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Motion Sickness History Questionnaire

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UNIVERSITY OF SOUTHAMPTON

INSTITUTE OF SOUND AND VIBRATION RESEARCH

HUMAN SCIENCES GROUP

Motion sickness history questionnaire

by

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Authorised for issue by
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Summary

A motion sickness susceptibility questionnaire and a means of scoring responses to the questionnaire are presented. The questionnaire records individual exposure to motion in various forms of transport (cars, buses, coaches, small boats, ships, aeroplanes, trains) and the occurrence of illness and vomiting in these forms of transport during the past year. Various symptoms (feeling hot or sweating, headaches, change of skin colour, mouth watering, drowsiness, dizziness, nausea, vomiting) ever experienced in these forms of transport are obtained, in addition to subject avoidance of the forms of transport and a self-rating of susceptibility to motion sickness. The questionnaire responses are used to determine various measures of motion exposure and susceptibility to motion sickness (i.e. travel frequency in the past year, illness frequency while travelling in past year, vomiting frequency in past year, illness susceptibility in past year, vomiting susceptibility in past year, total susceptibility to vomiting, total susceptibility to motion sickness, susceptibility to motion sickness in land transport, susceptibility to motion sickness in non-land transport). The questionnaire has been used in various experimental studies to allow for individual variations in susceptibility to motion sickness when selecting subjects for experimental investigations. The questionnaire has also been used to relate sickness caused by specific laboratory stimuli to subject susceptibility to motion sickness in various forms of transport. This report also presents an illness rating scale and a symptom checklist used in laboratory experiments of motion sickness.

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Appendix 1 Motion sickness susceptibility questionnaire

Appendix 2: Example of completed questionnaire

1. Introduction

Susceptibility to motion sickness varies widely between individuals. Studies of motion sickness are helped by knowing the susceptibility of individual subjects relative to a larger group of subjects. This may be achieved by quantifying individual experience of motion sickness, taking account of the number of occasions in which the individual has been exposed to motion in commonly provocative situations.

A motion sickness susceptibility questionnaire was devised and tested by Reid (1991). This report presents this questionnaire, and a means of scoring the questionnaire, that has been used in the Institute of Sound and Vibration Research since 1991.

The method described in this report has been employed in various investigations, including studies by Holmes (1996, 1997, 1998), Howarth (1999), Howarth, Martino and Griffin (1999), Lobb (1999), Mills and Griffin (2000), Webb (1997, 1998, 1999), Woodman and Griffin (1997).

2. Motion sickness history questionnaire

The questionnaire contains brief instructions and an initial section on personal details, including age, weight and height. This is followed by 12 questions on experience of motion sickness while travelling in seven forms of transport, a question asking for a self-rating of motion sickness susceptibility relative to other people, and two questions about past and present health. The questionnaire is shown in Appendix 1. Appendix 2 shows an example of a completed questionnaire.

3. Assessment of measures of susceptibility

Nine measures relating to motion sickness susceptibility have been calculated from the questionnaire (see Table 1). A worked example of each measure is provided in this Section, using the data in the completed questionnaire shown in the Appendix 2.

The calculations require the assignment of one score (an integer value) to each response column of Questions 1 to 13. The score ranges are shown in Table 2.

The nine measures of susceptibility may be used to assign subjects participating in motion sickness experiments to groups such that there is no difference in the susceptibility between groups. The susceptibility measures also provide an indication of which subjects may become ill with certain motions. For example, a high value of M_{land} may indicate that a subject is more likely to become ill when exposed to motions of the type experienced in land transport (cars, buses, coaches and trains).

