WORKING PAPER 428

A LOCAL PERSPECTIVE ON SELLAFIELD

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1. Context

A coincidence of events in November 1983 re-alerted the attention of a wide public to possible health risks associated with British Nuclear Fuels' (BNF) waste reprocessing operations at Sellafield in Cumbria. A highly publicised Yorkshire Television programme, 'Windscale, the nuclear laundry', screened at the beginning of the month, suggested a historically higher than average incidence of Leukaemia amongst children in the vicinity. Two weeks after the programme was broadcast a serious operational error at BNF led to the discharge into the sea of a tank of radioactive effluent which should have been held for further reprocessing; part of it was subsequently washed back by the tides on to local beaches. This discharge coincided with a well-publicised attempt by Greenpeace, as part of a longer running campaign against the build-up of unnatural radioactivity in the environment, to block the outlet of the pipeline through which radioactive effluent is routinely discharged from Sellafield into the sea.

It was not only the nuclear industry and members of the public at large who, in different ways, took serious notice of these events. Government response was also more than usually noticeable - the stepping up of radiation monitoring in the area; related scientific analyses (Department of the Environment 1984, Health and Safety Executive 1984); the issuing of a statement from the Department of the Environment advising the public not to make "unnecessary use" of a 25 mile stretch of local beaches; and the establishment of a high-level inquiry under Sir Douglas Black into the possible increased incidence of cancer in the vicinity of the Sellafield site.

To many these events and responses are uninteresting and irrelevant. To others they represent small but unimportant aberrations in the otherwise reliable operations of British Nuclear Fuels at Sellafield. To others still they represent ugly evidence of a dangerous industry whose operations cannot be adequately controlled and should be drastically, if not completely, curtailed. To still others they may do no more than to discolour recollections of holidays in the area, with some relief that it is not the

place where they themselves have to live.

Many thousands of people, however, do live there, and one of the premises of this paper is that it is of interest to complement the programmes of radio physical, radio-biological, epidemiological and medical inquiry into radiation concentrations and consequent possible health risks with an attempt to develop a proper understanding of views and attitudes within local communities.

Impressions of the views of about four hundred people, recorded during social survey work in a random* selection of households in towns and villages within a 20 mile radius of the Sellafield complex (see Figure 1), can only make a small contribution to such knowledge. Key findings from this survey work are presented in such a spirit, against an awareness of the primitive representations of views in other sources - cartoons (Figure 2), the nature of popular media comment (Headlines, Figure 3), and the telling comment of Fischoff et al. (1981) p.161, that,

> 'Chemists, climatologists, physicists, and others who might tread very gently beyond the available data in their own areas of specialisation, at times feel no restraint in opining that "this is what lay people think about the risks of nuclear power", that "this is the sort of information the public needs to put risks into proper perspective" or that "this is how the public will react to stricter safety measures". '

The survey data presented in this paper was collected mainly by final year undergraduate Geography students from the University of Leeds as part of a field course in West Cumbria. Given the prominence of Sellafield in the public eye and the absence of in-depth sociological inquiry by other researchers, this fieldwork is not considered to have significantly increased the attention drawn to the area, nor to have unduly sensitised communities to issues of which they would otherwise be unaware. Although much of the immediate impact of the November 1983 events had subsided by the time of the survey in April 1984, related issues were still very much 'live'. For example, continued press and media coverage maintained popular awareness; letters to local newspapers were still predominantly preoccupied with views on Sellafield; the official advice about the

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* Interviewers were asked to use their judgement in randomly selecting households in each allotted location.

beaches had not been withdrawn; fish sales were depressed; and individuals involved with the local tourist trade were expressing concern at the prospects of a bad season in view of the detrimental image of the area.

Sociological and psychological research findings from work in the vicinity of other nuclear establishments are not necessarily a reliable guide as to what might be expected from the present survey. Sellafield is unique in many respects: in its distinctive position in the nuclear fuel cycle; in the volume of its radioactive discharges (albeit low level waste); in its dominance of the economic fabric of its locality; and in its position as part of the local social and political fabric - all to an extent not matched by other nuclear establishments in the UK.

2. Key findings

Attitudes to BNF

Approximately half of those people questioned expressed a favourable opinion towards British Nuclear Fuels as a local company, either 'moderately' (19%) or 'strongly' (30%). Many people expressed 'mixed feelings' (a further 29%) and most others were either moderately or strongly against (about 20%). When these views - expressed in April 1984 - were compared to those held 12 months before (i.e. before the YTV documentary and all the adverse publicity that followed) no real changes were apparent; then, 5% fewer had mixed feelings, 2% fewer had been against BNFL; correspondingly more had been in favour of the company.

It seems appropriate to comment on the weight of opinion in favour of BNF and the stability of views in this respect in relation to the dependence of those questioned on BNF for their livelihood.

As already suggested, BNF is of colossal economic importance to its local area, employing in excess of 10,000 people, drawn largely from the area in which the survey was undertaken (6,000 permanent, 4,000 temporary jobs) and indirectly supporting thousands of other jobs in local service industries. A positive relationship between the effect of BNF on people's livelihood and their view towards BNF might

therefore be expected, and this can be discerned from Figure 4. It is not a clear-cut relationship, however, and there is room for further interpretation.

