

Influence of Topics, Media, Subjects and Criteria on Persuasive Effectiveness of Fear Arousing Communications : An analysis of the Previous Studies

by

Hiromi FUKADA*

Abstract : This study was conducted to investigate the influence of four methodological variables— topics, media, subjects and criteria— on the inconsistency among the findings regarding relative persuasive effectiveness of high fear versus low fear in the fear appeal studies. Analysis showed that topics and media had some influence on main effects of fear on persuasion, but it was impossible to interpret those results. Additionally, it was showed that recipients' personality variable and recipients' relevance-to-threat variable facilitated interaction effects between fear and either of the variables on persuasion.

Introduction

A large number of studies on fear arousing communications have been done since Janis & Feshbach (1953) first reported a negative relationship between the level of fear and persuasive effectiveness. We can see a considerable degree of inconsistency among the findings regarding the relative effectiveness of high fear versus low fear in those studies ; some indicate a negative relationship between fear and persuasion, some indicate a positive relationship, some indicate a mixed relationship (a positive relationship at one criterion and a negative relationship at other criterion), and some indicate a neutral relationship (no relationship).

Higbee (1969) has suggested four methodological considerations as possible sources of the inconsistency among the findings concerning main effects of fear on persuasion. It was suggested by Higbee (1969) that the diversity in topics, media, subjects or criteria used in the research on fear arousing communications might cause the inconsistency. But, he only listed up topics, media, subjects and criteria used in the fear appeal studies, not trying to analyze the influence of these four factors on the inconsistency.

The purpose of the present study is to examine the influence of four methodological variables — topics, media, subjects and criteria— on the inconsistency among the findings regarding relative persuasive effectiveness of high versus low fear in the studies on fear arousing communications.

Procedures of analysis

Table 1 indicates the studies of fear arousing communications in a broad sense, which involve experimental manipulation of the level of fear in a persuasive communication. Of these studies in Table 1, the following studies do not, strictly speaking, belong to the

* Department of Early Childhood Education, Faculty of Education, Shimane University, Matsue, 690 JAPAN.

area of fear appeals and persuasion : (1-b) fear appeals and reactions, (2) positive-negative appeals and persuasion, (3) irrelevant fear arousal and persuasion, (4) physiological arousal and persuasion, (5) false physiological feedback and persuasion, and (6) emotional role playing and persuasion.

Table 2 shows the level of fear arousal used in the research of fear appeals and persuasion. The studies which have only one level of fear are inappropriate to the present analysis. The following analysis, therefore, is carried out by using the research on fear appeals and persuasion with two or more levels of fear.

Table 3 shows main effects of fear on persuasion, which are classified into four types of relationship between fear level and persuasive effectiveness : (1) a positive, (2) a negative, (3) a mixed (positive and negative), and (4) a neutral relationship. The last type means no relationship between fear and persuasion.

Table 4 shows interaction effects between fear variable and some other independent variable on persuasion, which are classified into five patterns : (1) a positive-more positive, (2) a positive-neutral, (3) a positive-negative, (4) a negative-neutral, (5) a negative-more negative relationship patterns. Each pattern means a combination of a relationship at one level of the independent variable and a relationship at other level.

Topics, media, subjects, criteria and independent variables used in the research on fear appeals and persuasion are showed in Table 5, 6, 7, 8 and 9, respectively. The relationships between each of the four methodological variables and types of main effects of fear on persuasion are showed in Table 10, 11, 12 and 13. The relationships between each of the four methodological variables and patterns of the interaction effects of fear by an independent variable other than the forementioned variables are showed in Table 14, 15, 16 and 17, respectively. Additionally, the relationships between different type of independent variable used in the research and patterns of the interaction effects are showed in Table 18.

Results and discussion of analysis

We can read from Table 10 that topics have influence on main effects of fear. The topic of smoking produce a negative and a mixed main effects more frequently than the rest of the topics do ($\chi^2=7.139$, $df=1$, $P<.01$). From another view point, topics of traffic safety, drugs and fallout shelters produce a neutral main effect more frequently than the rest of topics do ($\chi^2=6.229$, $df=1$, $P<.05$).

Though differences of topics may be understood as those of dimensions such as familiarity, importance, ego-involvement, nearness (in time and space), and etc., as Higbee (1969) pointed out, none of these dimensions explain the results obtained in this study.

