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RESEARCH REPORT

AVOIDANCE RESPONSE TO THE RISK ENVIRONMENT: A CROSS-CULTURAL COMPARSION

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Avoidance Response to the Risk Environment: A Cross-Cultural Comparison[1]

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Summary

A field survey was performed in Vienna, Austria, as a replication of one previously done in Ontario, Canada, with the objective of exploring attitudes toward various types of environmental risk. Subjects were asked to rate fifteen hazard situations in order of their wish to avoid them; the responses were then used to construct a risk avoidance ranking order. The rank size correlation coefficient for the total Austrian and Canadian groups was 0.62. In the Canadian sample the respondent's personal experience with specific hazards was an important factor in determining ranking (experienced respondents vs. inexperienced $r = 0.45$). This was not found in the Austrian sample, $r = 0.81$. The largest ranking difference in the Austrian group was related to the respondent's self-estimated ability to imagine specific hazard situations (good imaginability vs. poor $r = 0.59$). Plans for further psychometric field surveys oriented specifically toward risks of technological origin are presented.

I. Introduction

Information on societal attitudes and behavioural patterns form an important input into decisions regarding the selection and deployment of large-scale techno-

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[1] The views expressed in this paper are those of the authors, and do not necessarily reflect those of the project sponsors.

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[3] Psychologisches Institut der Universität Wien, Liebiggasse 5, A-1010 Vienna, Austria.

logical systems (see, for example, reference 3). Of special interest are the second and higher order consequences of those decisions which are probabilistic in terms of both occurrence and magnitude of consequence. These risks, in many cases, are the dominant factor in the acceptance of technological innovations by the public.

Obviously the perception of risks is a vital factor in forming attitudes toward them. In the case of risks of technological origin there has been relatively little research in this area and there is no body of behavioural theory to which hypothesis can be related. This paper will report on a field survey performed in Vienna, Austria, to determine attitudes toward a number of environmental risks. The survey used was the Avoidance Response Test of Golant and Burton [2] who were investigating attitudes, in London, Ontario, Canada, towards natural hazards. The Vienna survey was intended as a preparatory step to the design of psychometric surveys specific to the investigation of technological risks.

II. Objectives

The primary objectives of this work were to gain experience in administering this type of field survey and to develop computer programmes for data analysis. The Avoidance Response Test of Golant and Burton was selected because it was available to us in detail and had been already run with a group in Canada, thus allowing, at the same time, a limited cross-cultural comparison of the response to some risk situations.

III. Test Description

Respondents were given a test form listing the fifteen hazard situations of Table I (the German translations used are given in Table II) and were instructed to rank them in terms of their desire to avoid them. As in the Canadian sample, most of the respondents found three of the situations (telling a lie, tooth extraction, lightning and thunderstorm) as being trivial, leaving essentially twelve hazard situations to be ranked. No attempt was made to tell respondents what to think about specific hazards, e.g. severe or minor auto accident. They were told to respond to the items as presented without seeking further information.

Four of the situations may be described as physical hazards (thirst, illness, auto accident, being attacked and robbed), implying discomfort or injury to the person; another group contains social hazards (being disliked by someone you admire, public embarrassment, failing in school or job, loneliness), implying psychic (non-physical) discomfort or injury; the others are natural hazards (forest fire, earthquake, tornado, flood). Golant and Burton emphasised that, in speaking of social, physical or natural hazards, it must be kept in mind that only the specific hazards of Table I are being considered and it is not possible, from these studies, to speak of avoidance to these general categories of hazard.

Although the main emphasis was on the group response to the hazard situations, a limited effort was made to examine the effect of individual attributes upon responses. The Canadian study selected for this purpose the respondents' experience, or lack of it, with particular hazards, several socio-economic traits, and two personality dimensions. The Austrian study added the self-rated ability of subjects to imagine themselves in specific hazard situations.

IV Results[4]

The sample of this study consisted of 144 respondents, most of whom were either administrative employees or students in Vienna. Table III shows a breakdown by age, sex and occupation. The subjects expressed their rank preferences for avoiding the hazard situations of Table I. The initial rankings were distributed into five classes and frequency distributions were produced for each hazard (Table IV). Rankings of 1 to 6 were said to be representative of a respondent wanting to most avoid a specific hazard situation, making it possible to construct the overall hazard avoidance ranking of Table V. The rank size correlation coefficient for the total Canadian and Austrian samples was 0.62.

A. Respondents' Hazard Experience

Table VI gives the percentage of respondents who had, or had not, personally experienced specific hazard situations (here ranked in order of experience percentage, not avoidance response). The rank correlation for experience between the Austrian and Canadian samples was 0.86. In the Canadian study the relationship between hazard avoidance and experience (Tables V and VI) was examined and a correlation of -0.43 was found, suggesting the relationship between hazard avoidance and experience to be inverse. The Austrian results show a different result, namely a correlation of +0.08. The difference between the Austrian and Canadian samples is significant at the $\alpha = 0.01$ level.