Rather more striking is the difference in view between men and women (Figure 5). Approximately two in every five (42%) men interviewed expressed a strong opinion in favour of BNF, while only about one in every five (22%) of the women interviewed expressed this view. Over a third (36%) of the women interviewed expressed mixed feelings, an attitude expressed by fewer than one in five (18%) of the men. Although it was evident when undertaking the survey that many wives had the same views as their husbands, it would be crude and misconceived to generalise on this basis.

Because of the very different character of the various towns and villages within which interviews were undertaken (differences in physiography, in housing, in historical roots, in economic base, and in visible influence of BNF) some broad differences in attitudes between places might be expected. Patterns of response did vary between different places, but no simple pattern emerged. Further exploration of this point would better await a larger sample.

Concern for possible radiation risks

The balance of expressed concern (or lack of it) over radiation risks is depicted in Table 1. The predominant view was of no worry at all (55%) although 11% did express great concern. Rather more concern was expressed for local children; a significant number of people expressed great concern (21% very worried) although, on the other hand, 35% stated themselves "not at all worried". All in all these figures indicate that a wide spectrum of views exists locally.

People may attribute possible health risks from Sellafield to a number of different sources (radiation concentrations on beaches, house-dust, seafood, for example) and a more specific question, included to take account of this, elicited a greater level of concern than that reflected above (see Table 2).

Concern was most acute for radiation on the beaches, almost one third (32%) of the people in the survey stating that they were 'very worried',

although about one quarter (23%) stated that they were 'not at all worried'. The rest shared views between these extremes (the majority being 'slightly worried'). Possible radiation concentrations in seafood ranked as the next highest source of concern, with 21% stating themselves to be 'very worried' but 43% 'not at all worried'. Less, though still significant, concern was expressed by some people over possible radiation concentrations in the air, in housedust and in milk, though the majority opinion here was of no worry at all.

These percentages reflect what people believe are or are not causes for concern and not (necessarily) any hard scientific understanding of the basis of their concerns. Many of these views and perceptions may well be inaccurate when compared to "scientific knowledge" on these matters: but the aim of the survey was not to moralise on the 'rationality' nor 'accuracy' of local perceptions. Any suggestion that local opinions are irrational or illegitimate may simply be a display of unwarranted naivity.

It was not surprising to discern a correlation between people's concern over possible radiation risks and their attitude towards BNF (Figures 6 and 7): a high percentage of those "not at all worried" were strongly in favour of BNF, and high proportions of those "moderately" or "very" worried had mixed feelings or were moderately or strongly against. Many expressing no worry, however, had mixed feelings towards BNF, prompting the important reminder that other factors are undoubtedly at play.

As with attitudes towards BNF, quite a strong correlation was also discernible between people's concern for possible radiation risks and their own economic dependence on BNF (Figure 8). It would be interesting to know more about the extent to which people's concern (or lack of it) is consciously rationalised in these terms - for those who strongly depend on BNF for their livelihood and express no worry, a compensatory mechanism may be important in conditioning their beliefs; for others, trust in employers may be a key factor; and for yet others, their lack of concern may have been an important justification in their choice of livelihood. For others still some completely different factors may be important. Of no less interest are possible explanations for other cells of the relation in Figure 8, though these will not be probed here.

Of far more interest than the explanation of individual relationships between pairs of factors designed into the present survey (concern x livelihood, concern x attitude, for example), is the development of a better

understanding of the totality of factors and forces that condition people's views, and of the differences between different people. Quite striking aggregate differences are discernible between men and women - concern being more acute among women than men (see Figure 9a, b, c). There was no discernible pattern of concern according to age, however, nor an easily explained pattern of concern between different places (see above). For the latter, a plausible prior hypothesis could have two contradictory elements: on the one hand that rumour should get more primitive and anxiety greater at greater distances from Sellafield (as the influence of familiarity becomes weaker); and on the other, that concern should get more acute with proximity to the potential source of hazard (Royal Society 1983). Important modifications would appear to be needed to this crude generalisation in this particular case, a line of inquiry that cannot be pressed until a larger number of people are interviewed.

A factor being recognised as of increasing importance in understanding people's attitudes towards particular issues is their degree of trust in the institutions associated with the management and regulation of risk (Wynne, 1982; Otway and Ravetz, 1984). In terms of the considered reliability of information provided by three key institutions in the present context - BNF, government agencies and the local liaison committee - the general picture is by no means one of unalloyed confidence in Authority (see data for BNF and government agencies in Table 3). As expected, there is a strong correlation between concern for possible radiation risks and the particular indicator of trust in institutions depicted in Table 3. For example, 64% of those who were "very worried" for local children considered BNF unreliable (Figure 10). The local liaison committee, established after the infamous Windscale inquiry of 1977 in order to improve relations and contact between BNF and the local community, had no meaning for many of those interviewed (see last column of row 2 in Table 3) - both its functions and even its very existence were not well appreciated.