From Table 11, media also have influence on main effects of fear. Tape recorded plus slides and printed media produce a neutral main effect less frequently than the rest of the media ($\chi^2=4.384$, $df=1$, $P<.05$).

At present stage, we can not give any explanation for the result.

However we can not find that both subjects and criteria have influence on main effects of fear, from Table 12 and 13.

None of topics, media, subjects, criteria and types of independent variable have influence on interaction effects between fear and some other independent variable on persuasion, as seen in Table 14, 15, 16, 17 and 18.

But recipients' personality variables produce interaction effects more frequently than the rest of the independent variables do ($\chi^2=10.474$, $df=1$, $P<.001$). In the case of recipients' relevance-to-threat variable added to recipients' personality variable, similar results are obtained ($\chi^2=5.093$, $df=1$, $P<.05$).

Table 1 Studies on fear arousing communications in a broad sense

<u>(1) Fear appeals</u>	
<u>(a) Fear appeals and persuasion</u>	
Beck & Davis (1978)	Janis & Feshbach (1954)
Beck & Lund (1981)	Janis & Terwilliger (1962)
Berkowitz & Cottingham (1960)	Kraus, El-Assal & DeFleu (1962)
Chu (1966)	Lehmann (1970)
Cope & Richardson (1972)	Leventhal & Niles (1964)
Dabbs & Leventhal (1966)	Leventhal & Niles (1965)
DeWolfe & Governale (1964)	Leventhal & Singer (1966)
Dziokonski & Weber (1977)	Leventhal & Trembly (1968)
Evans et al. (1970)	Leventhal & Watts (1966)
Frandsen (1963)	Leventhal, Jones & Trembly (1966)
Fritzen & Mazer (1975)	Leventhal, Singer & Jones (1965)
Fukada (1973)	Leventhal, Watts & Pagano (1967)
Fukada (1975a)	Lewan & Stotland (1961)
Fukada (1975b)	Mewborn & Rogers (1979)
Fukada (1983a)*	Millman (1968)
Fukada (1983b)	Moltz & Thistlethwaite (1955)
Goldstein (1959)	Powell (1965)
Gollob & Dittes (1965)	Powell & Miller (1967)**
Griffeth & Rogers (1976)	Ramirez & Lasater (1976)
Haefner (1965)	Ramirez & Lasater (1977)
Haraoka (1970)	Rogers & Mewborn (1976)
Hashimoto (1969)	Rogers & Thistlethwaite (1970)
Hass, Bagley & Rogers (1975)	Shelton & Rogers (1981)
Helmreich & Hamilton (1968)*	Skilbeck, Tulips & Ley (1977)
Hewgill & Miller (1965)	Smart & Fejer (1974)
Horowitz (1969)	Stainback & Rogers (1983)
Horowitz & Gumenic (1970)	Stern, Lana & Pauling (1965)
Insko, Arkoff & Insko (1965)	Cohen (1957)
Janis & Feshbach (1953)	
<u>(b) Fear appeals and reactions</u>	
Cecil, Weiss & Feinberg (1978)	Janis & Milholland (1954)
Duke (1967)	Robbins (1962a)
Fischer et al. (1967)	Robbins (1962b)
Hayakawa (1977)	Shirai & Takata (1977)
Higbee (1974)	
<u>(2) Positive-negative appeals and persuasion</u>	
Dabbs (1964)	Powell & Miller (1967)**
Leventhal & Perloe (1962)	
<u>(3) Irrelevant fear arousal and persuasion</u>	
Fukada (1983a)*	Lundy, Simonson & Landers (1967)
Helmreich & Hamilton (1968)*	Sigall & Helmreich (1969)
Helmreich, Kuiken & Collins (1968)	Simonson & Lundy (1966)
Hendrick & Borden (1970)	
<u>(4) Physiological arousal and persuasion</u>	
Mintz & Mills (1971)	Rogers & Dickner (1975)
<u>(5) False physiological feedback and persuasion</u>	
Beck (1979)	Harris & Jellison (1971)
Evans et al. (1975)	Hendrick, Giesen & Borden (1975)
Giesen & Hendrick (1974)	Krisher, Darley & Darley (1973)
<u>(6) Emotional role playing and persuasion</u>	
Janis & Mann (1965)	Mann & Janis (1968)
Mann (1967)	

