

CHAPTER 12: A SURVEY TO INVESTIGATE RISK-TAKING

12.0 INTRODUCTION

Many of the interviews discussed in Chapter 10 indicated a possible influence of gender on both confidence and the willingness to make estimates. Substantiation of the potential for these links was found in the research by others mentioned in Chapter 11. I presented a seminar at BSRLM [Clayton 1990] providing participants with some of the information presented in these chapters and they encouraged me to pursue this aspect of the work. In discussion with colleagues in schools and Bristol Polytechnic, I decided to develop a survey of pupils which would be 'subject-neutral' i.e. it would not focus on risk-taking in mathematics (or any other specific subject) but would give information across the curriculum. I also was interested in determining if the willingness to take risks was linked to age and consequently, I decided to conduct a survey of pupils in primary and secondary schools. My intention was to open the investigation in this area and I did not intend that it would be definitive but that it would indicate a possible area for further research.

12.1 DEVELOPMENT OF SURVEY STATEMENTS

I circulated an early set of statements among colleagues receiving suggestions as to modifications and possible additional statements. I discussed this matter with teacher colleagues and advisory teachers to develop a broad set of statements. All colleagues were most helpful and many were interested in predicting the manner in which pupils of various ages would respond to the statements. It became apparent that if the wording of the two surveys could be the same (or very similar), the results could be more closely correlated across the age range. After consultation with colleagues, I decided to give the secondary pupils options of 'Agree', 'Do Not Mind', or 'Disagree' but primary pupils were given a simpler choice of 'Yes' or 'No'. The main reason for this decision was that primary colleagues thought the younger pupils would not be able to cope with the three categories but the older pupils would and the additional category would prove useful because pupils would not be forced to make an either/or choice. In retrospect, the decision to give three choices proved to be a very useful one as the following analysis will show, in many cases, that secondary pupils had a clear preference for Agree or Disagree and this preference was linked to gender although they

had an easy 'opt-out' choice of Do Not Mind. The decision to restrict the younger pupils to two choices was made out of respect for primary colleagues wishes and some of the primary data is less convincing. I do not regret this decision as the data is of some use but perhaps a future survey could be arranged with three choices.

The Primary Survey and the Secondary Survey can be found in Appendix VIII.

12.2 ADMINISTRATION OF THE SURVEY

I obtained the permission of headteachers of four primary schools and three secondary schools in Bristol to conduct the surveys. The primary schools are some of the feeder schools for the secondary schools. The catchment areas of these schools vary greatly and include areas of middle-class owner-occupiers and some of the large council housing estates of Bristol.

In particular, Primary School A takes pupils from a predominately working class area but including some middle class pupils and Primary School B draws from a very middle-class area of owner occupiers. On the other hand, Primary School C takes pupils primarily from a large council estate and Primary School D mainly draws from an area of considerable social deprivation but it also has pupils from middle-class families. The catchment area for Secondary School A (until recently a small grammar school) includes that of Primary School D but also includes a larger area of middle-class families. Both of these schools also have a multi-ethnic intake. Secondary School B is a very large comprehensive school which has an intake including most of the gamut of social backgrounds but mainly drawing from relatively 'comfortable' outer city/suburban working-class families and Secondary School C draws mainly from one of the largest council estates in Bristol and has recently suffered from falling rolls.

I went to each primary school to conduct the survey and in all cases I read the statement to the class of pupils after I had explained to the pupils that I wanted them to tick the box which most closely indicated how they felt about each statement. It became obvious during the survey and from feedback from the primary teachers that the pupils were interested in taking this 'test'. I think one reason for this was that I assured them that

they could not get a statement 'wrong' and that it was 'their' opinion that I wanted and not that of their friends. I was able to conduct the survey myself for one of the secondary schools but time constraints made it impossible for me to conduct the survey in the other two schools and the teachers of those pupils conducted the survey after I had spoken to them of my method of delivery. Both of these schools were in the process of reviewing their equal opportunity policies and were interested in the results of the survey. I have had both professional and personal contact with these schools and I have every confidence that the staff took this activity seriously.