Another indicator of people's trust in authorities - whether they act properly in appreciating and ensuring "safe" levels of radiation in the environment - might be their view on the adequacy of monitoring. Since the events of November 1983 there has been a substantial increase in the amount of monitoring undertaken, including considerably more intensive monitoring on the beaches, and the first significant official sampling of housedust. Rather more than half those interviewed (55%) considered that

the amount of monitoring now undertaken was about right, though almost one third (32%) considered it still insufficient (Table 4). A significant 11% of those interviewed preferred not to express a view, perhaps reflecting an issue that was peripheral or irrelevant to their own thinking, or which they had difficulty in assessing.

Finally, and complementing the above findings, it is of interest to note the extent of support within local communities for the activities of Greenpeace, 50% in favour, and drawn both from people 'pro' and from people 'anti' BNF. Though their actions are not always approved of, the organisation is seen by many as a useful watchdog and catalyst for debate and action and for tightening control of the build-up of radioactivity in the environment.

Further comment

The summary of some of the key findings above inevitably touches upon only the surface of the complexity of factors meshing together to generate people's attitudes and opinions. There are inescapable reservations about the quality of the data - in the design of a sample that can be regarded as representative of a wide public (see Table 5) - and in the design of unambiguous questions, eliciting people's true views relevant to their own agenda of concerns, and not those according to the agenda of external analysts only. Such reservations must undoubtedly temper interpretation and handling of "findings" - needing more discrimination than represented in the headline "Locals think Sellafield is Safe" (Sunday Times, 24th August, 1984).

There is a need to develop an adequate understanding of what lies beneath views summarised above, exploring, for example, the different justifications and rationalisations that shape attitudes, the stability of people's views, and the striking differences in personality, awareness, fear, outlook and much else that were evidence during the door to door work when undertaking the survey. Such inquiry can be expected to deepen understanding of the striking gender differences, for example, and should also provide a rich empirical basis from which to develop conceptual and theoretical understanding of people's attitudes to risk, and so develop a more adequate body of intellectual knowledge in this field.

Table 1. How worried are people about radiation levels in the areas around BNF's plant at Sellafield as regards health risks to the following people?

	Not at all worried	Slightly worried	Moderately worried	Very worried	Cannot say
themselves	55	22	11	11	0
Local children	35	26	16	21	2

% responses

Table 2. How worried are people about radiation levels in each of the following:

	Not at all worried	Slightly worried	Moderately worried	Very worried	Cannot say
on the beaches	23	29	14	32	2
in seafood	43	19	12	21	5
in the air	48	20	13	17	2
in milk	55	16	9	16	4
in house dust	59	13	9	15	4

% responses

Table 3. The considered reliability of different sources of information:

	completely reliable	adequately reliable	of variable reliability	unreliable	cannot say
British Nuclear Fuels	16	25	28	25	6
local liaison committee	6	20	22	10	42
government bodies	10	27	26	21	16
local newspapers	7	27	38	21	7
quality press	5	21	30	18	26
popular press	2	10	29	42	16
T.V.	8	18	39	28	6
environmental groups	9	19	31	30	11

% responses

Table 4. Peoples general view about the amount done to monitor radiation levels

	About right	Not enough	Too much	Cannot say
Currently	55	32	2	11
In the past	26	60	0	12

Table 5. Reasons for non-participation in the survey

Reason given	Number of times
Too busy	23
Not interested in the survey	16
BNF employees who thought it better not to give their views	13
Considered that it didn't concern them	11
There's nothing wrong at Sellafield; there has been a fuss over nothing	10
Wives of BNF employees who thought that they ought not to answer these sorts of questions	8
Did not want to talk about it	6
Inferred that they were "sick of it"	6
No opinion on these matters	6
Considered themselves insufficiently informed to express a view	6
Nothing to say	4
Thought their husbands should fill in the survey	2
Thought it too controversial	1
Too frightened	1
Did not want to talk to an environmental group	1
No reason given	18

References

Department of the Environment (Jan. 1984) 'An incident leading to contamination of the beaches near to the BNFL Windscale and Calder Works, Sellafield November 1983'.
A report of the investigations into the circumstances by the DoE Radiochemical Inspectorate.

B. Fischoff et al (1981) Lay foibles and expert foibles in judgement about risks. In Progress in Resource Management and Environmental Planning 3 (T. O'Riordan and R.K. Turner, eds) Chichester, Wiley.

Health and Safety Executive (Feb. 1984) 'The contamination of the beach incident at BNFL, Sellafield November 1983'.

H. Otway and J. Ravetz (1984) On the regulation of technology: examining the linear model. Futures 217-232.

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Wynne, Brian (1982) Rationality and Ritual: the Windscale Inquiry and nuclear decisions in Britatin. The British Society for the History of Science.

