255 interviews obtained, nine were removed because of inconsistent responses on whether the person attended in the past and intended to attend in the future. Another 15 cases were removed because of one or more answers which were not completed. Respondents were informed that they need not answer all the questions, and some demurred when asked about their age, income, or education. The analysis was conducted with a total number of 231 cases.

Data Analysis

The data were analyzed using the BMD computer program with discriminant analyses and stepwise regressions being conducted on the variable attend/not attend. In both the discriminant analysis and the regression, those respondents who reported they attended in the past, and will attend in the future (attenders) differed significantly from those who said they did not attend in the past, nor would they attend in the future (non-attenders). When appropriate, t tests and chi square tests were conducted to test individual hypotheses.

Hypothesis Number 1

Both attenders and non-attenders will report safety presentations are low in fear arousal. Attenders will report they produce more fear than non-attenders will report.

Both parts of this hypothesis were confirmed. Respondents were asked how often they were made nervous by the flight attendant talking about the safety features in the aircraft during the oral briefing, or by looking at or thinking about the briefing card. They answered on a five point scale (1=Never, 5=Always).

The amount of nervousness reported was much less than the midpoint of the scale (3) for both the oral briefing, $t(229) = 28.3$, $p < .001$, and for the briefing card, $t(229) = 38.7$, $p < .001$. (See Table 1.)

INSERT TABLE 1 ABOUT HERE

Attenders reported more nervousness than non-attenders when looking at, or thinking about, the briefing card, $t(229) = 5.1$, $p < .01$.

Attenders also reported more nervousness than non-attenders when attending to the oral briefing, $t(229) = 4.77$, $p < .01$.

The difference between reported nervousness from briefing cards and oral briefings was not significant, $t(229) = 1.48$.

TABLE 1

Nervousness Produced By Oral Briefings and Briefing Cards

	ATTENDERS	NON-ATTENDERS	TOTAL
Oral Briefings			
Mean	1.475	1.087	1.359
SD	1.017	.411	.880
N	162	69	231
Briefing Cards			
Mean	1.352	1.015	1.250
SD	.815	.120	.687
N	162	69	231

Note: A high score indicates a higher level of reported nervousness. The attender/non-attender difference is statistically significant, $p < .01$.

Hypothesis Number 2

Respondents will report oral briefings and briefing cards are low in novelty and complexity. Attenders will report oral briefings and briefing cards are higher in novelty and complexity than non-attenders.

Four questions were asked to assess the perceived degree of novelty and complexity for both briefing cards and oral briefings. The questions were coded such that a high score indicated a low level of novelty or complexity. Because of no differences between the four questions for complexity and novelty for oral briefing and safety cards, the answers were combined and attenders were compared with non-attenders. (See Table 2.)

INSERT TABLE 2 ABOUT HERE

Non-attenders thought the safety presentations were of lower complexity and novelty than attenders, $t(229) = 3.49$, $p < .05$.

The midpoint of the rating scale, for the four questions combined, is 12. The group as a whole had a total score of 14.615, indicating they thought the safety presentations were generally low in both novelty and complexity, $t(229) = 18.01$, $p < .001$.

Both aspects of Hypothesis 2 were confirmed.

Hypothesis Number 3

Passengers who attend will report oral briefings are easier to see, and the briefing cards easier to find than non-attenders.

This hypothesis was only partially supported. Both attenders and non-attenders reported the oral briefings as easy to see; there was no difference between the two groups.

However, attenders found the briefing cards more easy to locate than the oral briefing was to see, while non-attenders found the card less easy to locate. The difference between attenders and non-attenders was statistically significant, $t(229) = 2.04$, $p < .01$. (See Table 3.)

INSERT TABLE 3 ABOUT HERE

Hypothesis Number 4

Attenders are more likely than non-attenders to conform to what is expected of them.

TABLE 2

Perceived Novelty and Complexity of Oral Briefings and Briefing Cards

	ATTENDERS	NON-ATTENDERS	TOTAL
Mean	14.296	15.362	14.615
SD	2.267	2.058	2.207
N	162	69	231

Note: A high score indicates a low rating of novelty and complexity. The attender/non-attender difference is statistically significant, $p < .01$.

TABLE 3

Ease of Seeing the Oral Briefing and Locating the Briefing Card

		ATTENDERS	NON-ATTENDERS
See Oral Briefings	Mean	4.302	4.348
	SD	1.121	1.198
	N	162	69
Locate Briefing Card	Mean	4.556	4.217
	SD	.899	1.247
	N	162	69

Note: A higher score indicates a greater ease of attending to the oral briefing or locating the briefing card. The scale ranged from 1 (hard) to 5 (easy). The difference between attenders and non-attenders was significant only for locating the briefing card, $p < .01$.

Compared to non-attenders, attenders reported they would be more likely to attend even more if others about them were also attending. The attender/non-attender difference was statistically significant when the presentation mode was the oral briefing, $t(229) = 6.7$, $p < .01$, or the briefing card, $t(229) = 6.7$, $p < .01$. (See Table 4.)

INSERT TABLE 4 ABOUT HERE

While the majority of the attenders reported they would attend more if others started attending, it is of practical significance to note that approximately half of the non-attenders reported they would also start attending more.