12.3 PRODUCTION OF DATA AND RESERVATIONS

Once all the surveys were completed, I arranged for the responses to be entered into a computer facility at Bristol Polytechnic and the processing of the data was delegated to a technician who has responsibility for entering data for staff. A member of the Computer Services Department was also willing to assist in the data handling. Consequently, I was relieved of all of the problems of data handling which I had to deal with in the previous use of the computer as described in Chapter 7. This also meant that I was less involved in the analysis and there were several problems that occurred. For example, the technician, who entered the data, input a '9' whenever a pupil did not respond to a statement. The programmer instructed the computer to count but ignore responses of '9'. This inadvertently ignored all responses by '9' year-old subjects and, in the early computer runs, a great deal of data was lost. These problems were overcome in the end but I learned a great deal about the advantages of keeping in 'close contact' with the data as I had done with the Sutton tests.

With the data entered into the computer, it was possible to use statistical software packages to produce representations of the data. Each school was given a package of pie charts showing the number (and percentage) of their pupils who replied to the statements in each of the categories. Each school was also given similar results for all the schools (including their own) but the schools were identified only as A, B, C or D and the number of pupils was deleted. This was done to preserve anonymity as the numbers might have allowed identification of one particular secondary school. A similar package of results for all statements is given

in Appendix IX. The survey obtained responses from 1320 secondary pupils and 400 primary pupils.

The computer also produced some analysis of the data which was useful in determining the statistical significance of the data. I have grave reservations of attributing a great deal of weight to these significance levels for a variety of reasons. First of all, the statements were open to a different interpretation by the pupils from the one which I had in mind. For example, Statement 8 (I don't like being asked questions in class) might have been interpreted by a pupil as being bothered by classmates asking the pupil questions. Secondly, some statements were found, in retrospect, to be poorly worded. Statement 12 (I only answer when I'm sure I know the right answer) gives the impression that all answers are either right or wrong. Obviously, there are some cases when this is true but there are also instances (estimation, for example) when a plethora of answers is reasonable. Thirdly, a pupil's responses to statements might be influenced by recent events. Statement 16 (If you were picked to be in a school play would you be happy) was not only worded as a question, breaking the pattern, but was also possibly affected by the recent success/failure of the school play (or other similar production) in the school. Obviously, there are other reasons for my reluctance to place great importance on the statistical analysis but these three are sufficient to make the reader aware of my thinking.

12.4 EXPECTATIONS OF RESPONSES

I think it important to include a brief section devoted to my own expectations and those of teacher colleagues of the pupils' responses . My main reason for conducting the survey was to give an indicator of a potential rich vein of research for the future. I believed that I would find that girls tended to respond in one way and boys in another. Teacher colleagues also stated their desire to predict the manner of their pupils responses and many of these were along gender lines. Primary teachers, in general, believed that the girls would be more willing than the boys to take risks and secondary teachers believed the opposite. Statement 16 (the school play) was expected to be given a positive response by the girls in secondary schools except in School A where teachers thought the 'sophistication' of the girls was such that they would be blasé about the

matter. All secondary colleagues said the boys would be less willing to display emotions in public and thereby take the risk of humiliation. Primary teachers stated their belief that the boys would be happy to be in the school play but the girls would be reticent about this.

12.5 TREATMENT OF THE DATA

Many pupils were unable to give an example of a game involving risk other than BRAG in response to the secondary item 20 and the responses for secondary items 21 and 22 (primary 20 & 21) were not illuminating. Many pupils left these blank. Therefore, I have not analyzed any of the data from these statements. The rest of the data was useful but I should reiterate my concern regarding the need for prudence and awareness of the limitations of statistical data. However, I decided to investigate the data to try to ascertain any trends.

12.5a Secondary School Data

As previously mentioned, all pie charts are presented in Appendix IX. I shall describe my method of displaying this data in another form which I think illuminates my claim that pupils' responses to risk are gender linked. The responses to Statement 8, "I don't like being asked questions in class.", are typical of many statements and Table 12A below shows the percentage of pupils who 'Agreed' are listed in descending order and below this data, the percentage of pupils who 'Disagreed' are given in ascending order. Each group is also identified by gender (**G** or **B**) and by school, (a, b or c). For example, the table shows 43% of the girls in School b 'Agreed' and 27% of the boys in School c 'Disagreed'.