Figure 1. A survey undertaken in places underlined

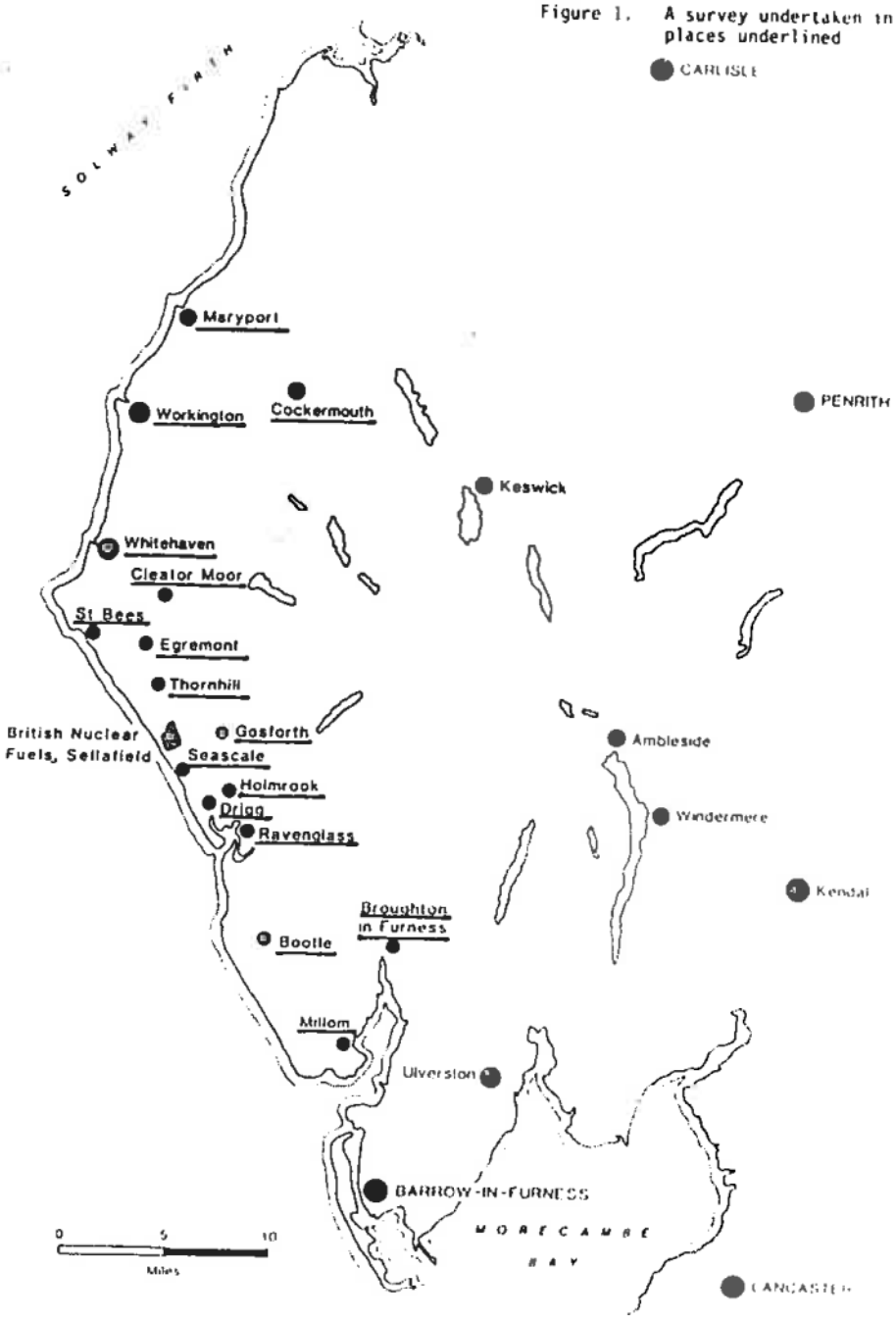

Figure 2. A cartoonists suggestion of potential radioactive contamination of seafood (Steve Bell; Guardian 20.9.84)

VILLAGES OF THE DAMNED

I put my trust in BNFL'

SEASCALE WELCOMES INQUIRY

Daily Telegraph Reporter

RESIDENTS of Seascale, Cumbria, yesterday welcomed calls in the report on Sellafield by Sir [illegible] Black's inquiry for investigations into [illegible] of

SEVERE CRITICISM OF BNFL OVER CONTAMINATION OF LOCAL BEACHES

[illegible]d's management has been castigated by two top gov[illegible] over [illegible]

Anxious mothers point finger at Sellafield

Six local women who all gave birth [illegible] Syndrome babies are asking if the [illegible] duced a massive radiation lea[illegible] [illegible]s to blame.

The st[illegible]

Locals believe Sellafield is safe

by Adriana Caudrey

"[illegible]GH proportion o[illegible] [illegible]r the Sellafie[illegible]

'WE CAN'T BLAME [illegible] PLANT'

[illegible] died four

Figure 3.