* Relevant and irrelevant fear

** Fear and positive arousal

Table 2 Fear levels manipulated in the studies of fear appeals and persuasion

Studies	Fear levels
Beck & Davis (1978)	High, moderate, low
Beck & Lund (1981)	Seriousness (high, low) × susceptibility (high, low)
Berkowitz & Cottingham (1960) Exp. 1	Strong, minimal
Berkowitz & Cottingham (1960) Exp. 2	Strong, minimal
Chu (1966)	Strong, moderate, mild
Cope & Richardson (1972)	Fear
Dabbs & Leventhal (1966)	High, low
DeWolfe & Governale (1964)	High
Dziokonski & Weber (1977)	High, moderate, low
Evans et al. (1970)	High, low
Frandsen (1963)	Moderate, minimal
Fritzen & Mazer (1975)	High, low
Fukada (1973)	High, low
Fukada (1975a)	High, low
Fukada (1975b)	High, low
Fukada (1983a)	High, low
Fukada (1983b)	High, low
Goldstein (1959)	Strong, minimal
Gollob & Dittes (1965)	Threat
Griffeth & Rogers (1976)	Noxiousness (high, low) × probability (high, low) × efficacy (high, low)
Haefner (1965)	Strong, minimal
Haraoka (1970)	High, middle, low
Hashimoto (1969)	High, low
Hass, Bagley & Rogers (1975)	Noxiousness (high, low) × probability (high, low)
Helmreich & Hamilton (1968)	High, low
Hewgill & Miller (1965)	High, low
Horowitz (1969)	High, low
Horowitz & Gumenic (1970)	High, low
Insko, Arkoff & Insko (1965)	High, low
Janis & Feshbach (1953)	Strong, moderate, minimal
Janis & Feshbach (1954)	Strong, minimal
Janis & Terwilliger (1962)	High, low
Kraus, El-Assal & DeFleu (1962)	Strong
Lehmann (1970)	Threatening
Leventhal & Niles (1964)	High, medium, low
Leventhal & Niles (1965)	Duration (8, 16, 24 & 32 min.) of exposure
Leventhal & Singer (1966)	High, low
Leventhal & Trembly (1968)	High, low
Leventhal & Watts (1966)	High, medium, low
Leventhal, Jones & Trembly (1966)	High, low
Leventhal, Singer & Jones (1965)	High, low
Leventhal, Watts & Pagano (1967)	High, moderate
Lewan & Stotland (1961)	Emotional
Mewborn & Rogers (1979)	High, low
Millman (1968)	Anxiety-provoking
Moltz & Thistlethwaite (1955)	Strong, weak
Powell (1965)	High, mild
Powell & Miller (1967)	Social disapproval
Ramirez & Lasater (1976)	High, moderate
Ramirez & Lasater (1977)	High, low
Rogers & Mewborn (1976)	Noxiousness (high, low) × probability (high, low) × efficacy (high, low)
Rogers & Thistlethwaite (1970)	High, low
Shelton & Rogers (1981)	Noxiousness (high, low) × efficacy (high, low)
Skilbeck, Tulips & Ley (1977) Exp. 1	High, medium, low
Skilbeck, Tulips & Ley (1977) Exp. 2	Fear
Smart & Fejer (1974) Exp. 1	High, medium, low
Smart & Fejer (1974) Exp. 2	High, low
Steinback & Rogers (1983)	High, low
Stern, Lana & Pauling (1965)	Fear arousing
Cohen (1957)	Need (fear) arousal

Table 3 Main effects of fear on persuasion in the studies of fear appeals with two or more fear levels