To examine the experience-avoidance correlations more closely, Table VI was divided into experienced and inexperienced hazard respondents to form Tables VII and VIII and each of the situations was analysed on the basis of "greatest avoidance" as had been done earlier with the complete study sample. When the avoidance responses for experienced and inexperienced respondents are separated, Table IX is formed.

In the Canadian sample it may be noted that the rankings for avoidance of physical hazards are rather homogenous for the experienced and inexperienced group but there are larger differences for the social hazards and even more for the natural hazards. The Austrian sample showed a significant difference between experienced and inexperienced respondents only for the physical hazard "thirst" ($\alpha = 0.10$). The rank size correlations between the two sets of responses were 0.45 for the Canadian sample and 0.81 for the Austrian. In other words, in contrast to the Canadian results, experience was not an important variable in the responses of the Austrian sample.

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[4]For ease in making comparisons the analysis of data exactly follows that used in the Canadian study.

In Table X the Austrian and Canadian responses for experienced respondents are compared, as are those from inexperienced respondents. The agreement between the risk avoidance tendencies remains small with rank size correlation of 0.43 and 0.52 respectively.

B. Imaginability

Previous research at the University of Vienna [1, 4] in the field of attitude determination has indicated the importance of being able to imagine oneself in a given risk situation. Therefore, as the only departure from the Canadian study, subjects were asked to rate their own ability, on a three-step scale, to imagine themselves in each situation. These responses were then divided into the three groups indicated (see Tables XI, XII and XIII) and rankings based upon "greatest avoidance" were made as with the complete study sample.

Table XIV shows a comparison of the risk avoidance tendencies for those who rated the imagination of specific situations as "good" or "poor". The rank size correlation for these groups was 0.59 which indicates that, for the Austrian sample, the ability to imagine specific hazard situations seemed to be more important than actual experience.

C. Aggregated Hazard Comparisons

A further step in the evaluation was to consider the three types of hazard situations (physical, social and natural) as groups; that is, the responses for individual situations were treated cumulatively under the type of hazard:

1) physical hazards: thirst, illness, auto accident, being attacked and robbed;

2) social hazards: being disliked by someone you admire, public embarrassment, failing in school or job, loneliness;

3) natural hazards: forest fire, earthquake, tornado flood.

These data were then used to form hazard type rankings, based upon "greatest avoidance" as had been done with the individual hazard situations of the complete study sample (summarized in Table XV). The criterion used here to define "greatest avoidance" was the rank sum of the four specific situations found under each type of hazard (cumulative rank 10-24). In this case, for the Canadian sample, natural hazards were the most avoided type; in contrast, the physical hazards were most avoided in the Austrian group. (Cumulative percentages corresponding to cumulative rank 10-24, taken from Table XV, are shown below:)

	Canada	Austria
Physical hazards	36.9 %	56.9 %
Social hazards	31.6 %	27.1 %
Natural hazards	44.2 %	31.9 %

D. Effect of Sociological Variables

A breakdown of the Austrian data in term of sociological variables indicated, as might be expected, a relatively greater avoidance, among people under 26 years, for social hazards as compared to physical. The opposite was found for persons between the ages of 26 and 53. However, the only factor found significant at the 0.01 level was a greater risk avoidance tendency with respect to natural hazards for women than for men. These analyses are summarized in Table XVI. Socio-economic variables and personality dimensions (Eysenck Personality Inventory Test) were not found to be significant.

V. Concluding Discussion

The results of this comparative investigation must be interpreted with caution. In order to allow direct comparisons the questionnaire and methods used in the original Canadian study were strictly replicated-even in cases where different, perhaps better, techniques were available. With these limitations in mind a few tentative conclusions may be drawn.

The extent to which man seeks to avoid specific risk situations was found to be culturally dependent in this study. The overall rank correlation coefficient Canada-Austria was found to be 0.62. While in Austria a markedly increased avoidance response to physical-social hazards was observed, the Canadian avoidance response was strongest for natural hazards. This does not necessarily seem to be the result of geographical-geological differences since the rank size correlations between the two groups for persons having had personal experience with these hazard situations was found to be 0.86. Further, the effect of personal experience was seen to be much less important in the Austrian sample ($r = 0.81$) than in the Canadian ($r = 0.45$).

An important variable in the Austrian study (not investigated in the Canadian work) seemed to be the ability to imagine specific risk situations. The comparison between sub-groups reporting good, as opposed to poor, imaginability gave a rank correlation of 0.59. The relationship between actual experience and imaginability is conjecturally interesting--consider the case of nuclear power plant risk avoidance where imagination must substitute for experience.

In summary, no firm conclusions can be made with respect to the cultural dependence of risk avoidance based upon these limited studies. The trends indicated are interesting and might, perhaps, be confirmed by further testing. However, the experience gained through this survey has suggested some new directions and techniques for future work:

a) the development of culturally independent test items regarding specific risk situations that may be readily understood by naive test subjects;

b) an attempt at structure analysis of risk behaviour in order to determine the basic dimensions;

c) the use of paired comparisons and rating scales in one-dimensional sub-tests designed to gain a psychometrical understanding of risk attitudes.