Table 1 The nine measures relating to motion sickness susceptibility

Measure	Symbol	Section
Travel frequency in past year	$T_{(yr.)}$	3.1
Illness frequency while travelling in past year	$I_{travel(yr.)}$	3.2
Vomiting frequency while travelling in past year	$V_{travel(yr.)}$	3.3
Illness susceptibility in transport in past year	$I_{susc.(yr.)}$	3.4
Vomiting susceptibility in transport in past year	$V_{susc.(yr.)}$	3.5
Total susceptibility to vomiting	V_{total}	3.6
Total susceptibility to motion sickness	M_{total}	3.7
Susceptibility to motion sickness in land transport	M_{land}	3.8
Susceptibility to motion sickness in non-land transport	M_{nland}	3.9

Motion sickness susceptibility measures calculated from questionnaire responses may therefore be correlated with illness ratings (see Section 5) and total symptom scores (see Section 6) obtained during motion sickness experiments.

3.1 Travel frequency in the past year, $T_{(yr.)}$

The travel frequency in the past year, $T_{(yr.)}$, is determined from responses to Question 1. For each mode of transport, a 'travel frequency score' (S_T) between 0 and 6 is assigned which depends on the column ticked (frequency of travel). The value of $T_{(yr.)}$ is then determined from the sum of the scores:

$$T_{(yr.)}=\sum S_T$$

Table 2 Score ranges for questions 1 to 13.

Question Number	Score range
Question 1	0 (never) to 6 (256+)
Questions 2 and 3	0 (never) to 6 (16+)
Questions 4 to 10 and 12	0 (never) to 3 (always)
Question 11	0 (no), 1 (yes)
Question 13	-2 (much less than average) to 2 (much more than average)

3.1.1 Worked example of $T_{(yr.)}$

Using the example responses to Question 1, as shown in Appendix 2, the travel frequency scores are shown in Table 3.

$$\text{Therefore, } T_{(yr.)} = \sum S_T$$

$$= 6+4+2+0+1+1+3$$

$$= 17$$

3.2 Illness frequency while travelling in the past year, $I_{travel(yr.)}$

Responses to Question 2 are used to determine the 'illness frequency while travelling in the past year', $I_{travel(yr.)}$. For each mode of transport, an illness frequency score (S_I) between 0 and 6 is assigned, depending on the column ticked (frequency of feeling ill). $I_{travel(yr.)}$ is then determined from the sum of scores:

$$I_{travel(yr.)} = \sum S_I$$

Table 3 Travel frequency scores.

Transport Mode	Score, S_T
cars	6
buses	4
coaches	2
small boats	0
ships	1
aeroplanes	1
trains	3

Table 4 Illness frequency scores.

Transport Mode	Score, S_I
cars	6
buses	4
coaches	1
small boats	0
ships	1
aeroplanes	0
trains	0

3.2.1 Worked example of $I_{travel(yr.)}$

Using the example responses to Question 2, as shown in Appendix 2, the illness frequency scores are shown in Table 4.

$$\text{Therefore, } I_{travel(yr.)} = \sum S_I$$

$$= 6+4+1+0+1+0+0$$

$$= 12$$

3.3 *Vomiting frequency while travelling in the past year, $V_{travel(yr.)}$*

The responses to Question 3 are used to determine the 'vomiting frequency while travelling in the past year', $V_{travel(yr.)}$. For each mode of transport, a vomiting frequency score (S_V) between 0 and 6 is assigned depending on the column ticked (frequency of vomiting). $V_{travel(yr.)}$ is then determined from the sum of scores:

$$V_{travel(yr.)} = \sum S_V$$

3.3.1 Worked example of $V_{travel(yr.)}$

Using the example responses to Question 3, as shown in Appendix 2, the vomiting frequency scores are shown in Table 5.

$$\text{Therefore, } V_{travel(yr.)} = \sum S_V$$

$$= 1+0+0+0+1+0+0$$

$$= 2$$

Table 5 Vomiting frequency scores.