Studies	Types of main effects
Beck & Davis (1978)	Neutral : neutral b)
Berkowitz & Cottingham (1960) Exp. 1	Neutral : neutral b)
Berkowitz & Cottingham (1960) Exp. 2	Positive : positive b)
Chu (1966)	Positive : positive c)
Dabbs & Leventhal (1966)	Positive : positive c), positive e)
Dziokonski & Weber (1977)	Positive : neutral b), positive c)
Evans et al. (1970)	Neutral : neutral c), neutral d), neutral e)
Frandsen (1963)	Neutral : neutral b)
Fritzen & Mazer (1975)	Positive : positive b), neutral d)
Fukada (1973)	Positive : positive c), positive e)
Fukada (1975a)	Positive : positive c), positive e)
Fukada (1975b)	Neutral : neutral c)
Fukada (1983a)	Positive : neutral b), positive c)
Fukada (1983b)	Positive : positive c)
Goldstein (1959)	Neutral : neutral d)
Haefner (1965)	Positive : neutral a), positive d), positive e)
Haraoka (1970)	Positive : positive b), positive c)
Hashimoto (1969)	Positive : positive b)
Helmreich & Hamilton (1968)	Positive : positive b)
Hewgill & Miller (1965)	Neutral : neutral b)
Horowitz (1969)	Neutral : neutral b)
Horowitz & Gumenic (1970)	Neutral : neutral b)
Insko, Arkoff & Insko (1965)	Positive : positive b)
Janis & Feshbach (1953)	Negative : negative a), negative d)
Janis & Feshbach (1954)	Neutral : neutral a), neutral d)
Janis & Terwilliger (1962)	Negative : negative b)
Leventhal & Niles (1964)	Positive & negative : positive a), negative & neutral c), positive e)
Leventhal & Niles (1965)	Neutral : neutral c)
Leventhal & Singer (1966)	Positive : positive c)
Leventhal & Trembly (1968)	Neutral : neutral c)
Leventhal & Watts (1966)	Positive & negative : positive a), neutral c), positive & negative d), neutral e)
Leventhal, Jones & Trembly (1966)	Positive : positive b), neutral c), neutral e)
Leventhal, Singer & Jones (1965)	Positive : positive b), positive c), neutral e)
Leventhal, Watts & Pagano (1967)	Neutral : neutral a), neutral c), neutral d)
Mewborn & Rogers (1979)	Neutral : neutral c)
Moltz & Thistlethwaite (1955)	Neutral : neutral d)
Powell (1965)	Neutral : neutral b)
Ramirez & Lasater (1976)	Neutral : neutral c), neutral d), neutral e)
Ramirez & Lasater (1977)	Positive : neutral c), positive d), neutral e)
Rogers & Thistlethwaite (1970)	Positive : neutral a), positive c)
Skilbeck, Tulips & Ley (1977) Exp. 1	Neutral : neutral e)
Smart & Fejer (1974) Exp. 1	Neutral : neutral c)
Smart & Fejer (1974) Exp. 2	Positive : positive b)
Stainback & Rogers (1983)	Neutral : neutral c)

a) Beliefs, b) attitudes or opinions, c) intentions or desire, d) reported behavior, e) actual behavior

Table 4 Interaction effects between fear and some other independent variable on persuasion in the studies of fear appeals with two or more fear levels

Studies	Patterns of interaction effects
Beck & Davis (1978)	—
Berkowitz & Cottingham (1960) Exp. 1	Positive-negative b)
Berkowitz & Cottingham (1960) Exp. 2	Positive-neutral b)
Chu (1966)	Positive-more positive c), positive-more positive c)
Dabbs & Leventhal (1966)	Positive-neutral c)
Dziokonski & Weber (1977)	—
Evans et al. (1970)	—
Frandsen (1963)	—
Fritzen & Mazer (1975)	— *
Fukada (1973)	Positive-neutral c), positive-neutral e)
Fukada (1975a)	—
Fukada (1975b)	—
Fukada (1983a)	—
Fukada (1983b)	—
Goldstein (1959)	Negative-neutral d)
Haefner (1965)	—
Haraoka (1970)	—
Hashimoto (1969)	—
Helmreich & Hamilton (1968)	—
Hewgill & Miller (1965)	Positive-neutral b)
Horowitz (1969)	Positive-negative b)
Horowitz & Gumenic (1970)	Positive-neutral b)
Insko, Arkoff & Insko (1965)	— *
Janis & Feshbach (1953)	—
Janis & Feshbach (1954)	Negative-more negative a), negative-neutral d)
Janis & Terwilliger (1962)	—
Leventhal & Niles (1964)	Negative-neutral c)
Leventhal & Niles (1965)	—
Leventhal & Singer (1966)	—
Leventhal & Trembly (1968)	Positive-negative c)
Leventhal & Watts (1966)	Positive-neutral e)
Leventhal, Jones & Trembly (1966)	—
Leventhal, Singer & Jones (1965)	—
Leventhal, Watts & Pgano (1967)	— *
Mewborn & Rogers (1979)	—
Moltz & Thistlethwaite (1955)	—
Powell (1965)	Positive-neutral b)
Ramirez & Lasater (1976)	—
Ramirez & Lasater (1977)	Positive-neutral d), positive-neutral e)
Rogers & Thistlethwaite (1970)	Negative-neutral a), positive-neutral c)
Skilbeck, Tulips & Ley (1977) Exp. 1	—
Smart & Fejer (1974) Exp. 1	—
Smart & Fejer (1974) Exp. 2	—
Stainback & Rogers (1983)	— *

a) Beliefs, b) attitudes or opinions, c) intentions or desire, d) reported behavior, e) actual behavior

* Interaction between fear and time since exposure was omitted from this table.