Hypothesis Number 5

Non-attenders will report greater preference for being thought of as experienced air travellers than attenders.

This hypothesis was not supported. There was slight agreement with the statement that most people would prefer to be thought of as experienced air travellers than people on their first flight. The difference between attenders and non-attenders was not statistically significant.

Hypothesis Number 6

Respondents will believe fearful passengers are more likely to attend than not attend. Attenders will also believe this is more likely to occur than non-attenders.

Respondents do believe the fearful passenger is more likely to attend than the non-fearful passenger, $t(229) = 11.9$, $p < .01$. However, the difference between the attender and the non-attender was not significant, $t < 1$. (See Table 5.)

INSERT TABLE 5 ABOUT HERE

Hypothesis Number 7

Non-attenders will believe it is more important not to display fear than attenders.

This hypothesis was not supported. The average respondent reported indecision on whether it was important to hide fear. The non-attender/attender difference was not statistically significant.

Hypothesis Number 8

Non-attenders believe there is less need of safety information than attenders because non-attenders believe there is less chance of an accident.

TABLE 4

Would Conform If Others Were to Start Attending More

	ATTENDERS	NON-ATTENDERS
Would Start Attending Oral Briefing		
Mean	4.272	3.174
SD	1.034	1.175
N	162	69
Would Start Attending Briefing Card		
Mean	4.037	2.855
SD	1.195	1.240
N	162	69

Note: A higher score indicates more attending if others were seen to attend more (1=Never, 5=Always). The attender/non-attender differences were statistically significant for both the oral briefing and the briefing card.

TABLE 5

Fearful Passengers Are More Likely to Attend

	ATTENDERS	NON-ATTENDERS	TOTAL
Mean	4.043	3.87	3.991
SD	1.258	1.259	1.258
N	162	69	231

Note: A high score indicates a respondent believes a fearful person is more likely to attend (1=Never, 5=Always). The attender/non-attender difference is not significant, though the group of respondents do believe the fearful are likely to attend, $p < .01$.

When asked to estimate the probability of the aircraft they are boarding having an accident on that particular flight (e.g., 1/10, 1/100, . . . 1/billion), the attenders thought the probability was 1/100,000; whereas the non-attenders thought the probability was nearly midway between 1/100,000 and 1/1 million. While this difference was in the predicted direction, the variability was large, and a t test of the attender/non-attender difference was not statistically significant, $t < 1$. Neither was a chi square of the distribution of probability estimates significant, $\chi^2 (8) = 2.39$.

When asked to estimate the number of commercial aircraft accidents that occur each year in the U.S., the average response was 106. However, the standard deviation was tremendous (250). The attender/non-attender difference was not significant.

When asked to agree or disagree on a five point scale (Agree=1, Disagree=5), on whether the time spent attending to the safety presentations was wasted because there is very little chance an accident would occur, the attender/non-attender difference was significant, $t(229) = 2.72$, $p < .01$. (See Table 6.)

INSERT TABLE 6 ABOUT HERE

Hypothesis Number 9

Non-attenders will believe there is less need of safety information than attenders because the chance of surviving an accident is lower.

Respondents were asked to estimate the percent of accidents in which everyone survives, only some survive, and none survive. The average percent reported for each of these estimates is:

Everyone survives	46.7%
Some survive	27.7%
None survive	24.0%

(The sum does not add up to 100% because of rounding errors.) Because the differences between attenders and non-attenders were slight, and the variation in answers was large, attender/non-attender differences were not significant.

Another question was asked in order to probe the same concept. Respondents were asked whether or not they agreed with the statement that safety information presentations were useless because during an accident most passengers won't live long enough to use the information. Attenders and non-attenders had virtually identical answers, averaging 1.8 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree).

Hypothesis Number 10

More non-attenders will believe trained crews will be available to assist them following an accident.

Three questions were asked in order to test this hypothesis. In none of the cases was the hypothesis supported.

TABLE 6

Time Spent Attending is Wasted Because of Low Accident Probability

	ATTENDERS	NON-ATTENDERS
Mean	1.698	2.101
SD	.933	1.059
N	162	69

Note: The higher score indicates belief the time spent attending is wasted because of low accident probability, (Time Not Wasted=1, Wasted=5). Attender/non attender difference was significant, $p < .01$.

Both attenders and non-attenders strongly agree that safety information presentations are very useful because following an accident, the crewmembers may not be available to assist the passenger. Both groups, however, indicated slight agreement with the statement that crewmembers are trained and capable of assisting all passengers in any kind of emergency.

Respondents were asked to assume they were in an aircraft and a rapid decompression occurred at high altitude (e.g., 40,000 feet). They were asked to estimate how often the flight attendants would be able to assist them in putting on the oxygen mask. The general response was 2.4 on a scale of 1 (Never) to 5 (Always). The attender/non-attender difference was not significant.

Hypothesis Number 11

Non-attenders will be more likely than attenders to believe they already know before boarding, what safety information is to be presented.

Respondents felt they very often know what will be presented in the safety briefing before they enter the aircraft. The attender/non-attender difference was not statistically significant.