Transport Mode	Score, S_V
cars	1
buses	0
coaches	0
small boats	0
ships	1
aeroplanes	0
trains	0

3.4 Illness susceptibility in transport in the past year, $I_{susc.(yr.)}$

Responses to Questions 1 and 2 are used to determine the 'illness susceptibility in transport in past year', $I_{susc.(yr.)}$. For each mode of transport, the illness frequency scores (S_I) from Question 2 (see Section 3.2) are divided by the travel frequency scores (S_T) from Question 1 (see Section 3.1). $I_{susc.(yr.)}$ is then determined from the mean of these ratios:

$$I_{susc.(yr.)} = \frac{\sum (S_I / S_T)}{N}$$

where N is the number of modes of transport in which respondents have travelled in the past year ($0 \leq N \leq 7$). If respondents have not travelled in one of the modes of transport, scores for this mode are not included in the calculation of the mean. Possible values of $I_{susc.(yr.)}$ range from 0 to 1.67.

3.4.1 Worked example of $I_{susc.(yr.)}$

Using the example responses to Questions 1 and 2, as shown in Appendix 2, the ratio of the illness frequency score to the travel frequency score, S_I/S_T for each mode of transport is shown in Table 6.

$$\text{Therefore, } I_{susc.(yr.)} = \frac{\sum (S_I / S_T)}{N}$$

$$= \frac{(1.0 + 1.0 + 0.5 + 0.0 + 1.0 + 0.0 + 0.0)}{6}$$

$$= \frac{3.5}{6}$$

$$= 0.583$$

Table 6 Ratio of the illness frequency score to the travel frequency score, S_I/S_T

Transport Mode	Score, S_I	Score, S_T	S_I/S_T
cars	6	6	1.0
buses	4	4	1.0
coaches	1	2	0.5
small boats	0	0	0.0
ships	1	1	1.0
aeroplanes	0	1	0.0
trains	0	3	0.0

3.5 Vomiting susceptibility in transport in the past year, $V_{susc.(yr.)}$

Responses to Questions 1 and 3 are used to determine the 'vomiting susceptibility in transport in past year', $V_{susc.(yr.)}$. For each mode of transport, the vomiting frequency scores (S_V) from Question 3 (see Section 3.3) are divided by the travel frequency scores (S_T) from Question 1 (see Section 3.1). $V_{susc.(yr.)}$ is determined from the mean of these ratios:

$$V_{susc.(yr.)} = \frac{\sum (S_V / S_T)}{N}$$

where N is the number of modes of transport in which respondents have travelled in the past year ($0 \quad N \quad 7$). If respondents have not travelled in one of the modes of transport, scores for this mode are not included in the calculation of the mean. Possible values of $V_{susc.(yr.)}$ range from 0 to 1.67.

3.5.1 Worked example of $V_{susc.(yr.)}$

Using the example responses to Questions 1 and 3, as shown in Appendix 2, the ratio of the vomiting frequency score to the travel frequency score, S_V/S_T for each mode of transport is shown in Table 7.

$$\text{Therefore, } V_{susc.(yr.)} = \frac{\sum (S_V / S_T)}{N}$$

$$= \frac{(0.167 + 0.0 + 0.0 + 0.0 + 1.0 + 0.0 + 0.0)}{6}$$

$$= \frac{1.167}{6}$$

$$= 0.195$$

Table 7 Ratio of the vomiting frequency score to the travel frequency score: S_V/S_T

Transport Mode	Score, S_V	Score, S_T	S_V/S_T
cars	1	6	0.167
buses	0	4	0.0
coaches	0	2	0.0
small boats	0	0	0.0
ships	1	1	1.0
aeroplanes	0	1	0.0
trains	0	3	0.0

3.6 Total susceptibility to vomiting, V_{total}

Responses to Question 11 are used to determine 'total susceptibility to vomiting', V_{total}. For each mode of transport, a vomiting history score (S_{vomit}) is assigned depending on the column ticked (ever vomited: yes/no). V_{total} is determined from the sum of the scores:

$$V_{total} = \sum S_{vomit}$$

Possible values of V_{total} range from 0 to 7.0.