The relationship between this research and the overall research programme of the Joint IAEA/IIASA Research Project has been presented in an earlier publication [3].

TABLE I

THE AVOIDANCE-RESPONSE TEST

HERE ARE FIFTEEN SITUATIONS -
READ THROUGH THE LIST -
DECIDE ON THE SITUATIONS YOU MOST WANT TO AVOID
Rank them 1 to 15 by order of avoidance. Use (1) for the situation you most want to avoid, and (15) for the situation you least want to avoid.

( ) THIRST
( ) TELLING A LIE
( ) BEING DISLIKED BY SOMEONE YOU ADMIRE
( ) FOREST FIRE
( ) EARTHQUAKE
( ) ILLNESS
( ) PUBLIC EMBARRASSMENT
( ) FAILING IN SCHOOL OR JOB
( ) AUTO ACCIDENT
( ) TORNADO
( ) TOOTH EXTRACTION
( ) LIGHTNING AND THUNDERSTORM
( ) LONELINESS
( ) FLOOD
( ) BEING ATTACKED AND ROBBED

NOW UNDERLINE ANY OF THE ABOVE SITUATIONS THAT YOU HAVE ACTUALLY EXPERIENCED.

TABLE II

GERMAN TRANSLATIONS USED IN THE AUSTRIAN RISK AVOIDANCE RESPONSE SURVEY

Canadian List	Austrian List
1. THIRST	1. DURST
2. TELLING A LIE	2. EINE LUEGE AUFTISCHEN
3. BEING DISLIKED BY SOMEONE YOU ADMIRE	3. VON EINER PERSON, DIE SIE BEWUNDERN, ABGELEHNT WERDEN
4. FOREST FIRE	4. WALDBRAND
5. EARTHQUAKE	5. ERDBEBEN
6. ILLNESS	6. KRANKHEIT
7. PUBLIC EMBARRASSMENT	7. VOR ANDEREN LEUTEN IN VERLEGENHEIT GERATEN
8. FAILING IN SCHOOL OR JOB	8. VERSAGEN IN DER SCHULE ODER IM BERUF
9. AUTO ACCIDENT	9. AUTOUNFALL
10. TORNADO	10. ORKAN
11. TOOTH EXTRACTION	11. EINEN ZAHN ZIEHEN LASSEN
12. LIGHTNING AND THUNDERSTORM	12. GEWITTERSTURM
13. LONELINESS	13. EINSAMKEIT
14. FLOOD	14. UEBERSCHWEMMUNG
15. BEING ATTACKED AND ROBBED	15. UEBERFALLEN UND BERAUBT WERDEN

TABLE III

AGE, SEX AND OCCUPATION OF RESPONDENTS

		Canada	Austria
Sex			
	male	59 %	69 %
	female	41 %	31 %
Occupation			
	employees	68 %	63 %
	students	30 %	36 %
	others	2 %	1 %
Age			
	under 26	41 %	42 %
	26 - 35	36 %	31 %
	36 - 45	17 %	8 %
	over 45	6 %	20 %

TABLE IV

AVOIDANCE DISTRIBUTIONS BY INDIVIDUAL HAZARD FOR THE TOTAL AUSTRIAN SAMPLE

Key: 1 - 3 Greatest Avoidance

PHYSICAL HAZARDS

	Thirst			Illness			Auto Accident			Attacked		
Class	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	21	14.6	14.6	87	60.4	60.4	60	41.7	41.7	38	26.4	26.4
4 - 6	25	17.4	31.9	27	18.8	79.2	40	27.8	69.4	51	35.4	61.8
7 - 9	38	26.4	58.3	16	11.1	90.3	28	19.4	88.9	34	23.6	85.4
10 -12	31	21.5	79.9	9	6.3	96.5	14	9.7	98.6	13	9.0	94.4
13 -15	29	20.1	100.0	5	3.5	100.0	2	1.4	100.0	8	5.6	100.0

SOCIAL HAZARDS

	Being Disliked			Embarrassment			Failing			Loneliness		
Class	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	20	13.9	13.9	11	7.6	7.6	27	18.8	18.8	41	28.5	28.5
4 - 6	21	14.6	28.5	31	21.5	29.2	43	29.9	48.6	30	20.8	49.3
7 - 9	26	18.1	46.5	28	19.4	48.6	26	18.1	66.7	29	20.1	69.4
10 -12	39	27.1	73.6	37	25.7	74.3	30	20.8	87.5	20	13.9	83.3
13 -15	38	26.4	100.0	37	25.7	100.0	18	12.5	100.0	24	16.7	100.0

NATURAL HAZARDS

	Forest Fire			Earthquake			Tornado			Flood		
Class	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	26	18.1	18.1	50	34.7	34.7	20	13.9	13.9	17	11.8	11.8
4 - 6	33	22.9	41.0	27	18.8	53.5	30	20.8	34.7	46	31.9	43.7
7 - 9	32	22.2	63.2	30	20.8	74.3	39	27.1	61.8	34	23.6	67.4

contd.