Hypothesis Number 12

Attenders will be more likely than non-attenders to believe there will be less time after an emergency for taking safety precautions, reading briefing cards, and following directions of the crew.

Respondents were asked to assume they were aboard an aircraft which had just had an accident and there was a fire. They were asked to estimate how much time would be available for most people to get out safely.

Attenders estimated a mean of 339 seconds, $SD=283$, compared to the non-attenders, mean=298 seconds, $SD=271$. The difference was opposite from the predicted direction, but was not statistically significant. Of practical significance is the fact that most people believe they have about 5 minutes to escape a burning aircraft; some think there is considerably more time available.

Respondents were also asked whether they agreed with the statement that there is usually enough time to get instructions on what to do from the crew or briefing card after an emergency occurs. Non-attenders and attenders had virtually identical responses, and generally disagreed with the statement. The average answer was 2.68 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree).

Hypothesis Number 13

Non-attenders will be more likely than attenders to believe the oral briefing is adequate and the briefing card information is not necessary.

Respondents were asked whether or not they agree with the statement that all the basic safety information passengers need is presented in the oral briefing and the information on the briefing card is unnecessary. Both groups indicated disagreement with this statement; their average response was 1.9 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). The difference between the groups was not statistically significant.

Hypothesis Number 14

Non-attenders are more likely than attenders to believe there is little that passengers can do for protection after an emergency occurs.

Respondents were asked whether or not they agreed with the statement that there is very little the passenger can do for protection after an emergency occurs. The average response was 2.1 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). There was no statistically significant difference between the groups.

Hypothesis Number 15

Passengers would attend to the safety presentations if they thought doing so was as important as wearing the seat belt.

This hypothesis was supported. Respondents did agree that they would attend more if they thought attending was as important as wearing seat belts. The attender/non-attender difference was statistically different, $t(229) = 4.23$, $p < .01$.

INSERT TABLE 7 ABOUT HERE

Hypothesis Number 16

Attention to safety presentations will be affected by whether the person is on a business or pleasure trip.

The hypothesis was supported; there is a difference between attenders and non-attenders on the type of flights they usually take. A greater proportion of attenders fly on pleasure trips than do non-attenders, $\chi^2 = 4.03$, $p < .05$.

INSERT TABLE 8 ABOUT HERE

TABLE 7

Would Attend If It Were As Important As Seatbelt Use

	ATTENDERS	NON-ATTENDERS
Mean	4.562	3.87
SD	.747	1.299
N	162	69

Note: A high score indicates the respondent reported more attention to the briefing card if it was thought to be as important as wearing the seatbelt. The scale ranged from 1 (Would Never Attend) to 5 (Always Attend). The attender/non-attender difference was statistically significant, $p < .01$.

TABLE 8

Relationship Between Attending and Whether the Person Flies
Primarily For Business or on Pleasure Trips

	ATTENDERS	NON-ATTENDERS
Business	28 (17%)	20 (29%)
Pleasure	134 (83%)	49 (71%)
	162	69

Note: A significantly greater proportion of attenders fly primarily on pleasure trips than do non-attenders, $p < .05$.

Hypothesis Number 17

Attention to safety presentations will be affected by whether the person is flying alone or flying with someone known before the flight.

This hypothesis was supported. Attenders are more likely to be flying with someone than non-attenders, $\chi^2 = 6.22$, $p < .02$.

INSERT TABLE 9 ABOUT HERE

Demographic Variables

Age. There was a slight, but statistically significant, age difference between attenders and non-attenders. The average age for attenders was 43 and for non-attenders, 38, $t(229) = 1.92$, $p < .01$.

Sex. There was a slight, but significant, sex effect. 58 percent of the attenders were females and 57 percent of the non-attenders were males, $\chi^2 = 4.12$, $p < .05$.

Education. Another slight, but significant, difference between attenders and non-attenders shows up here, where the average education level of non-attenders was higher (nearly completing the third year of college) than that for attenders (the average grade completed was sophomore in college). The difference was statistically significant, $t(229) = 1.91$, $p < .05$.

Income. Income between attenders and non-attenders was not statistically different. The average yearly household income was about \$20,000, $SD = \$12,150$.

Flight History. Non-attenders had taken an average of 5.1 flights in the past previous two years, compared to 4.25 flights taken by attenders. The difference was statistically significant, $t(229) = 2.88$, $p < .01$.

Discriminant Analysis and Multiple Regression

These two statistical approaches determine which of two or more variables are responded to similarly by respondents, and which variables are best at predicting the behavior in question; in this instance, attending or non-attending. Discriminant analysis dichotomizes the behavior being predicted (attending/non-attending) while multiple regression considers the behavior being predicted as a continuous variable. Both approaches attempt to reduce to a minimum the variables which, if known, could be used to predict whether a person would attend or not.

The discriminant analysis identified seven significant factors which could be used to predict whether a person would attend or not attend to safety presentations. (See Table 10.)

TABLE 9

Relationship Between Attending and Whether The Person
Flies Alone Or With Someone

	ATTENDERS	NON-ATTENDERS
Usually Flies Alone	65 (40%)	40 (58%)
Usually Flies With Someone	97 (60%)	29 (42%)
	162	69

Note: The proportion of attenders who fly with someone is greater than for non-attenders, $p < .02$.