3.6.1 Worked example of V_{total}

Using the example responses to Question 11, as shown in Appendix 2, the vomiting history scores (S_{vomit}) are shown in Table 8.

$$\text{Therefore, } V_{total} = \sum S_{vomit}$$

$$= 1+0+1+0+1+0+0 = 3$$

Table 8 Vomiting history scores.

Transport mode	Score, S_{Vomit}
cars	1
buses	0
coaches	1
small boats	0
ships	1
aeroplanes	0
trains	0

Table 9 Questions and notation for symptom frequency scores in all transport modes.

Symptom	Frequency Score	Question No.
Hot/sweat	S_{hot}	4
Headache	S_{head}	5
Pallor	S_{pallor}	6
Mouth watering	S_{water}	7
Drowsiness	S_{drowsy}	8
Dizziness	S_{dizzy}	9
Nausea	S_{nausea}	10
Vomiting	S_{vomit}	11

3.7 Total susceptibility to motion sickness, M_{total}

Responses to Questions 4 to 13 are used to determine the 'total susceptibility to motion sickness', M_{total}. For each mode of transport, frequency scores are assigned for the frequency of *ever* experiencing each of eight symptoms. Table 9 shows the questions and the notation corresponding to each symptom frequency score in all transport modes. Frequency scores are also assigned for the avoidance due to motion sickness of each transport mode, S_{avoid} (Question 12) and to self-rated susceptibility to motion sickness, S_{self} (Question 13).

Total susceptibility to motion sickness, M_{total}, is determined from the sum of the total scores for each symptom, for avoidance of each transport mode and for self-rated susceptibility:

$$M_{total} = \sum S_{hot} + \sum S_{head} + \sum S_{pallor} + \sum S_{water} + \sum S_{drowsy} + \sum S_{dizzy} + \sum S_{nausea} + \sum S_{vomit} + \sum S_{avoid} + \sum S_{self}$$

Possible values of M_{total} range from -2 to 177.

3.7.1 Worked example of M_{total}

Using the example responses to Questions 4 to 13, as shown in Appendix 2, frequency scores for symptoms and the avoidance of each mode of transport are shown in Table 10. Self-rated susceptibility to motion sickness, S_{self} (Question 13) for this example is 1.

Therefore,

$$M_{total} = \sum S_{hot} + \sum S_{head} + \sum S_{pallor} + \sum S_{water} + \sum S_{drowsy} + \sum S_{dizzy} + \sum S_{nausea} + \sum S_{vomit} + \sum S_{avoid} + \sum S_{self}$$

$$= 7+2+5+6+5+2+10+3+5+1 = 46$$

3.8 *Susceptibility to motion sickness in land transport, M_{land}*

Responses to Questions 4 to 13 are used to determine the 'susceptibility to motion sickness in land transport', M_{land}. For land transport modes (cars, buses, coaches and trains), frequency scores are assigned for the frequency of *ever* experiencing each of eight symptoms. Table 11 shows the questions and notation corresponding to each symptom frequency score. Frequency scores are also assigned for the avoidance due to motion sickness of each land-transport mode, S_{lavoid} (Question 12) and to self-rated susceptibility to motion sickness, S_{self} (Question 13).

Susceptibility to motion sickness in land transport, M_{land}, is determined from the sum of the total scores for symptoms experienced in land transport, for avoidance of land transport and for self-rated susceptibility:

$$M_{land} = \sum S_{lhot} + \sum S_{lhead} + \sum S_{lpallor} + \sum S_{lwater} + \sum S_{ldrowsy} + \sum S_{ldizzy} + \sum S_{lnausea} + \sum S_{lvomit} + \sum S_{lavoid} + \sum S_{self}$$

Possible values of M_{land} range from -2 to 102.

Table 10 Frequency scores for symptoms and travel avoidance in all transport modes.