Table 5 Topics used in the studies of fear appeals and persuasion with two or more fear levels

Studies	Topics
Beck & Davis (1978)	Smoking
Berkowitz & Cottingham (1960) Exp. 1	Traffic safety (safety belts)
Berkowitz & Cottingham (1960) Exp. 2	Traffic safety (safety belts)
Chu (1966)	Roundworms
Dabbs & Leventhal (1966)	Tetanus
Dziokonski & Weber (1977)	Dental hygiene (gum disease)
Evans et al. (1970)	Dental hygiene
Frandsen (1963)	Population growth
Fritzen & Mazer (1975)	Alcohol
Fukada (1973)	Venereal disease (syphilis)
Fukada (1975a)	Venereal disease (syphilis)
Fukada (1975b)	Venereal disease (syphilis)
Fukada (1983a)	Venereal disease (syphilis)
Fukada (1983b)	Venereal disease (syphilis)
Goldstein (1959)	Dental hygiene
Haefner (1965)	Dental hygiene
Haraoka (1970)	Dental hygiene
Hashimoto (1969)	Psychological experiments
Helmreich & Hamilton (1968)	Human subjects
Hewgill & Miller (1965)	Fallout shelters
Horowitz (1969)	Drugs
Horowitz & Gumenic (1970)	Drugs
Insko, Arkoff & Insko (1965)	Smoking
Janis & Feshbach (1953)	Dental hygiene
Janis & Feshbach (1954)	Dental hygiene
Janis & Terwilliger (1962)	Smoking
Leventhal & Niles (1964)	Smoking
Leventhal & Niles (1965)	Traffic safety (safe driving)
Leventhal & Singer (1966)	Dental hygiene
Leventhal & Trembly (1968)	Traffic safety (safe driving)
Leventhal & Watts (1966)	Smoking
Leventhal, Jones & Trembly (1966)	Tetanus
Leventhal, Singer & Jones (1965)	Tetanus
Leventhal, Watts & Pagano (1967)	Smoking
Mewborn & Rogers (1979)	Venereal disease
Moltz & Thistlethwaite (1955)	Dental hygiene
Powell (1965)	Fallout shelters
Ramirez & Lasater (1976)	Dental hygiene
Ramirez & Lasater (1977)	Dental hygiene
Rogers & Thistlethwaite (1970)	Smoking
Skilbeck, Tulips & Ley (1977) Exp. 1	Obesity
Smart & Fejer (1974) Exp. 1	Drugs (marijuana)
Smart & Fejer (1974) Exp. 2	Drugs (a non-existent drug)
Stainback & Rogers (1983)	Alcohol

Table 6 Media used in the studies of fear appeals and persuasion with two or more fear levels

Studies	Media
Beck & Davis (1978)	Film
Berkowitz & Cottingham (1960) Exp. 1	Tape recorded plus slides
Berkowitz & Cottingham (1960) Exp. 2	Tape recorded plus slides
Chu (1966)	Oral
Dabbs & Leventhal (1966)	Printed
Dziokonski & Weber (1977)	Tape recorded plus slides
Evans et al. (1970)	Oral
Frandsen (1963)	Tape recorded, television, or live
Fritzen & Mazer (1975)	Tape recorded
Fukada (1973)	Tape recorded plus slides
Fukada (1975a)	Printed
Fukada (1975b)	Printed
Fukada (1983a)	Printed plus slides
Fukada (1983b)	Printed
Goldstein (1959)	Tape recorded plus slides
Haefner (1965)	Tape recorded plus slides
Haraoka (1970)	Tape recorded plus slides
Hashimoto (1969)	Tape recorded
Helmreich & Hamilton (1968)	Printed plus oral plus properties
Hewgill & Miller (1965)	Tape recorded
Horowitz (1969)	Printed plus film
Horowitz & Gumenic (1970)	Printed plus film
Insko, Arkoff & Insko (1965)	Tape recorded plus slides
Janis & Feshbach (1953)	Tape recorded plus slides
Janis & Feshbach (1954)	Tape recorded plus slides
Janis & Terwilliger (1962)	Printed
Leventhal & Niles (1964)	Printed plus oral plus film
Leventhal & Niles (1965)	Film
Leventhal & Singer (1966)	Tape recorded plus slides
Leventhal & Trembly (1968)	Film
Leventhal & Watts (1966)	Film
Leventhal, Jones & Trembly (1966)	Printed
Leventhal, Singer & Jones (1965)	Printed
Leventhal, Watts & Pagano (1967)	Printed plus film
Mewborn & Rogers (1979)	Tape recorded plus film
Moltz & Thistlethwaite (1955)	Tape recorded plus slides
Powell (1965)	Tape recorded
Ramirez & Lasater (1976)	Tape recorded plus slides
Ramirez & Lasater (1977)	Tape recorded plus slides
Rogers & Thistlethwaite (1970)	Printed plus film
Skilbeck, Tulips & Ley (1977) Exp. 1	Oral
Smart & Fejer (1974) Exp. 1	Printed
Smart & Fejer (1974) Exp. 2	Printed
Stainback & Rogers (1983)	Printed plus tape recorded