The multiple regression identified 12 significant factors. (See Table 11.) Five of the factors were common to both the discriminant analysis and multiple regression.

INSERT TABLES 10 & 11 ABOUT HERE

Using the seven significant factors identified in the discriminant analysis, the computer program was able to correctly identify 81.2% of the non-attenders and 75.3% of the attenders, for an overall accuracy of 77.1%.

The discriminant analysis and multiple regression identified several factors which the t tests did not identify, and which are of interest.

Both tests identified the mode of interview as a significant factor. Apparently, those respondents who received the cover letter were from a different population from those contacted via the random digit dial method. Non-attenders were somewhat more likely to be contacted by the RDD method than attenders. The practical significance of this finding is not readily apparent.

A factor which showed up in the multiple regression, and which has not been found to be significant in any of the other analyses, involved the relative expertise of the flight attendants and cockpit crew as far as cabin safety was concerned. Approximately 75% of both non-attenders and attenders believe that flight attendants were more trained for handling emergencies in the cabin than were the flight crews. About 20% of the non-attenders and 17% of the attenders thought the cockpit crews were more trained in handling cabin emergencies than flight attendants. According to the regression analysis, the significant difference between attenders and non-attenders was in the "Don't Know" category; the majority (75%) of those in this category were attenders.

CONCLUSIONS

The conclusions of the study are summarized in Table 12.

INSERT TABLE 12 ABOUT HERE

Characteristics of the Message

Generally, the safety presentations are perceived as being low in fear arousal. The non-attenders report virtually no nervousness associated with the presentations while the attenders report low levels of nervousness.

In a correlational study such as this, it is impossible to attribute cause-effect relationships. Do the non-attenders report no fear associated with the safety presentations because, by definition, these people do not attend to them in the first place? Are people who attend frightened by what they hear and see?

TABLE 10

Discriminant Analysis Summary Table

<u>HYPOTHESIS NUMBER</u>	<u>VARIABLE</u>	<u>U-STATISTIC</u>	<u>APPROXIMATE F-STATISTIC</u>	<u>DEGREES OF FREEDOM</u>
4	Oral Briefing Conformity	.8202	50.203	1,229
4	Briefing Card Conformity	.7790	32.342	2,228
2	Oral Briefing Complexity	.7492	25.325	3,227
8	Low Probability of Accident	.7257	21.357	4,226
1	Briefing Card Fear	.7118	18.222	5,225
-	Mode of Interview	.6991	16.072	6,224
3	Ease of Finding Briefing Card	.6866	14.542	7,223

TABLE 11

Multiple Regression Summary Table

<u>HYPOTHESIS NUMBER</u>	<u>VARIABLE</u>	<u>MULTIPLE R.</u>	<u>F-to- ENTER</u>
4	Oral Briefing Conformity	.435	53.4
2	Oral Briefing Complexity	.512	22.7
13	Oral Briefing Adequate	.565	18.8
15	Seatbelt-Safety Information Comparison	.602	15.2
2	Briefing Card Novelty	.626	10.9
8	Low Probability of Accident	.644	8.8
16	Flying for Pleasure	.658	7.3
1	Briefing Card Fear	.672	7.4
10	Crew Expertise	.685	7.6
DV	Flying Alone or with Someone	.695	5.5
--	Mode of Interview	.703	4.8

TABLE 12

SUMMARY OF FINDINGS

Respondents Agreed:	<u>Attender/Non-Attender Differences</u>	
	Non-Attendees	Attendees
Safety presentations are low in fear arousal.	Report low/no fear	Report some fear
Safety presentations are low in novelty and complexity	Report safety info is very low in novelty & complexity	Report slightly higher levels of complexity & novelty
Oral briefings are easy to see.	No Differences	
Briefing cards are easy to find.	Cards less easy to find	Cards easier to find
They would conform and attend to oral briefing and briefing card.	About half would conform/Most would conform	
Preferred to be thought of as an experienced air traveller.	No Differences	
Fearful passengers are more likely to attend.	No Differences	
May or may not be important to hide fear.	No Differences	
Safety information is needed even though accident probability is low.	Not needed as much because of low probability of a accident	Information needed
Safety information is needed because most will survive an accident.	No Differences	
Safety information is useful even though trained crew will be available.	No Differences	
Safety information is known before boarding.	No Differences	

(Continued next page)

TABLE 12

SUMMARY OF FINDINGS (cont.)

Respondents Agreed:	<u>Attender/Non-Attender Differences</u>	
	Non-Attenders	Attenders
Safety information is needed because there may not be enough time to get it after an emergency.	No Differences	
Oral briefing is inadequate and briefing card is necessary.	Many agree	Most agree
Passengers can do something for self-protection after an emergency.	No Differences	
Would attend if safety presentation were as important as seatbelts.	Agree	Strongly agree
Attenders more likely to take pleasure flights.	Most fly on business	Most fly on pleasure trips
Attenders more likely to fly with someone.	Usually fly alone	Usually fly with someone
<u>Demographic Variables</u>		
Age	Younger	Older
Sex	More men	More women
Education	Higher	Lower
Flight Experience	More	Less
Income	No Differences	

Or, is it the other way around? Do those who are fearful of the upcoming flight attend to the safety presentation, which when attended to, reinforces the persons' fear? The question of which came first, the fear or the attending, could only be answered in an experimental study.