Figure 4 :

Attitude to BNF x Effect on Household Livelihood

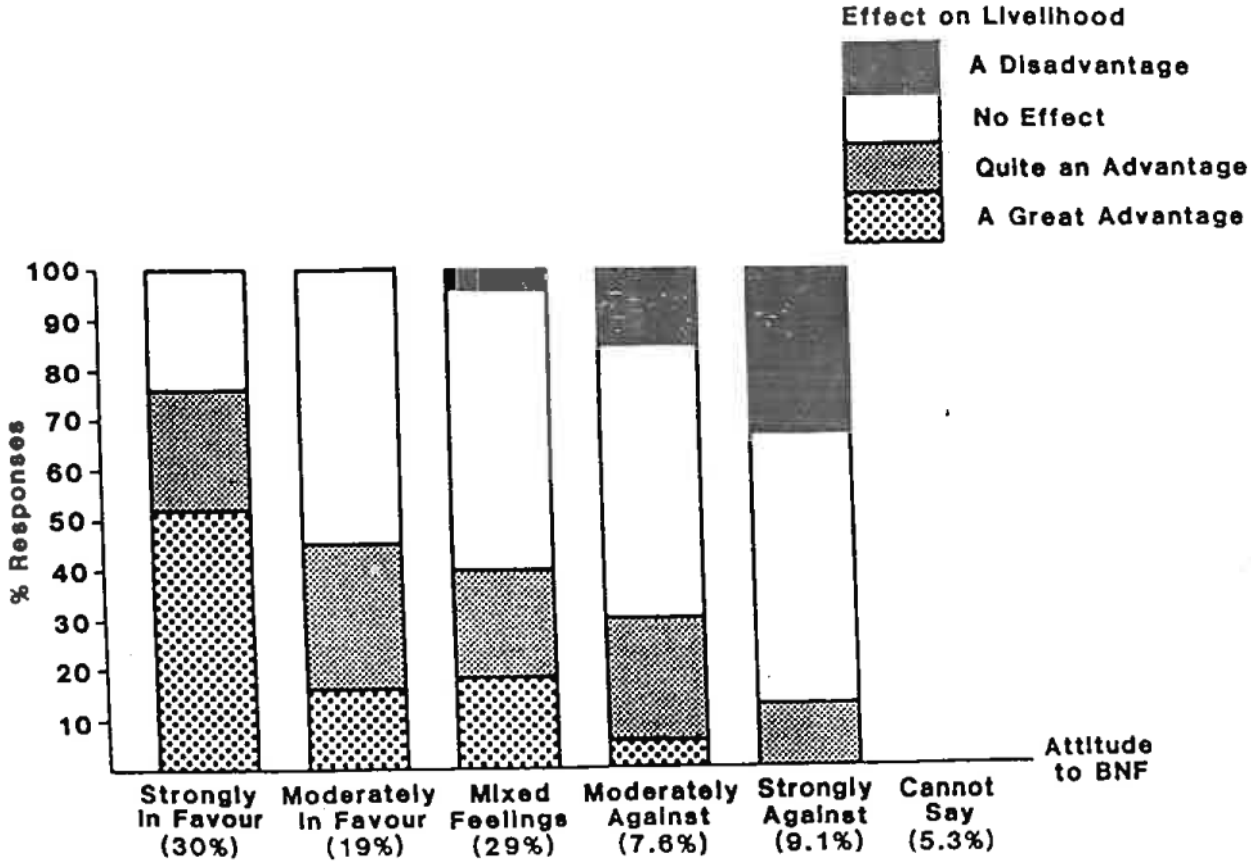

Figure 5 :

Attitude x Gender

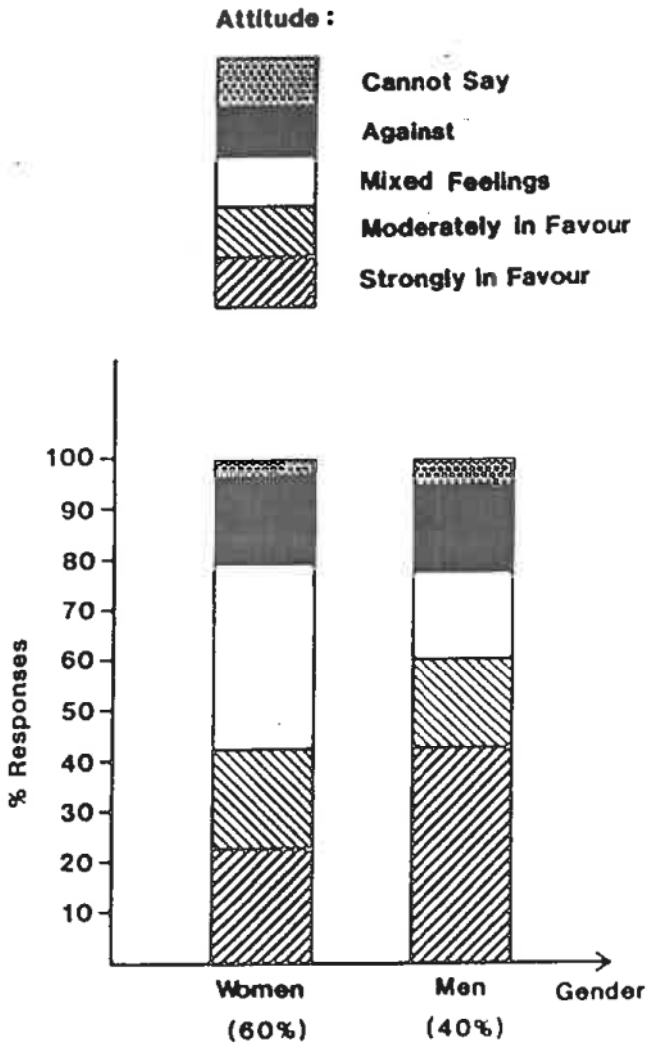

Figure 6 :