TABLE 12A

RESPONSES TO STATEMENTS BY GENDER AND SCHOOL (Secondary)

Statement 8: I don't like being asked questions in class.

	Gb	Ga	Gc	Ba	Bb	Bc
Agree	43	40	39	33	32	26

Disagree	16	17	18	20	23	27
	Ga	Gc	Gb	Ba	Bb	Bc

I draw the reader's attention to the fact that the percentage of all girl groups 'Agreeing' with this statement exceeds the percentage of any boy groups 'Agreeing' and the percentage of all girl groups 'Disagreeing' with the statement is less than the percentage of any boy groups 'Disagreeing'. I will show the data for those statements which had total consistency which I believe indicates that the willingness to take risks is gender-linked. Other statements had a mix of school/gender with some consistency but not complete and I shall present examples of these later. The reader should also be aware that I was interested in consistency and the percentages of 'Agreeing' always descends and the percentage of 'Disagreeing' always ascends. The identifying labels of **G** or **B** may reverse but the consistency is still evident. The data for Statements 9, 10, 11, 13, 14 & 16 are shown in Table 12B after Table 12C.

Other statements were intended to be 'neutral' and I expected these statements not to reveal any pattern by school or gender. The data for Statements 1 & 2 are shown in Table 12C below.

TABLE 12C
RESPONSES TO STATEMENTS BY GENDER AND SCHOOL
(Secondary)

Statement 1: I prefer to work on my own.

	Bc	Gc	Bb	Gb	Ga	Ba
Agree	20	15	15	11	10	9
Disagree	11	15	16	19	26	29
	Gc	Bc	Gb	Bb	Ba	Ga

Statement 2: I enjoy working with my friends.

	Ga	Gc	Gb	Bc	Bb	Ba
Agree	85	83	76	67	66	40
Disagree	0	1	2	2	2	<u>50</u>
	Gb	Gc	Bc	Bb	Ga	Ba

TABLE 12B
RESPONSES TO STATEMENTS BY GENDER AND SCHOOL
(Secondary)

Statement 9: I sometimes do not put up my hand even though I know the answer.

	Gb	Ga	Gc	Bb	Ba	Bc
Agree	73	70	66	59	55	53
Disagree	15	16	16	24	25	26
	Ga	Gc	Gb	Bc	Bb	Ba

Statement 10: I enjoy trying out ideas to solve problems.

	Bc	Ba	Bb	Gb	Ga	Gc
Agree	56	55	54	44	42	38
Disagree	8	8	10	12	14	18
	Ba	Bb	Bc	Gb	Gc	Ga

Statement 11: I feel embarrassed if I get a question wrong.

	Gb	Ga	Gc	Bc	Bb	Ba
Agree	51	42	33	30	30	26
Disagree	23	24	25	27	35	40
	Gb	Gc	Ga	Bc	Bb	Ba

Statement 13: I am lucky when I do well on a task.

	Ga	Gc	Gb	Ba	Bb	Bc
Agree	39	34	30	25	22	14
Disagree	23	31	36	53	54	60
	Gc	Ga	Gb	Bb	Ba	Bc

Statement 14: I like difficult tasks.

	Ba	Bc	Bb	Gc	Gb	Ga
Agree	28	24	22	20	18	12
Disagree	22	25	30	31	32	34
	Bc	Bb	Ba	Gc	Gb	Ga

Statement 16: If you were picked to be in the school play would you be happy?

	Gb	Gc	Ga	Bc	Ba	Bb
Agree	42	38	26	24	21	17
Disagree	21	24	33	39	47	47
	Gc	Gb	Ga	Bc	Bb	Ba

It can be seen that Statement 1 is relatively consistent by schools as the 'pairs' of each school occur in ascending/descending order but there are no major differences between schools or genders, i.e. the question could be considered 'neutral'. It would appear from the data that most secondary pupils are not strongly concerned whether they work on their own but they do enjoy working with their friends with the pronounced exception of the boys from School a (underlined for emphasis). The only suggested reason for this anomaly was that some of the boys from that school consider they are quite sophisticated and that the 'working with friends' did not fit with this sophistication. It is interesting that this school has an unusual cohort of pupils as indicated by the catchment area previously noted. Comparisons across schools might prove interesting for the particular schools but it is not my intention to proceed further along the lines of school differences. The reader is invited to investigate other statements but when I performed this analysis other statements did not show any consistency between genders or schools with two marked exceptions which I shall now present. Statements 15 and 19 stated opinions often heard in the classroom or staffroom and the data for these statements is presented in Table 12D below.