Transport Mode	S_{hot}	S_{head}	S_{pallor}	S_{water}	S_{drowsy}	S_{dizzy}	S_{nausea}	S_{vomit}	S_{avoid}
cars	1	1	1	1	2	1	2	1	0
buses	2	0	1	1	1	0	1	0	1
coaches	1	0	0	1	1	0	1	1	1
small boats	2	0	2	2	0	1	3	0	2
ships	1	0	1	1	0	0	2	1	1
aeroplanes	0	1	0	0	0	0	1	0	0
trains	0	0	0	0	1	0	0	0	0
Total Score	7	2	5	6	5	2	10	3	5

Table 11 Questions and notation for symptom frequency scores in all transport modes.

Symptom	Frequency Score	Question No.
Hot/sweat	S_{lhot}	4
Headache	S_{lhead}	5
Pallor	$S_{lpallor}$	6
Mouth watering	S_{lwater}	7
Drowsiness	$S_{ldrowsy}$	8
Dizziness	S_{ldizzy}	9
Nausea	$S_{lnausea}$	10
Vomiting	S_{lvomit}	11

3.8.1 Worked example of M_{land}

Using the example responses to Questions 4 to 13, as shown in Appendix 2, frequency scores for symptoms and the avoidance of land transport are shown in Table 12. Self-rated susceptibility to motion sickness, S_{self} (Question 13) for this example is 1.

Therefore,

$$M_{land} = \sum S_{lhot} + \sum S_{lhead} + \sum S_{lpallor} + \sum S_{lwater} + \sum S_{ldrowsy} + \sum S_{ldizzy} + \sum S_{lnausea} + \sum S_{lvomit} + \sum S_{lavoid} + \sum S_{self}$$

$$= 4+1+2+3+5+1+4+2+2+1= 25$$

3.9 Susceptibility to motion sickness in non-land transport, M_{nland}

Responses to Questions 4 to 13 are used to determine the 'susceptibility to motion sickness in non-land transport', M_{nland}. For non-land transport modes (small boats, ships and

Table 12 Frequency scores for symptoms and the avoidance of land transport.

Transport Mode	S_{lhot}	S_{lhead}	$S_{lpallor}$	S_{lwater}	$S_{ldrowsy}$	S_{ldizzy}	$S_{lnausea}$	S_{lvomit}	S_{lavoid}
cars	1	1	1	1	2	1	2	1	0
buses	2	0	1	1	1	0	1	0	1
coaches	1	0	0	1	1	0	1	1	1
trains	0	0	0	0	1	0	0	0	0
Total Score	4	1	2	3	5	1	4	2	2

Table 13 Notation for symptom frequency scores in all transport modes.

Symptom	Frequency Score	Question No.
Hot/sweat	S_{nlhot}	4
Headache	S_{nlhead}	5
Pallor	$S_{nlpallor}$	6
Mouth watering	$S_{nlwater}$	7
Drowsiness	$S_{nldrowsy}$	8
Dizziness	$S_{nldizzy}$	9
Nausea	$S_{nlnausea}$	10
Vomiting	$S_{nlvomit}$	11

aeroplanes), frequency scores are assigned for the frequency of *ever* experiencing each of eight symptoms. Table 13 shows the questions and notation corresponding to each symptom frequency score. Frequency scores are also assigned for the avoidance due to motion sickness of each non-land transport mode, $S_{nlavoid}$ (Question 12) and to self-rated susceptibility to motion sickness, S_{self} (Question 13).

Total susceptibility to motion sickness in non-land transport, M_{nland}, is determined from the sum of the total scores of symptoms experienced in non-land transport, avoidance of non-land transport and self-rated susceptibility:

$$M_{nland} = \sum S_{nlhot} + \sum S_{nlhead} + \sum S_{nlpallor} + \sum S_{nlwater} + \sum S_{nldrowsy} + \sum S_{nldizzy} + \sum S_{nlnausea} + \sum S_{nlvomit} + \sum S_{nlavoid} + \sum S_{self}$$

Possible values of M_{nland} range from -2 to 77.