4 - 6	33	22.9	41.0	27	18.8	93.1	30	20.8	54.7	46	31.9	43.7
7 - 9	32	22.2	63.2	30	20.8	74.3	39	27.1	61.8	34	23.6	67.4

contd.

TABLE IV contd.

Class	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
10 -12	35	24.3	87.5	27	18.8	93.1	31	21.5	83.3	31	21.5	88.9
13 -15	18	12.5	100.0	10	6.9	100.0	24	16.7	100.0	16	11.1	100.0

TRIVIAL HAZARDS

Class	Lying			Tooth Extraction			Thunderstorm		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	8	5.6	5.6	6	4.2	4.2	3	2.1	2.1
4 - 6	7	4.9	10.4	12	8.3	12.5	10	6.9	9.0
7 - 9	20	13.9	24.3	18	12.5	25.0	33	22.9	31.9
10 -12	39	27.1	51.4	35	24.3	49.3	42	29.2	61.1
13 -15	70	48.6	100.0	73	50.7	100.0	56	38.9	100.0

TABLE V

RANKING OF HAZARDS BASED ON RESPONDENTS (TOTAL SAMPLE)
GREATEST AVOIDANCE MEASURES (1-6)

	AUSTRIA		CANADA		
	%	Rank	%	Rank	Differences
Thirst	31.9	(10)	26.7	(12)	(+2)
Illness	79.2	(1)	46.1	(7)	(-6)
Auto Accident	69.4	(2)	77.7	(1)	(+1)
Attacked	61.8	(3)	61.6	(2)	(+1)
Being Disliked	28.5	(12)	35.0	(11)	(+1)
Embarrassment	29.2	(11)	35.4	(10)	(+1)
Failing	48.6	(6)	50.9	(6)	(0)
Loneliness	49.3	(5)	38.4	(8)	(-3)
Forest Fire	41.0	(8)	51.9	(4)	(+4)
Earthquake	53.5	(4)	51.5	(5)	(-1)
Tornado	34.7	(9)	53.4	(3)	(+6)
Flood	43.7	(7)	35.9	(9)	(-2)

$r = 0.62$

TABLE VI

HAZARD EXPERIENCE OF RESPONDENTS BY SITUATION

Experience with:	AUSTRIA %	AUSTRIA Rank	CANADA %	CANADA Rank	Differences
Thirst	70.8	(3)	62.1	(3)	+ 8.7 %
Illness	84.7	(1)	80.6	(1)	+ 4.1 %
Auto Accident	59.0	(4)	61.7	(4)	- 2.7 %
Attacked	3.5	(12)	5.3	(12)	- 1.8 %
Being Disliked	42.0	(7)	43.7	(6)	- 2.7 %
Embarrassment	76.4	(2)	52.4	(5)	+24.0 %
Failing	39.6	(8)	33.0	(7)	+ 6.6 %
Loneliness	52.8	(5)	73.8	(2)	-21.0 %
Forest Fire	9.7	(11)	14.8	(8)	- 5.1 %
Earthquake	51.4	(6)	13.1	(9)	+38.3 %
Tornado	11.1	(10)	9.2	(11)	+ 1.9 %
Flood	21.5	(9)	13.1	(10)	+ 8.4 %

$r = 0.86$

TABLE VII

EXPERIENCE — FREQUENCY DISTRIBUTIONS OF EXPERIENCED HAZARD PARTICIPANTS

Key: 1-3 Class (Greatest Avoidance)

PHYSICAL HAZARDS

Class	Thirst No.	Thirst %	Thirst Cum.%	Illness No.	Illness %	Illness Cum.%	Auto Accident No.	Auto Accident %	Auto Accident Cum.%	Attacked No.	Attacked %	Attacked Cum.%
1 - 3	10	9.8	9.8	72	59.0	59.0	38	44.7	44.7	3	60.0	60.0
4 - 6	15	14.7	24.5	23	18.9	77.9	25	29.4	74.1	0	0.0	60.0
7 - 9	27	26.5	51.0	15	12.3	90.2	15	17.6	91.8	1	20.0	80.0
10 -12	25	24.5	75.5	7	5.7	95.9	7	8.2	100.0	1	20.0	100.0
13 -15	25	24.5	100.0	5	4.1	100.0	0	0.0	100.0	0	0.0	100.0

SOCIAL HAZARDS

Class	Being Disliked No.	Being Disliked %	Being Disliked Cum.%	Embarrassment No.	Embarrassment %	Embarrassment Cum.%	Failing No.	Failing %	Failing Cum.%	Loneliness No.	Loneliness %	Loneliness Cum.%
1 - 3	10	16.9	16.9	10	9.1	9.1	9	15.8	15.8	29	38.2	38.2
4 - 6	12	20.3	37.3	26	23.6	32.7	17	29.8	45.6	10	13.2	51.3
7 - 9	9	15.3	52.5	19	17.3	50.0	9	15.8	61.4	14	18.4	69.7
10 -12	16	27.1	79.7	27	24.5	74.5	14	24.6	86.0	9	11.8	81.6
13 -15	12	20.3	100.0	28	25.5	100.0	8	14.0	100.0	14	18.4	100.0