TABLE 12D

**RESPONSES TO STATEMENTS BY GENDER AND SCHOOL
(Secondary)**

Statement 15: Boys generally do not like it if girls are better at school work.

	Gc	Ga	Gb	Ba	Bb	Bc
Agree	46	44	39	22	12	12
Disagree	28	38	42	56	57	58
	Gc	Gb	Ga	Bb	Ba	Bc

Statement 19: Girls generally do not like it if boys are better at school work.

	Bc	Bb	Ba	Ga	Gb	Gc
Agree	29	28	24	11	9	8
Disagree	41	43	48	60	61	61
	Bc	Bb	Ba	Gb	Gc	Ga

Many of the responses to Statement 15 indicate the girls think the boys do not like them being better but the boys do not agree. The responses to Statement 19 are less clear but they may indicate that the boys are aware that the girls are less 'jealous' of the boys' success in school work. These two statements showed the greatest disparity between the genders. A measure of the disparity is the minimal percentage difference between the highest of one gender with the lowest of the other gender in both 'Agreeing' and 'Disagreeing'. The minimal gap between a 'boy group' and a 'girl group' is 12%. I thought this was a useful gauge by which a measure of disparity could be given and I will continue in this section to use the 'percentage gap' as a measure.

Of the Statements 8, 9, 10, 11, 13, 14 and 16, Statement 13 shows the greatest 'gaps' (5% in Agree and 17% in Disagree) between the genders and Statement 9 gives gaps exceeding 6%. Statement 10 gives a gap of 10% in Agree only. The reader should recall that I stated early in this chapter that the decision to give the secondary pupils a noncommittal choice (Do Not Mind) was a useful one. The reader will be aware for the 'consistent' statements analyzed above that the percentage of 'Do Not Mind' responses varied between approximately 20% and 50%. Obviously, these are not insignificant numbers of pupils but a significant difference was evident among those who decided to Agree or Disagree and this difference was strongly influenced by gender.

I suggest that the results of this survey indicate that gender has an influence on pupil's responses to these statements. To summarise, boys are more willing than girls to answer questions in class, attempt difficult tasks and to try out ideas. They are not as worried as girls about answering questions incorrectly nor do they consider that luck was a factor in their success on a task. This survey would then agree with the findings of other researchers that boys enjoy the 'limelight' of public display (except the stage version thereof), have a stronger self-image and are willing to engage in challenging activities. Before proceeding I would like to add that the computer also produced values of chi-squared and the corresponding level of significance to four decimal place accuracy for each statement for the global populations with gender being the discriminating factor and these are presented in Table 12E below. For the reader's convenience, I have given the statements which show **MOST SIGNIFICANT** (less than 1% significance level according to the chi-squared test) relationship with gender as **Bold** and SIGNIFICANT (less

than 5% significance level according to the chi-squared test) relationship with gender as Underlined.

This additional information gives greater support for my belief in the importance of gender in this area albeit with my aforementioned reservations.

Finally, I wanted to interrogate the data for similarity of responses to groups of statements. I decided that Statements 8 and 9 were concerned with 'public display' in the classroom and Statement 16 was a special case outside the classroom. Statements 10, 11 and 14 were classified as representing a willingness to engage in challenging activities and Statement 13 indicates a degree of self-image, although it could be argued that other statements also indicate the subject's self-image. These 'classifications' are very subjective and with the previously mentioned reservations, I am hesitant to draw any strong conclusions on the basis of this analysis. I decided that a 'confident' pupil would respond in a particular way to a given statement and a pupil lacking in confidence would respond in the opposite manner. Again this decision is highly subjective but I thought that the pupils' responses could provide further support for my suggestion that gender is an important factor in the willingness to take risk and confidence. I tested the data to determine the percentage of pupils responding in different ways to pairs, triples and all of Statements 8, 9, 10, 11, 13 and 14. I shall describe the manner in which this was done for Statements 8 and 9.