Table 7 Subjects used in the studies of fear appeals and persuasion with two or more fear levels

Studies	Subjects
Beck & Davis (1978)	College students
Berkowitz & Cottingham (1960) Exp. 1	College students
Berkowitz & Cottingham (1960) Exp. 2	College students
Chu (1966)	Elementary school students
Dabbs & Leventhal (1966)	College students
Dziokonski & Weber (1977)	College students (female)
Evans et al. (1970)	Junior high school students
Frandsen (1963)	College students
Fritzen & Mazer (1975)	Junior high school students
Fukada (1973)	College students
Fukada (1975a)	College students (female)
Fukada (1975b)	College students (female)
Fukada (1983a)	College students (female)
Fukada (1983b)	College students (female)
Goldstein (1959)	High school students
Haefner (1965)	Junior high school students
Haraoka (1970)	High school students (female)
Hashimoto (1969)	College students (female)
Helmsreich & Hamilton (1968)	College students (male)
Hewgill & Miller (1965)	Adults
Horowitz (1969)	College students (male)
Horowitz & Gumenic (1970)	College students
Insko, Arkoff & Insko (1965)	Junior high school students
Janis & Feshbach (1953)	High school students
Janis & Feshbach (1954)	High school students
Janis & Terwilliger (1962)	Adults
Leventhal & Niles (1964)	Population cross-section
Leventhal & Niles (1965)	College students
Leventhal & Singer (1966)	Population cross-section
Leventhal & Trembly (1968)	High school students
Leventhal & Watts (1966)	Population cross-section
Leventhal, Jones & Trembly (1966)	Adults
Leventhal, Singer & Jones (1965)	College students
Leventhal, Watts & Pagano (1967)	College students
Mewborn & Rogers (1979)	College students
Moltz & Thistlethwaite (1955)	Army recruits
Powell (1965)	Adults
Ramirez & Lasater (1976)	Elementary & junior high school students
Ramirez & Lasater (1977)	Elementary & junior high school students
Rogers & Thistlethwaite (1970)	College students
Skilbeck, Tulips & Ley (1977) Exp. 1	Adults (female)
Smart & Fejer (1974) Exp. 1	High school students
Smart & Fejer (1974) Exp. 2	College students
Stainback & Rogers (1983)	Junior high school students

Table 8 Criteria used in the studies of fear appeals and persuasion with two or more fear levels