NATURAL HAZARDS

Class	Forest Fire No.	Forest Fire %	Forest Fire Cum.%	Earthquake No.	Earthquake %	Earthquake Cum.%	Tornado No.	Tornado %	Tornado Cum.%	Flood No.	Flood %	Flood Cum.%
1 - 3	2	14.3	14.3	27	36.5	36.5	2	12.5	12.5	3	9.7	9.7
4 - 6	2	14.3	28.6	14	18.9	55.4	0	0.0	12.5	9	29.0	38.7
7 - 9	4	28.6	57.1	14	18.9	74.3	4	25.0	37.5	5	16.1	54.8
10 -12	3	21.4	78.6	11	14.9	89.2	6	37.5	75.0	7	22.6	77.4
13 -15	3	21.4	100.0	8	10.8	100.0	4	25.0	100.0	7	22.6	100.0

contd.

TABLE VII contd.

TRIVIAL HAZARDS

Class	Lying			Tooth Extraction			Thunderstorm		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	5	4.5	4.5	5	4.0	4.0	2	2.0	2.0
4 - 6	6	5.4	9.8	10	8.0	12.0	4	3.9	5.9
7 - 9	12	10.7	20.5	15	12.0	24.0	22	21.6	27.5
10 -12	32	28.6	49.1	28	22.4	46.4	31	30.4	57.8
13 -15	57	50.9	100.0	67	53.6	100.0	43	42.2	100.0

TABLE VIII

FREQUENCY DISTRIBUTIONS OF INEXPERIENCED HAZARD PARTICIPANTS

AUSTRIAN SAMPLE

Key: 1-3 Class (Greatest Avoidance)

PHYSICAL HAZARDS

	Thirst			Illness			Auto Accident			Attacked		
Class	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	11	26.8	26.8	15	68.2	68.2	22	37.3	37.3	35	25.2	25.2
4 - 6	9	22.0	48.8	4	18.2	86.4	15	25.4	62.7	51	36.7	61.9
7 - 9	11	26.8	75.6	1	4.5	90.9	13	22.0	84.7	33	23.7	85.6
10 -12	6	14.6	90.2	2	9.1	100.0	7	11.9	96.6	12	8.6	94.2
13 -15	4	9.8	100.0	0	0.0	100.0	2	3.4	100.0	8	5.8	100.0

SOCIAL HAZARDS

	Being Disliked			Embarrassment			Failing			Loneliness		
Class	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	10	11.8	11.8	1	2.9	2.9	18	20.7	20.7	12	17.6	17.6
4 - 6	9	10.6	22.4	5	14.7	17.6	26	29.9	50.6	30	29.4	47.1
7 - 9	17	20.0	42.4	9	26.5	44.1	17	19.5	70.1	15	22.1	69.1
10 -12	23	27.1	69.4	10	29.4	73.5	16	18.4	88.5	11	16.2	85.3
13 -15	26	30.6	100.0	9	26.5	100.0	10	11.5	100.0	10	14.7	100.0

NATURAL HAZARDS

	Forest Fire			Earthquake			Tornado			Flood		
Class	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	24	18.5	18.5	23	32.9	32.9	18	14.1	14.1	14	12.4	12.4
4 - 6	31	23.8	42.3	13	18.6	51.4	30	23.4	37.5	37	32.7	45.1
7 - 9	28	21.5	63.8	16	22.9	74.3	35	27.3	64.8	29	25.7	70.8
10 -12	32	24.6	88.5	16	22.9	97.1	25	19.5	84.4	24	21.2	92.0
13 -15	15	11.5	100.0	2	2.9	100.0	20	15.6	100.0	9	8.0	100.0

contd.

TABLE VIII contd.

TRIVIAL HAZARDS

Class	Lying			Tooth Extraction			Thunderstorm		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	3	9.7	9.7	1	5.3	5.3	1	2.4	2.4
4 - 6	1	3.2	12.9	2	10.5	15.8	6	14.3	16.7
7 - 9	8	25.8	38.7	3	15.8	31.6	11	26.2	42.9
10 -12	7	22.6	61.3	7	36.8	68.4	11	26.2	69.0
13 -15	12	38.7	100.0	6	31.6	100.0	13	31.0	100.0

TABLE IX

RANKING OF HAZARDS FOR EXPERIENCED AND INEXPERIENCED RESPONDENTS

(AUSTRIAN AND CANADIAN SAMPLES)

GREATEST AVOIDANCE MEASURES (1-6)