3.9.1 Worked example of M_{nland}

Using the example responses to Questions 4 to 13, as shown in Appendix 2, frequency scores for symptoms and the avoidance of non-land transport are shown in Table 14. Self-rated susceptibility to motion sickness, S_{self} (Question 13) for this example is 1.

Table 14 Frequency scores for symptoms and the avoidance of land transport.

Transport Mode	S_{nlhot}	S_{nlhead}	$S_{nlpallor}$	$S_{nlwater}$	$S_{nldrowsy}$	$S_{nldizzy}$	$S_{nlnausea}$	$S_{nlvomit}$	$S_{nlavoid}$
Small boats	2	0	2	2	0	1	3	0	2
ships	1	0	1	1	0	0	2	1	1
aeroplane	0	1	0	0	0	0	1	0	0
Total Score	3	1	3	3	0	1	6	1	3

4. Example measures of susceptibility to motion sickness

Values obtained for six of the measures of susceptibility to motion sickness may be compared with those of 333 male subjects aged between 18 and 26 years who participated in one of four motion sickness laboratory studies at the Institute of Sound and Vibration Research (Mills and Griffin, 2000; Howarth, 1999; Howarth, Martino and Griffin, 1999; Lobb, 1999). Table 15 provides the median, 25th and 75th percentiles, minimum and maximum of the six measures of susceptibility to motion sickness of the 333 subjects.

Table 15 Median, 25th and 75th percentiles, minimum and maximum of measures of susceptibility of 333 male subjects aged 18 to 26 years.

	$I_{susc.(yr.)}$	$V_{susc.(yr.)}$	V_{total}	M_{total}	M_{land}	M_{nland}
Possible range	0 – 1.67	0 – 1.67	0 - 7	(-2) - 177	(-2) - 102	(-2) - 77
25th percentile	0.00	0.00	0	4	2	0
median	0.00	0.00	0	9	5	2
75th percentile	0.11	0.00	1	17	10	6
Minimum	0.00	0	0	-2	-2	-2
Maximum	1.00	0	6	69	43	37

Table 16 Motion illness rating scale.

Rating	Corresponding feelings
0	No symptoms
1	Any symptoms, however slight.
2	Mild symptoms, e.g. stomach awareness but no nausea
3	Mild nausea
4	Mild to moderate nausea
5	Moderate nausea but can continue
6	Moderate nausea and want to stop

5. Illness rating scale used in experiments

During motion sickness experiments conducted in the laboratory and in field environments, an illness rating scale has been used. The scale, based on a seven-point scale used by Golding and Kerguelen (1992), is shown in Table 16. An alternative version of this scale is recommended (see Table 17 below). This modified scale has a simplified description of the "corresponding feeling" for rating 2 which may be easier for subjects to interpret and recall.

Subjects should be shown the rating scale before their exposure so that they are familiar with its form. A subject exposed to a potentially nauseogenic stimulus, is asked at periodic intervals (e.g. every minute) to provide a rating (from 0 to 6). The words corresponding to the number are repeated to the subject by the experimenter to confirm that they have chosen an appropriate response. The experimenter does *not* attempt to influence the subject response in any other way. If appropriate, the stimulus may be removed when a rating of 6 (or less) is reached, so as to reduce the chances of vomiting. Prior to exposure to motion, subjects are

Table 17 Alternative motion illness rating scale.

Rating	Corresponding feelings
0	No symptoms
1	Any symptoms, however slight.
2	Mild symptoms
3	Mild nausea
4	Mild to moderate nausea
5	Moderate nausea but can continue
6	Moderate nausea and want to stop

Table 18 Symptoms included in post-exposure checklist.

yawning	increased salivation
cold sweating	headache
nausea	bodily warmth
stomach awareness	dizziness
dry mouth	drowsiness

shown a list of common symptoms of motion sickness (see Table 18, below).