A second characteristic of the safety message is that the presentations are low in novelty and complexity. While non-attenders report the safety information is virtually the same from one flight to the next, attenders report the complexity and novelty of the presentations are more involved than non-attenders report.

Again, the experimental approach would be needed to determine which came first. The non-attenders may report the safety presentations, especially the safety cards, are the same on each aircraft, but of course since they don't attend to them, they are hardly in a position to make this judgment. Those who attend do see the differences in safety presentations. But do they attend because they see differences, or do they see differences because they attend? Would non-attenders start to become attenders if they were convinced that there really were differences between one aircraft and another as far as safety equipment and procedures were concerned?

Characteristics of the Presenter

Respondents generally agreed that oral briefings were easy to attend to.

They also agreed that the briefing cards were easy to locate, although the attenders reported them easier to find than the non-attenders.

It seems that there would be good justification to assume the non-attenders reported it was somewhat more difficult to find the safety cards because this was a good reason for not actually attending to them. Since there is nothing in the demographic data to indicate that attenders would have special characteristics enabling them to find seatback cards more readily than non-attenders, and if we assume that seatback cards are generally in the same place for both attenders and non-attenders, then we can assume that attenders find safety cards easier to locate because the attenders looked for them in the first place, and find them when they look for them.

Characteristics of the Audience

Social Components

Conformity

Most of the respondents reported they would attend more if they started to notice that other passengers were beginning to attend more to the safety information presentations. About half of the non-attenders, and most of the attenders, agreed that they would conform if others started attending more. This finding was the most statistically reliable of the study.

The practical implication of this finding is that if one wished to increase passenger attention to safety presentations then if it were possible to get some people to start attending more, a "snowball" effect could be created. If an initial effort to get some passengers who fly often to start attending was successful, then the mere behavior of these passengers could act to in-

crease the attending on the part of other passengers, who would act as stimuli on a third group of passengers, etc.

The effect, of course, might die out in a short period if, for example, the passengers found the safety information boring, undecipherable, etc. Or, it might snowball if the information was interesting, different from one aircraft to the next, or if in some other way the passengers were somehow rewarded for attending to the safety presentation.

Sophistication

Respondents agreed that it was preferable to be thought of as an experienced air traveller, but there was no difference between attender and non-attender.

This preference could be useful in increasing attention to safety presentations if passengers were convinced that the experienced air traveller actually paid more attention, or was expected to pay more attention, to safety presentations.

Fearlessness

There was general agreement by both attenders and non-attenders that fearful passengers are more likely to attend to safety presentations than passengers who do not fear flying. There was no attender/non-attenders difference. Attenders and non-attenders also did not differ in reporting a general indecision on whether it was important or not to hide fear.

Based on this finding, there are two apparent alternatives to increasing attention. The first, which is not suggested as a general procedure, is simply to increase passenger's fear of the flight. This should be done only in limited situations, as when there is reason to believe the aircraft could have trouble making a safe landing. Informing the passengers of the possible safety problem would most likely have the effect of increasing passenger's attention to safety information.

The second alternative is to somehow convince the passengers that fear is not the only reason to attend to safety presentations. A clue to the method by which this could be done may be gained from an examination of the rational reasons why some people attend and others do not.

Rational Component

Accident Probability

Most respondents agreed that safety information was needed even though the accident probability was low. Non-attenders reported there was less chance of an accident occurring than attenders, but this finding was not statistically significant. In any case, non-attenders were more apt to report that, because the accident probability was low, time spent attending to safety presentations was wasted.

Two ways of increasing attending, based on this finding, would be to a) decrease the "cost" of attending, and b) increase the importance of the consequence for

not attending. What is meant by decreasing the cost of attending is to decrease the psychological effort in picking up a safety card and studying what to do in case one's life were suddenly put in danger. Insuring the cards are interesting, informative, clearly presented, etc. might be one way to decrease the cost of attending. The consequence for not attending, of course, could be put in terms of personal safety, safety of friends, etc. To do this in such a way that passengers are not put off on flying might be difficult.

Probability of Survivable Accident

Respondents reported a belief that all passengers survive in less than half (46.7%) the accidents, and that only some survive in 27.7%. They reported that in a quarter of the accidents, none of the passengers survive. There was no attender/non-attender difference.

Obviously, this sample of passengers have a dimmer view of the probability of accident survivability than is warranted, based on actual statistics. But this view is certainly understandable if one considers that most of the accidents that the average passenger is aware of are those reported by the media; and these reported accidents are probably more serious in nature, having more fatalities than those accidents not reported by the media.

There was no difference between attenders and non-attenders on whether time was wasted because the probability of accident survivability was low. Respondents in general disagreed with this idea, and reported the time spent attending was not wasted for this reason.