Attitude to BNF x Concern for Oneself

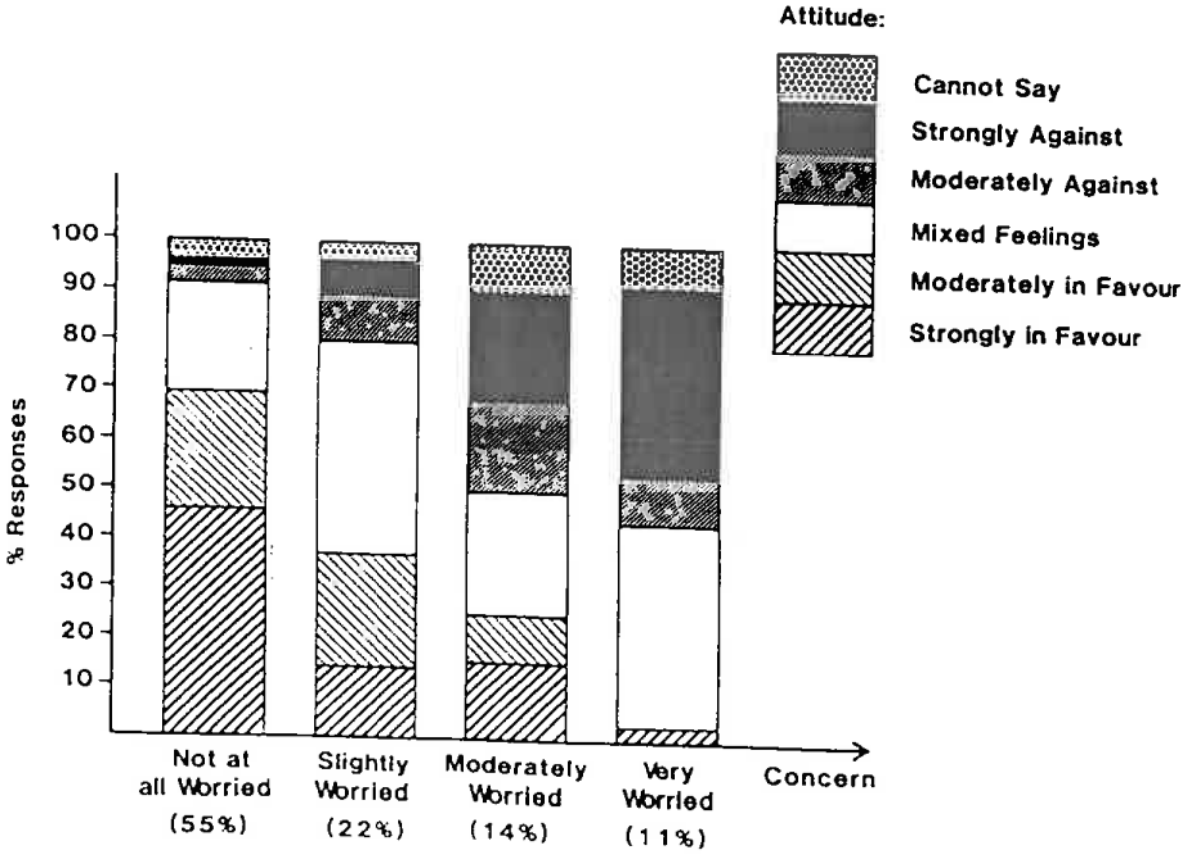

Figure 7 :