Graphical presentations of individual, average, or median illness ratings as a function of the duration of exposure are expected to show increases in ratings of illness with increased duration of exposure to a nauseogenic motion. However, a control condition may be required to show that the nauseogenic stimulus of interest is the cause of any change in rating.

Various statistical methods of analysis of the illness ratings are possible. Survival analysis (e.g. duration of exposure before a selected rating is reached) makes no assumptions about what happens after reaching the rating of interest.

The average, or summation, of ratings over the exposure period (and some graphical presentations of results) may assume that if a subject terminates exposure (by giving a rating of 6) all subsequent ratings up to the end of the planned exposure would have been 6. The ratings summed over the exposure period are called 'accumulated illness ratings'. The average rating over the exposure period is called the 'average illness rating'.

6. Symptom checklist used in experiments

During or following motion exposure, subjects may be asked to complete a symptom checklist to show any symptoms they experience.

Table 18 lists ten symptoms that have been included in a symptom checklist. The number of symptoms reported may be accumulated to give a total symptom score.

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Appendix 1

Motion sickness susceptibility questionnaire

MOTION SICKNESS SUSCEPTIBILITY QUESTIONNAIRE

INSTRUCTIONS

This questionnaire is primarily concerned with: (i) your susceptibility to motion sickness, and (ii) what types of motion are most effective in causing this sickness.

Please read the questions carefully and answer them ALL by either TICKING or FILLING IN the boxes which most closely correspond to you as an individual.

All the information you give is CONFIDENTIAL and will be used for research purposes only.

Thank you very much for your co-operation.

NAME..... AGE.....

COURSE..... YEAR.....

TELEPHONE NUMBER..... EMAIL.....

APPROXIMATE BODY WEIGHT..... HEIGHT.....

1. In the past YEAR, how many times have you travelled AS A PASSENGER in the following types of transport?

	NEVER	1	2-3	4-15	16-63	64-255	256+
CARS							
BUSES							
COACHES							
SMALL BOATS							
SHIPS							
AEROPLANES							
TRAINS							

2. In the past YEAR, how many times have you felt ill, whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	1	2	3	4-7	8-15	16+
CARS							
BUSES							
COACHES							
SMALL BOATS							
SHIPS							
AEROPLANES							
TRAINS							

3. In the past YEAR, how many times have you VOMITED whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	1	2	3	4-7	8-15	16+
CARS							
BUSES							
COACHES							
SMALL BOATS							
SHIPS							
AEROPLANES							
TRAINS							

4. Do you EVER feel HOT or SWEAT whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

5. Do you EVER suffer from HEADACHES whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

6. Do you EVER suffer from LOSS/ CHANGE OF SKIN COLOUR (go pale) whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

7. Do you EVER suffer from MOUTH WATERING whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

8. Do you EVER feel DROWSY whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

9. Do you EVER feel DIZZY whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

10. Do you EVER suffer from NAUSEA (stomach discomfort, feeling sick) whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

11. Have you EVER vomited whilst travelling AS A PASSENGER in the following types of transport?

	NO	YES
CARS		
BUSES		
COACHES		
SMALL BOATS		
SHIPS		
AEROPLANES		
TRAINS		

12. Would you avoid any of the following types of transport beacuse of motion sickness ?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS				
BUSES				
COACHES				
SMALL BOATS				
SHIPS				
AEROPLANES				
TRAINS				

13. Which of the following best describes your SUSCEPTIBILITY to motion sickness?

MUCH LESS THAN AVERAGE	
LESS THAN AVERAGE	
AVERAGE	
MORE THAN AVERAGE	
MUCH MORE THAN AVERAGE	

14. Have you ever suffered from any serious illness or injury ?

NO	YES

15. Are you under medical tretament or suffering a disability affecting daily life. ?

NO	YES

Appendix 2

Example of completed questionnaire

MOTION SICKNESS SUSCEPTIBILITY QUESTIONNAIRE

INSTRUCTIONS

This questionnaire is primarily concerned with: (i) your susceptibility to motion sickness, and (ii) what types of motion are most effective in causing this sickness.