		AUSTRIA					CANADA				
		Experienced		Inexperienced			Experienced		Inexperienced		
		%	Rank	%	Rank	Difference	%	Rank	%	Rank	Difference
Phys.	Thirst	24.5	(11)	48.8	(6)	(+5)	20.4	(12)	37.1	(10)	(+2)
	Illness	77.9	(1)	86.4	(1)	(0)	45.2	(5)	50.0	(5)	(0)
	Auto Accident	74.1	(2)	62.7	(2)	(0)	71.7	(1)	87.3	(1)	(0)
	Attacked	60.0	(3)	61.0	(3)	(0)	45.5	(4)	62.5	(2)	(+2)
Soc.	Being Disliked	37.3	(8)	22.4	(11)	(-3)	37.8	(7)	32.8	(11)	(-4)
	Embarrassment	32.7	(9)	17.6	(12)	(-3)	32.4	(9)	38.8	(8)	(+1)
	Failing	45.6	(6)	50.6	(5)	(+1)	58.8	(3)	47.1	(7)	(-4)
	Loneliness	51.3	(5)	47.1	(7)	(-2)	40.8	(6)	31.5	(12)	(-6)
Nat.	Forest Fire	28.6	(10)	42.3	(9)	(+1)	69.0	(2)	49.2	(6)	(-4)
	Earthquake	55.4	(4)	51.4	(4)	(0)	29.6	(10)	54.8	(4)	(+6)
	Tornado	12.5	(12)	37.5	(10)	(+2)	36.9	(8)	55.0	(3)	(+5)
	Flood	38.7	(7)	45.1	(8)	(+1)	22.2	(11)	38.8	(9)	(+2)

r = 0.81 r = 0.45

TABLE X

COMPARISON OF HAZARD RANKINGS FOR EXPERIENCED AND INEXPERIENCED RESPONDENTS

(AUSTRIAN and CANADIAN Samples)

		Experienced Respondents			Inexperienced Respondents		
		AUSTRIA Rank	CANADA Rank	Difference	AUSTRIA Rank	CANADA Rank	Difference
Phys.	Thirst	(11)	(12)	(-1)	(6)	(10)	(-4)
	Illness	(1)	(5)	(-4)	(1)	(5)	(-4)
	Auto Accident	(2)	(1)	(+1)	(2)	(1)	(+1)
	Attacked	(3)	(4)	(-1)	(3)	(2)	(+1)
Soc.	Being Disliked	(8)	(7)	(+1)	(11)	(11)	(0)
	Embarrassment	(9)	(9)	(0)	(12)	(8)	(+4)
	Failing	(6)	(3)	(+3)	(5)	(7)	(-2)
	Loneliness	(5)	(6)	(-1)	(7)	(12)	(-5)
Nat.	Forest Fire	(10)	(2)	(+8)	(9)	(6)	(+3)
	Earthquake	(4)	(10)	(-6)	(4)	(4)	(0)
	Tornado	(12)	(8)	(+4)	(10)	(3)	(+7)
	Flood	(7)	(11)	(-4)	(8)	(9)	(-1)

r = 0.43

r = 0.52

IMAGINATION: GOOD

TABLE XI

DISTRIBUTION OF AVOIDANCE TENDENCY BY SITUATION

(AUSTRIAN SAMPLE)

Greatest Avoidance Tendency (1-3)

PHYSICAL HAZARDS

Class	Thirst			Illness			Auto Accident			Attacked		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	4	23.5	23.5	4	40.0	40.0	3	33.3	33.3	10	20.4	20.4
4 - 6	4	23.5	47.1	3	30.0	70.0	2	22.2	55.6	17	34.7	55.1
7 - 9	2	11.8	58.8	2	20.0	90.0	4	44.4	100.0	15	30.6	85.7
10 -12	2	11.8	70.6	1	10.0	100.0	0	0.0	100.0	4	8.2	93.9
13 -15	5	29.4	100.0	0	0.0	100.0	0	0.0	100.0	3	6.1	100.0

SOCIAL HAZARDS

Class	Being Disliked			Embarrassment			Failing			Loneliness		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	1	4.3	4.3	0	0.0	0.0	7	24.1	24.1	2	7.1	7.1
4 - 6	2	8.7	13.0	4	23.5	23.5	9	31.0	55.2	7	25.0	32.1
7 - 9	6	26.1	39.1	2	11.8	35.3	4	13.8	69.0	5	17.9	50.0
10 -12	7	30.4	69.6	5	29.4	64.7	5	17.2	86.2	8	28.6	78.6
13 -15	7	30.4	100.0	6	35.3	100.0	4	13.8	100.0	6	21.4	100.0

NATURAL HAZARDS

Class	Forest Fire			Earthquake			Tornado			Flood		
	No.	%	Cum.%	No.	%	Cum.%	No	%	Cum.%	No.	%	Cum.%
1 - 3	4	12.5	12.5	9	33.3	33.3	5	11.1	11.1	4	13.3	13.3
4 - 6	5	15.6	28.1	6	22.2	55.6	13	28.9	40.0	7	23.3	36.7
7 - 9	6	18.8	46.9	8	29.6	85.2	13	28.9	68.9	5	16.7	53.3
10 -12	11	34.4	81.3	2	7.4	92.6	9	20.0	88.9	10	33.3	86.7
13 -15	6	18.8	100.0	2	7.4	100.0	5	11.1	100.0	4	13.3	100.0

contd.

TABLE XI contd.