Attitude to BNF x Concern for Local Children

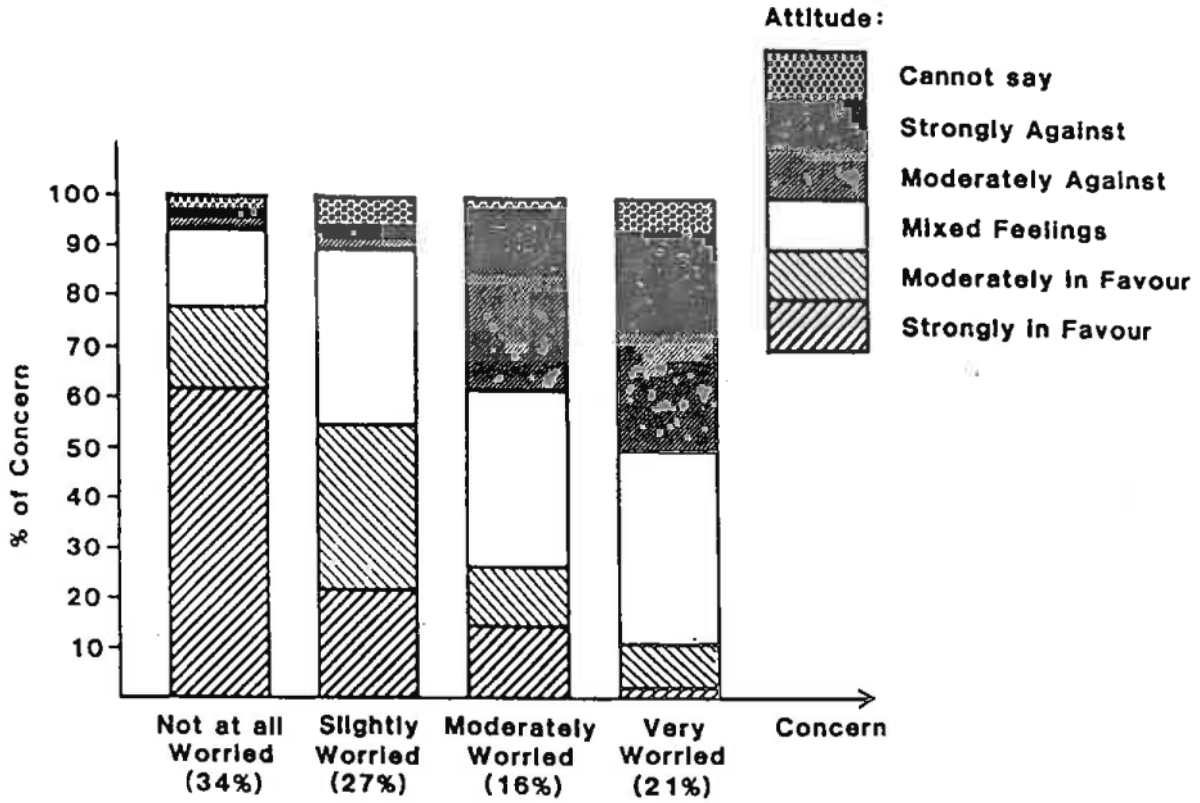

Figure 8 :