Please read the questions carefully and answer them ALL by either TICKING or FILLING IN the boxes which most closely correspond to you as an individual.

All the information you give is CONFIDENTIAL and will be used for research purposes only.

Thank you very much for your co-operation.

NAME..... AGE.....

COURSE..... YEAR.....

TELEPHONE NUMBER..... EMAIL.....

APPROXIMATE BODY WEIGHT..... HEIGHT.....

1. In the past YEAR, how many times have you travelled AS A PASSENGER in the following types of transport?

	NEVER	1	2-3	4-15	16-63	64-255	256+
CARS							X
BUSES					X		
COACHES			X				
SMALL BOATS	X						
SHIPS		X					
AEROPLANES		X					
TRAINS				X			

2. In the past YEAR, how many times have you felt ill, whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	1	2	3	4-7	8-15	16+
CARS							X
BUSES					X		
COACHES		X					
SMALL BOATS	X						
SHIPS		X					
AEROPLANES	X						
TRAINS	X						

3. In the past YEAR, how many times have you VOMITED whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	1	2	3	4-7	8-15	16+
CARS		X					
BUSES	X						
COACHES	X						
SMALL BOATS	X						
SHIPS		X					
AEROPLANES	X						
TRAINS	X						

4. Do you EVER feel HOT or SWEAT whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS		X		
BUSES			X	
COACHES		X		
SMALL BOATS			X	
SHIPS		X		
AEROPLANES	X			
TRAINS	X			

5. Do you EVER suffer from HEADACHES whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS		X		
BUSES	X			
COACHES	X			
SMALL BOATS	X			
SHIPS	X			
AEROPLANES		X		
TRAINS	X			

6. Do you EVER suffer from LOSS/ CHANGE OF SKIN COLOUR (go pale) whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS		X		
BUSES		X		
COACHES	X			
SMALL BOATS			X	
SHIPS		X		
AEROPLANES	X			
TRAINS	X			

7. Do you EVER suffer from MOUTH WATERING whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS		X		
BUSES		X		
COACHES		X		
SMALL BOATS			X	
SHIPS		X		
AEROPLANES	X			
TRAINS	X			

8. Do you EVER feel DROWSY whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS			X	
BUSES		X		
COACHES		X		
SMALL BOATS	X			
SHIPS	X			
AEROPLANES	X			
TRAINS		X		

9. Do you EVER feel DIZZY whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS		X		
BUSES	X			
COACHES	X			
SMALL BOATS		X		
SHIPS	X			
AEROPLANES	X			
TRAINS	X			

10. Do you EVER suffer from NAUSEA (stomach discomfort, feeling sick) whilst travelling AS A PASSENGER in the following types of transport?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS			X	
BUSES		X		
COACHES		X		
SMALL BOATS				X
SHIPS			X	
AEROPLANES		X		
TRAINS	X			

11. Have you EVER vomited whilst travelling AS A PASSENGER in the following types of transport?

	NO	YES
CARS		X
BUSES	X	
COACHES		X
SMALL BOATS	X	
SHIPS		X
AEROPLANES	X	
TRAINS	X	

12. Would you avoid any of the following types of transport because of motion sickness ?

	NEVER	OCCASIONALLY	OFTEN	ALWAYS
CARS	X			
BUSES		X		
COACHES		X		
SMALL BOATS			X	
SHIPS		X		
AEROPLANES	X			
TRAINS	X			

13. Which of the following best describes your SUSCEPTIBILITY to motion sickness?

MUCH LESS THAN AVERAGE	
LESS THAN AVERAGE	
AVERAGE	
MORE THAN AVERAGE	X
MUCH MORE THAN AVERAGE	

14. Have you ever suffered from any serious illness or injury ?

NO	YES

15. Are you under medical tretament or suffering a disability affecting daily life. ?

NO	YES