TRIVIAL HAZARDS

Class	Lying			Tooth Extraction			Thunderstorm		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
4 - 6	0	0.0	0.0	0	0.0	0.0	2	28.6	28.6
7 - 9	1	16.7	16.7	0	0.0	0.0	2	28.6	57.1
10 -12	2	33.3	50.0	0	0.0	0.0	1	14.3	71.4
13 -15	3	50.0	100.0	3	100.0	100.0	2	28.6	100.0

IMAGINATION: MEDIUM

TABLE XII

DISTRIBUTION OF AVOIDANCE TENDENCY BY SITUATION

(AUSTRIAN SAMPLE)

Greatest Avoidance Tendency (1-3)

PHYSICAL HAZARDS

Class	Thirst			Illness			Auto Accident			Attacked		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	5	26.3	26.3	10	71.4	71.4	9	45.0	45.0	6	15.4	15.4
4 - 6	4	21.1	47.4	0	0.0	71.4	3	15.0	60.0	15	38.5	53.8
7 - 9	2	10.5	57.9	2	14.3	85.7	6	30.0	90.0	12	30.8	84.6
10 -12	5	26.3	84.2	1	7.1	92.9	2	10.0	100.0	5	12.8	97.4
13 -15	3	15.8	100.0	1	7.1	100.0	0	0.0	100.0	1	2.6	100.0

SOCIAL HAZARDS

Class	Being Disliked			Embarrassment			Failing			Loneliness		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	5	12.5	12.5	0	0.0	0.0	6	16.2	16.2	7	23.3	23.3
4 - 6	6	15.0	27.5	3	11.1	11.1	16	43.2	59.5	9	30.0	53.3
7 - 9	8	20.0	47.5	7	25.9	37.0	6	16.2	75.7	5	16.7	70.0
10 -12	10	25.0	72.5	9	33.3	70.4	7	18.9	94.6	4	13.3	83.3
13 -15	11	27.5	100.0	8	29.6	100.0	2	5.4	100.0	5	16.7	100.0

NATURAL HAZARDS

Class	Forest Fire			Earthquake			Tornado			Flood		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	6	15.8	15.8	10	35.7	35.7	8	16.7	16.7	4	10.0	10.0
4 - 6	10	26.3	42.1	1	3.6	39.3	9	18.8	35.4	14	35.0	45.0
7 - 9	9	23.7	65.8	5	17.9	57.1	11	22.9	58.3	12	30.0	75.0
10 -12	6	15.8	81.6	10	35.7	92.9	11	22.9	81.2	8	20.0	95.0
13 -15	7	18.4	100.0	2	7.1	100.0	9	18.8	100.0	2	5.0	100.0

contd.

TABLE XII contd.

TRIVIAL HAZARDS

Class	Lying			Tooth Extraction			Thunderstorm		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	7	10.3	10.3	1	7.7	7.7	1	4.5	4.5
4 - 6	3	4.4	14.7	2	15.4	23.1	1	4.5	9.1
7 - 9	10	14.7	29.4	3	23.1	46.2	7	31.8	40.9
10 -12	17	25.0	54.4	2	15.4	61.5	6	27.3	68.2
13 -15	31	45.6	100.0	5	38.5	100.0	7	31.8	100.0

IMAGINATION: POOR

TABLE XIII

DISTRIBUTION OF AVOIDANCE TENDENCY BY SITUATION

(AUSTRIAN SAMPLE)

Greatest Avoidance Tendency (1-3)

PHYSICAL HAZARDS

Class	Thirst No.	%	Cum.%	Illness No.	%	Cum.%	Auto Accident No.	%	Cum.%	Attacked No.	%	Cum.%
1 - 3	12	11.1	11.1	73	60.8	60.8	48	41.7	41.7	22	39.3	39.3
4 - 6	17	15.7	26.9	24	20.0	80.8	35	30.4	72.2	19	33.9	73.2
7 - 9	34	31.5	58.3	12	10.0	90.8	18	15.7	87.8	7	12.5	85.7
10 -12	24	22.2	80.6	7	5.8	96.7	12	10.4	98.3	4	7.1	92.9
13 -15	21	19.4	100.0	4	3.3	100.0	2	1.7	100.0	4	7.1	100.0

SOCIAL HAZARDS

Class	Being Disliked No.	%	Cum.%	Embarrassment No.	%	Cum.%	Failing No.	%	Cum.%	Loneliness No.	%	Cum.%
1 - 3	14	17.3	17.3	11	11.0	11.0	14	17.9	17.9	32	37.2	37.2
4 - 6	13	16.0	33.3	24	24.0	35.0	18	23.1	41.0	14	16.3	53.5
7 - 9	12	14.8	48.1	19	19.0	54.0	16	20.5	61.5	19	22.1	75.6
10 -12	22	27.2	75.3	23	23.0	77.0	18	23.1	84.6	8	9.3	84.9
13 -15	20	24.7	100.0	23	23.0	100.0	12	15.4	100.0	13	15.1	100.0

NATURAL HAZARDS

	Forest Fire			Earthquake			Tornado			Flood		
1 - 3	16	21.6	21.6	31	34.8	34.8	7	13.7	13.7	9	12.2	12.2
4 - 6	18	24.3	45.9	20	22.5	57.3	8	15.7	29.4	25	33.8	45.9
7 - 9	17	23.0	68.9	17	19.1	76.4	15	29.4	58.8	17	23.0	68.9
10 -12	18	24.3	93.2	15	16.9	93.3	11	21.6	80.4	13	17.6	86.5
13 -15	5	6.8	100.0	6	6.7	100.0	10	19.6	100.0	10	13.5	100.0

contd.