Studies	Criteria
Beck & Davis (1978)	Attitudes
Berkowitz & Cottingham (1960) Exp. 1	Attitudes
Berkowitz & Cottingham (1960) Exp. 2	Attitudes
Chu (1966)	Desire
Dabbs & Leventhal (1966)	Intentions, actual behavior
Dziokonski & Weber (1977)	Attitudes, intentions
Evans et al. (1970)	Intentions, reported behavior, actual behavior
Frandsen (1963)	Attitudes
Fritzen & Mazer (1975)	Attitudes, reported behavior
Fukada (1973)	Intentions, actual behavior
Fukada (1975a)	Intentions, actual behavior
Fukada (1975b)	Intentions
Fukada (1983a)	Opinions, intentions
Fukada (1983b)	Intentions
Goldstein (1959)	Reported behavior
Haefner (1965)	Beliefs, reported behavior, actual behavior
Haraoka (1970)	Opinions, intentions
Hashimoto (1969)	Opinions
Helmreich & Hamilton (1968)	Attitudes
Hewgill & Miller (1965)	Attitudes
Horowitz (1969)	Attitudes
Horowitz & Gumenic (1970)	Attitudes
Insko, Arkoff & Insko (1965)	Opinions
Janis & Feshbach (1953)	Beliefs, reported behavior
Janis & Feshbach (1954)	Beliefs, reported behavior
Janis & Terwilliger (1962)	Attitudes
Leventhal & Niles (1964)	Beliefs, Intentions, Actual behavior
Leventhal & Niles (1965)	Desire
Leventhal & Singer (1966)	Intentions
Leventhal & Trembly (1968)	Desire
Leventhal & Watts (1966)	Beliefs, intentions, reported behavior, actual behavior
Leventhal, Jones & Trembly (1966)	Attitudes, intentions, actual behavior
Leventhal, Singer & Jones (1965)	Attitudes, intentions, actual behavior
Leventhal, Watts & Pagano (1967)	Beliefs, desire, reported behavior
Mewborn & Rogers (1979)	Intentions
Moltz & Thistlethwaite (1955)	Reported behavior
Powell (1965)	Attitudes
Ramirez & Lasater (1976)	Intentions, reported behavior, actual behavior
Ramirez & Lasater (1977)	Intentions, reported behavior, actual behavior
Rogers & Thistlethwaite (1970)	Beliefs, intentions
Skilbeck, Tulips & Ley (1977) Exp. 1	Actual behavior
Smart & Fejer (1974) Exp. 1	Intentions
Smart & Fejer (1974) Exp. 2	Attitudes
Stainback & Rogers (1983)	Intentions

Table 9 Independent variables used in the studies of fear appeals and persuasion with two or more fear levels

Studies	Independent variables
Beck & Davis (1978)	Personal impotence f), personal interest f), usage e)
Berkowitz & Cottingham (1960) Exp. 1	Relevance e)
Berkowitz & Cottingham (1960) Exp. 2	Relevance e)
Chu (1966)	Efficacy b), imminency b), counterpropaganda c)
Dabbs & Leventhal (1966)	Effectiveness b), pain b)
Dziokonski & Weber (1977)	Vulnerability d), repression-sensitization d)
Evans et al. (1970)	Recommendation b), (time)
Frandsen (1963)	Media
Fritzen & Mazer (1975)	Alcoholic vs. non-alcoholic communicator a)
Fukada (1973)	Repression-sensitization d), sex f)
Fukada (1975a)	Efficacy b), credibility a)
Fukada (1975b)	Desirability b), credibility a)
Fukada (1983a)	(Time)
Fukada (1983b)	TP-forewarning, PI-forewarning, FI-forewarning
Goldstein (1959)	Coping d)
Haefner (1965)	Original vs. revised message c)
Haraoka (1970)	Recommendation b)
Hashimoto (1969)	Anxiety d)
Helmreich & Hamilton (1968)	Birth order f)
Hewgill & Miller (1965)	Credibility a)
Horowitz (1969)	Exposure type b), volunteering f)
Horowitz & Gumenic (1970)	Choice of exposure, volunteering f)
Insko, Arkoff & Insko (1965)	Aptitude f), sex f), (time)
Janis & Feshbach (1953)	—
Janis & Feshbach (1954)	Anxiety d)
Janis & Terwilliger (1962)	—
Leventhal & Niles (1964)	Usage e)
Leventhal & Niles (1965)	(Time)
Leventhal & Singer (1966)	Position of recommendations b), vulnerability d)
Leventhal & Trembly (1968)	Fear type, self-esteem d)
Leventhal & Watts (1966)	Susceptibility d), usage e)
Leventhal, Jones & Trembly (1966)	Specificity b), availability b), eligibility e), sex f)
Leventhal, Singer & Jones (1965)	Specificity b)
Leventhal, Watts & Pagano (1967)	Specificity b), smoking during communication, usage e)
Mewborn & Rogers (1979)	Reassurance b), sex f)
Moltz & Thistlethwaite (1955)	Assurance b)
Powell (1965)	Target of threat
Ramirez & Lasater (1976)	(Time)
Ramirez & Lasater (1977)	Ethnicity of communicator a), self-esteem d), ethnicity of recipient f)
Rogers & Thistlethwaite (1970)	Reassurance b), usage d)
Skillbeck, Tulips & Ley (1977) Exp. 1	Sidedness c), exposure type c), (time)
Smart & Fejer (1974) Exp. 1	Anxiety d), usage e)
Smart & Fejer (1974) Exp. 2	—
Stainback & Rogers (1983)	Sidedness c), expertise a), (repeated)

a) Source or communicator variables, b) recommendation variables, c) other message variables,

d) recipients' personality variables, e) recipients' relevance-to-threat variables,

f) other recipients' variables

Variables in the parentheses were omitted in the present study.