Concern for Oneself x Dependence on BNF for Livelihood

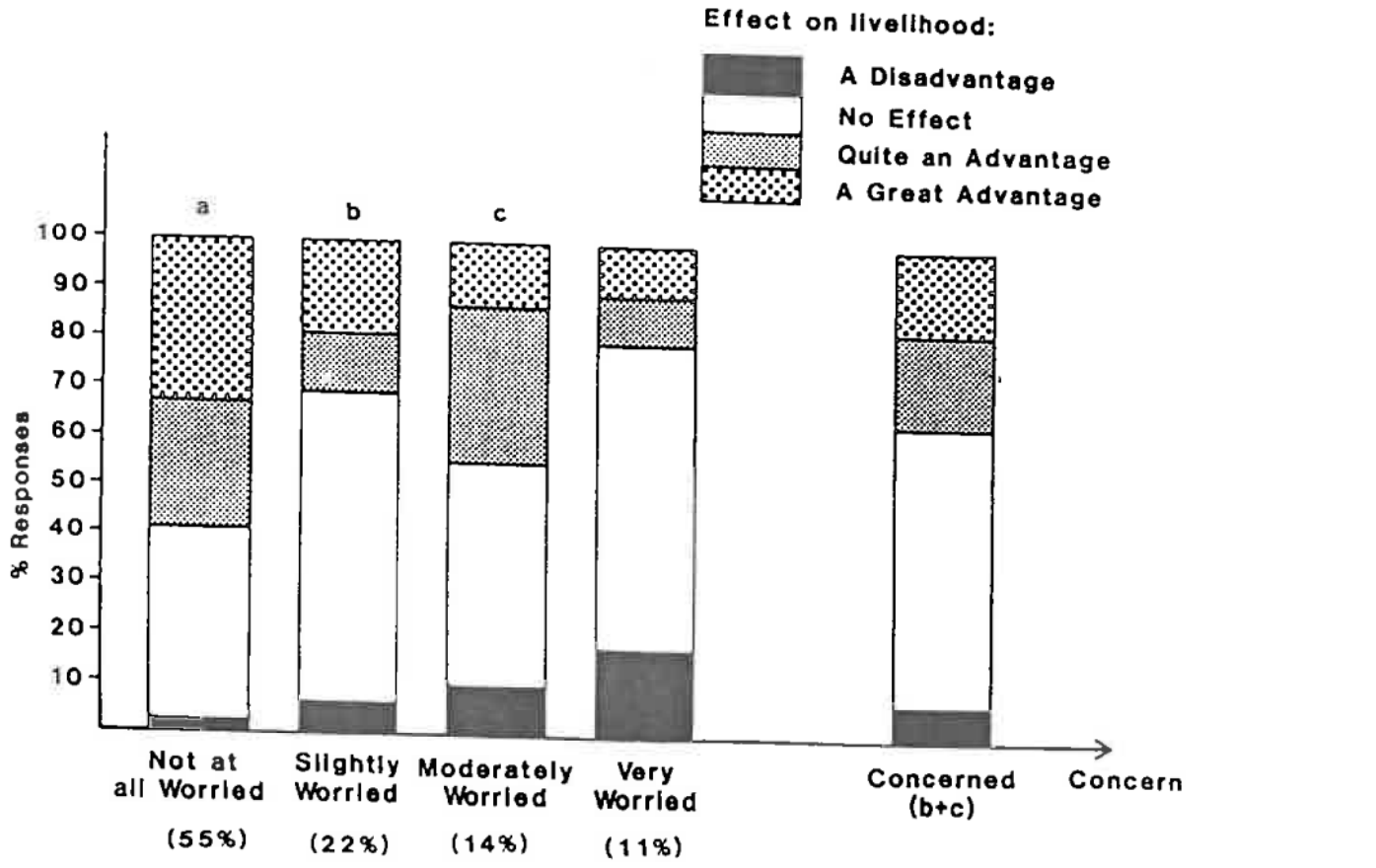

Figure 9 :

Concern x Gender

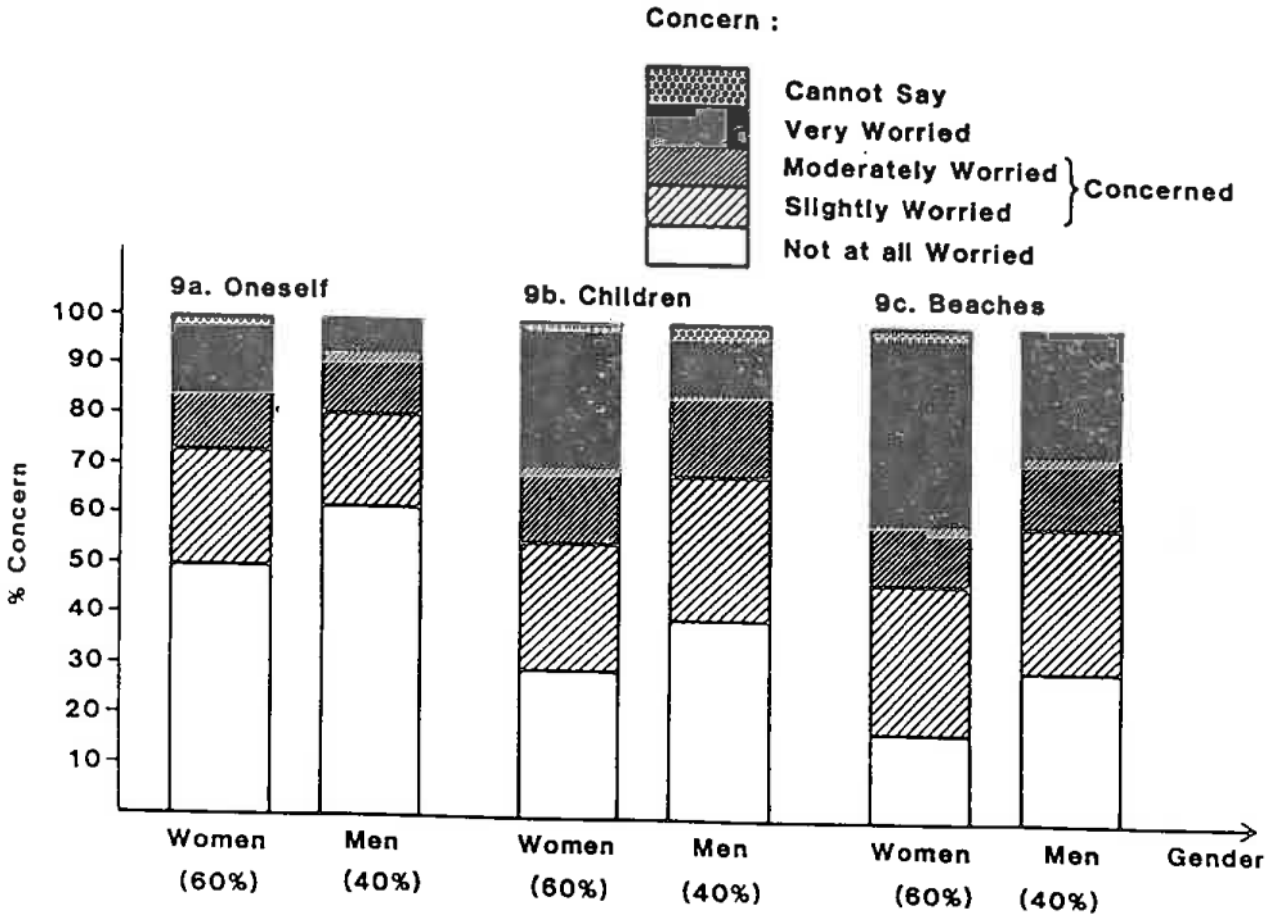

Figure 10 :

Concern x Reliability of BNF