TABLE 12E

**CHI-SQUARED ANALYSIS OF SECONDARY RESPONSES BY
GENDER**

TWO DEGREES OF FREEDOM

STATEMENT	CHI-SQUARED	SIGNIFICANCE
1	4.93	0.0852
2	20.06	0.0000
<u>3</u>	<u>6.22</u>	<u>0.0446</u>
4	0.59	0.7445
5	4.40	0.1110
6	11.31	0.0035
7	1.24	0.5370
8	15.63	0.0004
9	28.92	0.0000
10	20.11	0.0000
11	42.13	0.0000
12	4.91	0.0860
13	62.54	0.0000
14	9.97	0.0068
15	129.55	0.0000
16	89.36	0.0000
17	38.92	0.0000
18	26.46	0.0000
19	77.39	0.0000

Pupils who responded to Statement 8 with Disagree OR Statement 9 with Disagree were counted in one category (D D) and those who responded otherwise were counted in the other category (Other) and these responses were divided by gender as shown in Table 12F below.

N.B. It is important to remember throughout this analysis that the inclusive OR is being used. In other words, subjects were responding Disagree to Statement 8 OR Disagree to Statement 9 but including those who responded Disagree to Statement 8 and Disagree with Statement 9.

TABLE 12F

CONSISTENCY OF RESPONSES TO STATEMENTS 8 OR 9 BY GENDER

STATEMENT		GENDER	
8	9	Girls	Boys
D	D	26	38
OTHER		74	62

I think a confident pupil would disagree with these statements as the boys' responses show and a pupil lacking in confidence would agree with these statements as the girls' responses show. A similar analysis was conducted for Statements 8 and 9 with the response of Agree (A) in each case and this data is presented in Table 12G below.

TABLE 12G

CONSISTENCY OF RESPONSES TO STATEMENTS 8 OR 9 BY GENDER

STATEMENT		GENDER	
8	9	Girls	Boys
A	A	76	65
OTHER		24	35

Notice again should be taken of the consistency of the results, eg more girls than boys agreed and more boys than girls disagreed.

Tables 12H and 12I below show the similar data for Statements 10, 11 & 14 and I believe the confident pupil would Agree with 10 & 14 and Disagree with 11.

TABLE 12H

**CONSISTENCY OF RESPONSES TO STATEMENTS 10 OR 11
OR 14
BY GENDER**

STATEMENT			GENDER	
10	11	14	Girls	Boys
A	D	A	58	72
OTHER			42	28

TABLE 12I

**CONSISTENCY OF RESPONSES TO
STATEMENTS 10 OR 11 OR 14 BY GENDER**

STATEMENT			GENDER	
10	11	14	Girls	Boys
D	A	D	62	49
OTHER			38	51

The boys again appear to be responding in a manner which indicates confidence and the girls responses indicate the opposite. Finally the entire set of statements was analyzed and Tables 12J and 12K below shows this data.

TABLE 12J

**CONSISTENCY OF RESPONSES TO
STATEMENTS 8 OR 9 OR 10 OR 11 OR 13 OR 14 BY GENDER**

STATEMENT						GENDER	
8	9	10	11	13	14	Girls	Boys
D	D	A	D	D	A	73	88
OTHER						27	12

TABLE 12K

**CONSISTENCY OF RESPONSES TO
STATEMENTS 8 OR 9 OR 10 OR 11 OR 13 OR 14 BY GENDER**

STATEMENT						GENDER	
8	9	10	11	13	14	Girls	Boys
A	A	D	A	A	D	90	81
OTHER						10	19

For all of the above results the significance level (again with gender as the discriminating factor) was given as 0.0000 with chi-squared values ranging between 18 and 45. This data continues to support the proposition that the impact of gender is not accidental but an important factor and if my interpretation of the responses of a confident pupil is correct, it can be seen that the boys are more likely than the girls to be classified as confident.