Table 10 Relationship between topics and types of main effects of fear on persuasion

	Positive	Negative	Mixed	Neutral
Dental hygiene	5	1	0	5
Smoking	2	1	2	2
Venereal disease	4	0	0	2
Traffic safety	1	0	0	3
Drugs	1	0	0	3
Tetanus	3	0	0	0
Alcohol	1	0	0	1
Fallout shelters	0	0	0	2
Other topics	3	0	0	2

Table 11 Relationship between media and types of main effects of fear on persuasion

	Positive	Negative	Mixed	Neutral
Tape recorded plus slides	8	1	0	5
Printed	6	1	0	2
Tape recorded	2	0	0	2
Film	0	0	1	3
Printed plus film	1	0	0	3
Oral	1	0	0	2
Other media	2	0	1	3

Table 12 Relationship between subjects and types of main effects of fear on persuasion

	Positive	Negative	Mixed	Neutral
Elementary school students	1	0	0	0
Elementary and junior high school students	1	0	0	1
Junior high school students	3	0	0	2
High school students	1	1	0	4
College students	12	0	0	9
Adults	1	1	0	3
Other subjects	1	0	2	1

Table 13 Relationship between criteria and types of main effects of fear on persuasion

	Positive	Negative	Neutral
Beliefs	2	1	4
Attitudes or opinions	9	1	9
Intentions or desire	11	1	13
Reported behavior	3	2	7
Actual behavior	5	0	8

Table 14 Relationship between topics and patterns of interaction effects of fear by some other independent variable

	Positive- more positive	Positive- neutral	Positive- negative	Negative- neutral	Mixed
Dental hygiene	0	1	0	1	1*
Smoking	0	1	0	1	1**
Venereal disease	0	1	0	0	0
Traffic safety	0	1	2	0	0
Drugs	0	1	1	0	0
Tetanus	0	1	0	0	0
Fallout shelters	0	2	0	0	0
Other topics	1	0	0	0	0

* Negative-more negative, negative-neutral

** Negative-neutral, positive-neutral

Table 15 Relationship between media and patterns of interaction effects of fear by some other independent variable

	Positive- more positive	Positive- neutral	Positive- negative	Negative- neutral	Mixed
Tape recorded plus slides	0	3	1	1	1*
Printed	0	1	0	0	0
Tape recoded	0	2	0	0	0
Film	0	1	1	0	0
Printed plus film	0	1	1	0	1**
Oral	1	0	0	0	0
Other media	0	0	0	1	0

* Negative-more negative, negative-neutral

** Negative-neutral, positive-neutral

Table 16 Relationship between subjects and patterns of interaction effects of fear by some other independent variable

	Positive- more positive	Positive- neutral	Positive- negative	Negative- neutral	Mixed
Elementary school students	1	0	0	0	0
Elementary and junior high school students	0	1	0	0	0
Junior high school students	0	0	0	0	0
High school students	0	0	1	1	1*
College students	0	4	2	0	1**
Adults	0	2	0	0	0
Other subjects	0	1	0	1	0

* Negative-more negative, negative-neutral

** Negative-neutral, positive-neutral

Table 17 Relationship between criteria and patterns of interaction effects of fear by some other independent variable

	Positive- more positive	Positive- neutral	Positive- negative	Negative- neutral	Negative- more negative
Beliefs	0	0	0	1	1
Attitudes or opinions	0	4	2	0	0
Intentions or desire	2	3	1	1	0
Reported behavior	0	1	0	2	0
Actual behavior	0	3	0	0	0

Table 18 Relationship between types of independent variables and patterns of interaction effects of fear by each variable

	Positive- more positive	Positive- neutral	Positive- negative	Negative- neutral	Negative- more negative	None
Source or communicator variables	0	1	0	0	0	5
Recommendation variables	2	0	0	1	0	13
Other message variables	0	0	0	0	0	6
Recipients' personality variables	0	4	1	2	1	3
Recipients' relevance-to-threat variables	0	3	1	1	0	4
Other variables	0	3	1	0	0	15

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