Trained Crew Available for Assistance After an Accident

About 75% of the respondents believe the flight attendant crewmember is better trained than cockpit crewmembers for handling cabin emergencies. (Most of those who are not sure which group of crewmembers is the most trained are likely to be attenders.) Respondents in general agree, to a slight extent, that crewmembers are trained and capable of assisting passengers in any kind of emergency. However, both attenders and non-attenders believe the time spent attending is still useful because following some emergencies, the crewmember may not be available.

Safety Information Already Known

Both attenders and non-attenders believe they already know the safety information prior to boarding the aircraft. The difference between the groups was not statistically significant.

The implication of this finding is that passengers may have an inordinately high estimate of their level of safety knowledge. They may not know the extent to which the aircraft and equipment vary in terms of number and location of exits, type of life jackets, locations and methods of inflating life rafts, etc.

It is possible that if passengers were informed about the differences in emergency equipment location and operation, they would revise their estimates

of their safety knowledge prior to boarding, and this could result in more attending after boarding. However logical this argument, it is still tenuous and one that is open to experimental confirmation. If the argument were valid, then why wouldn't the attenders report they did not know, prior to boarding, the information to be presented? If they believe they already know the information, why do they attend? The issue needs further investigation.

Time Available to Gain Safety Information After Emergency

There was no significant difference between attenders and non-attenders on the perceived time available in the post-emergency situation. Respondents believed they would have about five minutes to safely evacuate a burning aircraft, three times longer than the 90 seconds they may actually have. However, respondents generally agreed that there was not enough time after emergencies to get needed information from the briefing card or the flight attendant.

The implications are that people, in general, are unaware of the seriousness of aircraft fires. While informing them of the need for quickly evacuating a burning aircraft might not increase attending to safety presentations, it might act to hasten passenger evacuation.

Adequacy of Oral Briefing

Respondents in general agreed, attenders more so than non-attenders, that the oral briefing is inadequate and that the briefing card information is also needed. (This attender/non-attender difference was not noted in the t test, but was found in the multiple regression.)

The implication of this is that if non-attenders were informed about the need for the additional information shown on the briefing card, they might attend more. It is also possible that some non-attenders simply use the reason that briefing card information is not important to justify their non-attending. Again, the need for experimental research is apparent.

Post-Emergency Self-Protection

Attenders and non-attenders generally disagreed with the idea that there is little a passenger can do to protect themselves after an emergency. The difference between the groups was not significant.

It is encouraging that most respondents do not feel that if an emergency were to occur, that the situation would be hopeless, and that there was nothing they could do to protect themselves. It may be that the belief that there are actions the passenger can take for self-protection can be built upon, and the passenger can be offered a variety of alternative actions for increasing the chance of self-protection.

Safety Presentation and Seat Belt Use

While both groups agreed, attenders agreed more so, that they would study the briefing card if they thought it were as important as the seat belt.

The practical implication of this finding is apparent. While wearing the seat belt is important, knowing what to do after unbuckling the seat belt (or what to do in other emergencies) may be just as important, or more so. The passenger already wears the seat belt for protection. Pairing the importance of attending the safety information with an act the passenger is already performing for the same purpose, may be an important impetus to increasing the attention to the safety presentation.

Situational Variables

Business vs. Pleasure Flying: Flying Alone or With Someone

Attendees fly mostly on pleasure trips, and they fly with someone they know. Non-attendees are more likely to fly alone and on business trips. It may be that attendees are more concerned about people they are responsible for (e.g., children, other relatives), and attend to the safety presentation not only for themselves but for the benefit of those they are with.

It is possible that if an oral safety presentation were to suggest that, in case of an emergency, a person should assist anyone on either side in coping with the emergency, that those who fly alone might take more interest in safety presentations. Whether this would result or not could be determined by experimental research.

Another implication of this finding is that in potential emergencies, the assigning of responsibility for another to those who are flying alone could increase the attention to a detailed safety information presentation on the part of the person flying alone.

Demographic Variables

Non-attendees were more likely to be men who were younger, with more education, and who have flown more than attendees. Non-attendees and attendees had the same household income.

One implication of these findings is that any attempts to increase attention to safety presentations would have to be geared to this group. Spurious arguments, and arguments based on emotional appeal, might be less successful than more logical reasons why the person should attend to safety information.

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APPENDIX A

Dear Recipient,

Interaction Research Corporation is conducting research for the Federal Aviation Administration in the field of aircraft passenger safety. If you have flown on a scheduled commercial aircraft at least twice in the past two years, we would greatly appreciate talking with you. This survey is authorized by Section 303 and 311 of the Federal Aviation Act. While you are not required to answer our questions, your cooperation is needed to make the results of the survey comprehensive, accurate and timely.

Since this type of survey has not been taken in the past, we must study in depth your opinions about certain aircraft safety practices as seen from the passenger's point of view. This will help us identify those areas of aircraft safety which need further attention.

While this survey will only take about 15 minutes, the information you give could be very important in determining the potential directions in which future safety programs will be guided.

We will contact you by telephone within a few days after you receive this letter to set up an appointment to conduct the survey.

We thank you in advance for assisting us in attempting to improve the area of aircraft passenger safety.