12.5b PRIMARY SCHOOL DATA

Pie charts for each of the Statements are presented in Appendix IX showing the data for the primary pupils. A similar analysis of the primary data did not reveal results that were so dramatic in their consistency but there were some statements that elicited consistent responses. Four schools took part in the survey and the table format previously described will be used with schools (a, b, c or d) and gender (**G** or **B**).

Consistent responses along gender lines were only found with Statements 18 and 19 and these results are given in Table 12L below. Obviously, as the primary pupils responded Yes or No, there is no need to reproduce the Gender/school 'identifier' for the No responses.

Statement 14 yielded data very nearly consistent and these results are produced in Table 12M below.

TABLE 12L

**RESPONSES TO STATEMENTS BY GENDER AND SCHOOL
(Primary)**

Statement 18 I enjoy problems where I have to estimate answers.

	Bd	Bb	Ba	Bc	Gd	Ga	Gb	Gc
YES	74	68	66	62	61	61	43	41
NO	26	32	34	38	39	39	57	59

Statement 19: Girls generally do not like it if boys are better at school work.

	Bd	Bc	Ba	Bb	Ga	Gc	Gd	Gb
YES	73	67	48	40	38	33	27	26
NO	27	33	52	60	62	67	73	74

TABLE 12M

**RESPONSES TO STATEMENTS BY GENDER AND SCHOOL
(Primary)**

Statement 14: I like difficult tasks.

	Bb	Bc	Ba	Ga	Bd	Gb	Gc	Gd
YES	64	52	50	44	43	41	29	28
NO	36	48	50	56	57	59	71	72

I did not find the same levels of consistency in the primary data as was evidenced in the secondary data. Girl groups from one school were 'more confident' than boy groups from that school and other boy groups from other schools. There was also not any consistency of one school population - either total or boy/girl - showing greater confidence than another school. For all of the above reasons, I find the primary data less convincing than the secondary data.

However, the global figures do show that the primary pupils display similar reactions to the statements. The computer also produced statistical data with the values of chi-squared and the associated levels of significance with gender as the discriminating factor and this information

is presented in Table 12N below. Again, I have given the statements which show **MOST SIGNIFICANT** (less than 1% significance level according to the chi-squared test) relationship with gender as **Bold**, but, in the case of the Primary data, underlining indicates VERY SIGNIFICANT (less than 2.5% significance level according to the chi-squared test) relationship with gender.

It would appear that gender is a factor and that the primary colleagues may be proved wrong regarding the girls' willingness to engage in risky activities.

12.6 SUMMARY

The purpose and development of the survey have been given and the methodology and schools involved have been described. Treatment of the data indicates that gender is a powerful factor in the manner in which some pupils respond to the statements. I do not intend to state conclusions on the basis of this survey but I do think it is clear that there are indicators that gender plays a strong role in pupils' willingness to engage in activities within school that involve risk. Teachers should be made aware of this and perhaps it would be reasonable to think that tasks which involve risk can be made more 'girl-friendly'. This does not imply that the girls need be patronised nor should they be 'pathologised' as described by Walkerdine [op cit, p199]. Teachers must be made aware of the possibility of gender issues in this area if progress is to be made to entitle all pupils to all of the curriculum.

TABLE 12N
CHI-SQUARED ANALYSIS OF PRIMARY RESPONSES BY
GENDER

ONE DEGREE OF FREEDOM

STATEMENT	CHI-SQUARED	SIGNIFICANCE
1	2.612	0.1061
2	0.210	0.6467
3	1.101	0.2941
4	0.023	0.8793
5	0.110	0.7401
6	3.008	0.0829
7	0.000	0.9874
8	2.116	0.1457
9	1.486	0.2229
10	2.560	0.1096
<u>11</u>	<u>5.044</u>	<u>0.0247</u>
12	8.571	0.0034
<u>13</u>	<u>5.317</u>	<u>0.0211</u>
14	8.452	0.0036
15	27.151	0.0000
16	10.555	0.0012
17	1.909	0.1671
18	7.116	0.0076
19	17.087	0.0000