TABLE XIII contd.

TRIVIAL HAZARDS

Class	Lying			Tooth Extraction			Thunderstorm		
	No.	%	Cum.%	No.	%	Cum.%	No.	%	Cum.%
1 - 3	1	1.4	1.4	5	3.9	3.9	2	1.7	1.7
4 - 6	4	5.7	7.1	10	7.8	11.7	7	6.1	7.8
7 - 9	9	12.9	20.0	15	11.7	23.4	24	20.9	28.7
10 -12	20	28.6	48.6	33	25.8	49.2	35	30.4	59.1
13 -15	36	51.4	100.0	65	50.8	100.0	47	40.9	100.0

TABLE XIV

RANKING OF HAZARDS BY IMAGINABILITY (GOOD VS. POOR)

AUSTRIAN SAMPLE

	Situation	IMAGINATION Good	Poor	
		Rank	Rank	Difference
Phys.	Thirst	(6)	(12)	(-6)
	Illness	(1)	(1)	(0)
	Auto Accident	(2.5)	(3)	(-0.5)
	Attacked	(5)	(2)	(+3)
Soc.	Being Disliked	(13)	(10)	(+3)
	Embarrassment	(12)	(9)	(+3)
	Failing	(4)	(8)	(-4)
	Loneliness	(9)	(5)	(+4)
Nat.	Forest Fire	(11)	(6.5)	(+4.5)
	Earthquake	(2.5)	(4)	(-1.5)
	Tornado	(7)	(11)	(-4)
	Flood	(8)	(6.5)	(+1.5)
Triv.	Lying	(14.5)	(15)	(-0.5)
	Tooth Extraction	(14.5)	(13)	(+1.5)
	Thunderstorm	(10)	(14)	(-4)

TABLE XV

CUMULATIVE DISTRIBUTION OF AVOIDANCE TENDENCY BY HAZARD TYPE (AUSTRIAN SAMPLE)

PHYSICAL HAZARDS				SOCIAL HAZARDS				NATURAL HAZARDS			
Class	No.	%	Cum.%	Class	No.	%	Cum.%	Class	No.	%	Cum.%
10-14	12	8.3	8.3	10-14	10	6.9	6.9	10-14	15	10.4	10.4
15-19	39	27.1	35.4	15-19	6	4.2	11.1	15-19	20	13.9	24.3
20-24	31	21.5	56.9	20-24	23	16.0	27.1	20-24	11	7.6	31.9
25-29	31	21.5	78.5	25-29	17	11.8	38.9	25-29	23	16.0	47.9
30-34	20	13.9	92.4	30-34	16	11.1	50.0	30-34	27	18.8	66.7
35-39	9	6.3	98.6	35-39	28	19.4	69.4	35-39	11	7.6	74.3
40-44	0	0.0	98.6	40-44	22	15.3	84.7	40-44	22	15.3	89.6
45-49	2	1.4	100.0	45-49	16	11.1	95.8	45-49	12	8.3	97.9
50-54	0	0.0	100.0	50-54	6	4.2	100.0	50-54	3	2.1	100.0

TABLE XVI

BREAKDOWN OF AVOIDANCE TENDENCIES BY HAZARD TYPE AND SOCIO-LOGICAL VARIABLES

AUSTRIAN SAMPLE

		PHYS. HAZARD		SOC. HAZARD		NAT. HAZARD	
	e	o	d	o	d	o	d
Sex							
male	68.75	75.82	7.07	76.09	7.34	54.00	-14.75*
female	51.25	24.18	-7.07	23.91	-7.34	46.00	14.75*
Occupation							
Employees	62.50	65.93	3.43	56.52	-5.98	60.00	-2.50
Students	36.11	31.78	-4.24	43.48	7.37	40.00	3.89
Others	1.39	2.20	0.81	0.0	-1.39	0.0	-1.39
Age							
under 26	41.67	32.97	-8.70	52.17	10.51	44.00	2.33
26 - 35	30.56	35.16	4.61	21.74	-8.82	28.00	-2.56
36 - 45	7.64	8.79	1.15	8.70	1.06	4.00	-3.64
over 45	20.14	23.08	2.94	17.39	2.75	24.00	3.86

*Significant at the 1 % level.

e = Percent of the occurrence frequency per social category.

o = Observed occurrence frequency for a strong avoidance tendency per social category with regard to physical, social and natural hazards.

d = Differences between expected and observed occurrence frequency.

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