Sincerely,

Daniel A. Johnson, Ph.D.
President

INTERVIEWER'S NAME _____

FORM APPROVED
OMB No. 04-S7801

DATE _____

INTERVIEW NUMBER _____

APPENDIX B

Hello Mr./Mrs. _____:

This is (Interviewer's name) of Interaction Research Corporation. We are conducting a survey for the Federal Aviation Administration about the presentation of safety information to airline passengers before takeoff.

This survey is authorized by Section 303 and 311 of the Federal Aviation Act. While you are not required to answer our questions, your cooperation is needed to make the results of the survey comprehensive, accurate and timely.

This is a survey of people who have flown at least twice on scheduled commercial aircraft in the past two years. Have you flown on scheduled commercial aircraft two or more times in the past two years? (Yes___ No___)

If No: Well, thank you very much. Is there anyone else in your home who has flown in the past two years, and who would care to participate in the survey? (Yes___ No___ If No, thank the person and say goodbye. If Yes, ask the person to have the experienced person come to the phone then start over again.)

If Yes: Good. We are interested in your ideas about the safety presentations, that is, about the oral briefings and the briefing cards. We notice that some people pay attention to the information and others don't. We are very interested in your opinion and we have a series of questions we would like to ask you about aircraft safety. The results of this program will be very useful in the near future as far as increasing aircraft safety aboard commercial airlines. Of course, all the answers you will give will be kept confidential, and your name, phone nor address will not be mentioned in any report. If you don't have any objections, may we start the interview now?

- 46-**

5. What specific information is usually found on the card? Don't Know 6
(5/6-00)

Door Locations Door Opening Instructions Oxygen Use Seat Belt Use
Seat Backs Up Tray Table Brace Positions Flotation Cushions
Life Jacket Information Life Raft Information TOTAL
(5-) (6-)

On many of the following questions I will be asking questions starting with the phrase, How often...? For example, I will ask "How often is the life jacket demonstration easy to see?" What I need is to have you answer using one of the following phrases: Always, Very Often, Quite a Bit, Occasionally, or Never. It would be very helpful if you were to write them down. Here they are again. Always, Very Often, Quite a Bit, Occasionally, or Never. If the question is not applicable, please tell me.

On other questions I will ask whether you agree or disagree with a given statement. You should respond by saying: Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree. You may want to copy them down. Here they are again. (Repeat phrases.)

6. How strongly do you agree or disagree with this statement? On the 8
next flight you take you intend to listen carefully to the oral
briefing given by the flight attendant. Strongly Agree Agree
(9-5) (9-4)
Undecided Disagree Strongly Disagree
(9-3) (9-2) (9-1)

7. Agree or Disagree? On the next flight you take you intend to pick 9
up the briefing card and study it before the aircraft takes off.

Strongly Agree Agree Undecided Disagree Strongly Disagree
(10-5) (10-4) (10-3) (10-2) (10-1)

8. How often have you paid close attention to the flight attendant's briefings on previous flights? Always Very Often Quite a Bit
(11-5) (11-4) (11-3)
Occasionally Never
(11-2) (11-1) 10
9. How often have you looked closely at the briefing card before or during previous flights? Always Very Often Quite a Bit Occasionally
(12-5) (12-4) (12-3) (12-2)
Never
(12-1) 11
10. When the flight attendant talks about the safety features in the oral briefing, how often does this make you feel nervous? Always Very Often
(15-5) (15-4)
Quite a Bit Occasionally Never
(15-3) (15-2) (15-1) 13
11. When you actually look at the briefing card, or think about the briefing card, how often does this make you feel nervous? Always
(16-5)
Very Often Quite a Bit Occasionally Never
(16-4) (16-3) (16-2) (16-1) 14
12. How often is the oxygen mask in the demonstration easy to see? Always Very Often Quite a Bit Occasionally Never Not Applicable
(17-5) (17-4) (17-3) (17-2) (17-1) (17-0) 16
13. How often is the briefing card in the seat back easy to locate? Always Very Often Quite a Bit Occasionally Never
(18-5) (18-4) (18-3) (18-2) (18-1) 17
14. Agree-Disagree. The complexity of the information on the briefing cards is quite low. Strongly Agree Agree Undecided Disagree
(19-5) (19-4) (19-3) (19-2)
Strongly Disagree
(19-1) 23
15. Agree-Disagree. Each time you hear an oral briefing, you get more information from it. Strongly Agree Agree Undecided Disagree
(20-1) (20-2) (20-3) (20-4)
Strongly Disagree
(20-5) 24

16. Agree-Disagree. The manner in which the information on the safety briefing cards is presented varies considerably from one airline to the next. Strongly Agree Agree Undecided Disagree Strongly Disagree
(21-1) (21-2) (21-3) (21-4) (21-5) 25
17. Agree-Disagree. The way in which flight attendants give the oral briefing is similar regardless of which airline you are flying. Strongly Agree Agree Undecided Disagree Strongly Disagree
(22-5) (22-4) (22-3) (22-2) (22-1) 26
18. About how long do you think you could remain conscious after an airplane decompressed at high altitude, say 40,000 feet? 15-29 30-44
(25-5) (25-4) 28
45-59 60-89 90+ Don't Know
(25-3) (25-2) (25-1) (25-0)
19. If you were traveling with a small child, and the plane decompressed suddenly, would you attempt to put the O₂ mask on yourself first or on the child first? Self Child Don't Know
(26-2) (26-1) (26-0) 29
20. Who do you think is most trained for handling emergencies in the cabin -- the flight attendants or the cockpit crew? Cockpit F/A
(27-1) (27-2) 37
Don't Know
(27-0)
21. Assume you believed there was no safety information on the briefing card which would be helpful, but you started noticing more and more people on different flights reading the cards. How often would you start reading the cards under these circumstances? Always Very Often
(28-5) (28-4) 44
Quite a Bit Occasionally Never
(28-3) (28-2) (28-1)

22. Assume you believed there was no information in the oral briefing which would be helpful, but you started noticing more and more people on different flights attending to the briefing. They would put down their books, stop talking to each other, and pay close attention to the flight attendant. Under these circumstances, how often would you pay close attention to the briefing?

45

Always Very Often Quite a Bit Occasionally Never
 (29-5) (29-4) (29-3) (29-2) (29-1)

23. Agree-Disagree. Most people prefer to be thought of as experienced air travelers rather than people on their first flight.

49

Strongly Agree Agree Undecided Disagree Strongly Disagree
 (30-5) (30-4) (30-3) (30-2) (30-1)

24. Some people are fearful of flying but circumstances force them to fly. How often do you think these people will study the briefing cards and pay attention to the flight attendant's briefing?

50

Always Very Often Quite a Bit Occasionally Never
 (31-5) (31-4) (31-3) (31-2) (31-1)

25. Agree-Disagree. No matter how much fear a person feels it is very important not to show that fear in any way.

54

Strongly Agree Agree
 (32-5) (32-4)

Undecided Disagree Strongly Disagree
 (32-3) (32-2) (32-1)

26. When you board an aircraft, what do you think the chances are that aircraft will have an accident on that particular flight?

55

1/10 1/100 1/1,000 1/10,000 1/100,000 1/1 mil 1/10 mil
 (33-1) (33-2) (33-3) (33-4) (33-5) (33-6) (33-7)

1/100 mil 1/billion
 (33-8) (33-9)

27. Estimate the number of accidents involving commercial passenger aircraft that occurs each year in the U. S.

56

(34) (35) (36)

28. Agree-Disagree. The time spent attending to the safety briefing or reading the card is wasted because there is very little chance an aircraft accident will occur. Strongly Agree Agree Undecided
(37-5) (37-4) (37-3)
Disagree Strongly Disagree
(37-2) (37-1)

57

29. An aircraft accident can be defined as one which results either in serious physical injury, or in substantial damage to the aircraft. In some aircraft accidents all the passengers survive, in others only some passengers survive, while in others none of the passengers survive. Estimate the percent of accidents in which everyone survives
(38) (39) only some survive (40) (41)
and none survive (42) (43)

59

60

61

30. Agree-Disagree. Safety information presentations are useless because during an accident most passengers won't live long enough to use the information. Strongly Agree Agree Undecided Disagree
(44-5) (44-4) (44-3) (44-2)
Strongly Disagree
(44-1)

62

31. Agree-Disagree. Safety information presentations are very useful because following an accident the crewmembers may not be available to assist the passenger. Strongly Agree Agree Undecided Disagree
(45-1) (45-2) (45-3) (45-4)
Strongly Disagree
(45-5)

63

32. Agree-Disagree. Crewmembers are trained and capable of assisting all passengers in any kind of emergency. Strongly Agree Agree
(46-5) (46-4)
Undecided Disagree Strongly Disagree
(46-3) (46-2) (46-1)

64

33. How often do you feel sure you know what information is going to be shown on the card even before you board the aircraft? 66

Always Very Often Quite a Bit Occasionally Never Not Applicable
 (47-5) (47-4) (47-3) (47-2) (47-1) (47-0)

34. Assume you were in an aircraft and a rapid decompression occurred at high altitude, say 40,000 feet. How often would the flight attendants be able to assist you in putting on the oxygen mask? 67

Always Very Often Quite a Bit Occasionally Never
 (48-5) (48-4) (48-3) (48-2) (48-1)

35. Assume the airplane in which you were riding had a landing accident; for example, it landed too hard, or it ran off the end of the runway. Assume there was a fire. About how much time would be available for most people to get out safely? 68

(49) (50) (51) (Seconds)

36. Agree-Disagree. After an emergency occurs there is usually enough time to get instructions on what to do from the crew or from the briefing card. 69

Strongly Agree Agree Undecided Disagree
 (52-5) (52-4) (52-3) (52-2)
Strongly Disagree
 (52-1)

37. Agree-Disagree. All the basic safety information passengers need is presented in the oral briefing and the information on the briefing card is unnecessary. 70

Strongly Agree Agree Undecided Disagree
 (53-5) (53-4) (53-3) (53-2)
Strongly Disagree
 (53-1)

38. Agree-Disagree. There is very little the passenger can do for protection after an emergency occurs. 71

Strongly Agree Agree
 (54-5) (54-4)
Undecided Disagree Strongly Disagree
 (54-3) (54-2) (54-1)

- Random Digit Dial (60-2)