

on the second chromatogram will show up mixtures of morphine and amphetamine or morphine and chlorpromazine.

### Discussion

It must be remembered that nearly 1,000 basic drugs are available, either legally or illegally. Most of these give a positive reaction with the iodoplatinate solution. Many of them give colours with the Marquis reagent.<sup>11</sup> Only the more important drugs of abuse and a few common tranquillizers have been included in Table I. Should other basic compounds assume a position of importance their characteristics can be determined for inclusion in the scheme. Further reagents may be added if this becomes necessary.

It must be emphasized that this method is in no way a substitute for normal toxicological analysis, and its results would not serve as legal proof in court. Owing to its speed and simplicity it should, however, be of service in providing confirmation of clinical or circumstantial evidence under conditions where normal laboratory facilities are not available.

I wish to express my thanks to Dr. M. Mitchenson and Dr. E. Tylden for providing me with experimental material, and to Mrs. Frances Desmond for technical assistance.

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## General Practice Observed

### The Hallucinations of Widowhood

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*British Medical Journal*, 1971, 4, 37-41

#### Summary

227 widows and 66 widowers were interviewed to determine the extent to which they had hallucinatory experiences of their dead spouse. The people interviewed formed 80.7% of all widowed people resident within a defined area, in mid-Wales, and 94.2% of those suitable, through the absence of incapacitating illness, for interview.

Almost half the people interviewed had hallucinations or illusions of the dead spouse. The proportion of men and women who had these experiences was similar. The hallucinations often lasted many years but were most common during the first 10 years of widowhood. Social isolation did not affect the incidence of hallucination, nor was it related to the incidence of known depressive illness. There was no variation within cultural groups and there was no variation with place of residence, whether this was within town, country, or village, or within England and Wales.

Young people were less likely to be hallucinated than those widowed after the age of 40. The incidence of hallucination increased with length of marriage and was particularly associated with a happy marriage and parenthood. Members of the "professional and managerial" group were particularly likely to be hallucinated,

while widows of "non-manual and sales workers" were the ones least likely to be hallucinated. The incidence was greater with hysteroid than obsessoid people. It was unusual for the hallucinations to have been disclosed, even to close friends or relatives.

These hallucinations are considered to be normal and helpful accompaniments of widowhood.

#### Introduction

The extent to which widowed people experience hallucinations and illusions of their dead spouse had not been previously investigated, so it seemed worth while to determine its incidence.

#### Method

The intention was to interview all widowed people resident within a defined area in mid-Wales. This area, centred on Llanidloes, is such that with few exceptions all residents are patients of one group practice. The practice has about 7,500 patients, and of these about 5,200 live in the survey area. The age and sex distribution of this survey group has been reported elsewhere by Rees and Lutkins.<sup>1</sup>

The identity of most widowed people in the area was already known, but a further check was made with the aid of the practice secretaries, who had lived for many years in the area, district nurses, and local clergy. It was found that 363 widowed people resided in the area. Because of serious physical or mental defects 52 were considered unfit for interview and excluded from the sample. The age and sex distribution of those excluded

Llanidloes, Montgomeryshire

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from and included in the sample is given in Table I, while the reasons for exclusion are given in Table II. Most of the people excluded were aged 80 years or more and 25% of those excluded died during the course of the survey.

Out of 311 people considered fit for interview 18 were not interviewed; the reasons for this are shown in Table III. Two women refused to be interviewed, and this refusal rate of

TABLE I—Age and Sex Distribution when Interviewed of Widowed People Resident in Area

Age in Years	Men		Women		Total	%
	Included in Sample	Excluded from Sample	Included in Sample	Excluded from Sample		
20-29	—	—	2	—	2	0.55
30-39	1	—	2	—	3	0.83
40-49	1	—	9	—	10	2.75
50-59	8	—	38	1	47	12.95
60-69	18	—	69	1	88	24.24
70-79	30	4	77	11	122	33.61
80-89	12	12	41	14	79	21.76
90-99	—	2	3	6	11	3.03
≥100	—	—	—	1	1	0.28
Total	70	18	241	34	363	100.00

TABLE II—Reasons for Exclusion

	Male	Female	Total	%
Deaf .. .. .	8	11	19	36.5
Speech barrier .. .. .	1	1	2	3.9
Low I.Q. .. .. .	—	1	1	1.9
Carcinomatosis .. .. .	—	1	1	1.9
Cardiac failure .. .. .	4	6	10	19.2
Confused .. .. .	1	8	9	17.3
Subdural haematoma and personality change .. .. .	1	—	1	1.9
Parkinson's disease .. .. .	1	1	2	3.9
Bedridden for other reasons .. .. .	2	5	7	13.5
Total .. .. .	18	34	52	100.0

TABLE III—Reasons for No Interview

	Male	Female	Total	%
Refused interview .. .. .	—	2	2	0.6
Sudden death precluded interview .. .. .	1	3	4	1.1
Not contacted .. .. .	3	9	12	3.3
Excluded because of illness .. .. .	18	34	52	14.3
Interviewed .. .. .	66	227	293	80.7
Total .. .. .	88	275	363	100.0

0.64% is much lower than usual in studies on bereavement, where refusal rates of 16-41% are the norm. A total of 80.7% of all widowed people resident in the area were interviewed and 94.2% of those considered fit for interview.

#### INTERVIEW

Each person was interviewed separately and with four exceptions no other person was present during the interview. The interviews were conducted in a semi-rigid manner. Each person was encouraged to talk freely about the deceased spouse, but enough direction was given to ensure that all items listed on a standardized form were covered. In particular the interview was used to determine whether the widowed person had experience of hallucinations (visual, auditory, or tactile) or illusions (sense of presence) of the dead spouse.

Particular care was taken in assessing the statements of those who reported hallucinatory experiences. Only those who did not rationalize the experience—for instance, by saying that they had seen the deceased in “their mind’s eye”—were listed as being hallucinated. If there was any doubt about the reality of the experience a nil response was recorded. Experiences occurring in bed at night, other than those occurring immediately after retirement, were discounted and recorded as dreams.

#### HYSTEROID-OBSOISSOID QUESTIONNAIRE

The people interviewed were asked to complete the hysteroid-obsessoid questionnaire devised by Caine and Hope.<sup>2</sup> The purpose was to determine whether a relation exists between post-bereavement hallucinations and personality type. Though a willingness and often an eagerness to talk marked the interview some of the older people were unable or unwilling to complete the questionnaire. Results were obtained from 54 men and 199 women. Of these 39 men and 149 women were obsessoid, while 15 men and 50 women were hysteroid. No data were obtained from 12 men and 28 women, all of whom were aged 50 or more, 30 of them being over the age of 70.

#### STATISTICAL ANALYSIS

The recorded data were transcribed on to punch cards and analysed on an ICL 80 column sorter. The statistical tests were carried out mainly with an Elliott 4130 computer programmed to test the difference between two proportions.

#### Results

For simplification and except where otherwise specifically stated the word “hallucination” is used to include all hallucinations and illusions. Of the 293 people interviewed 137 (46.7%) had post-bereavement hallucinations. These hallucinations often lasted many years, and at the time of interview 106 (36.1%) people still had hallucinations. The proportions of hallucinated men and women were similar, with 33 (50%) men and 104 (45.8%) women having had hallucinations.

The most common type of hallucination is the illusion of feeling the presence of the dead spouse. The incidence of the various hallucinations is shown in Table IV. Auditory hallucinations (13.3%) are slightly less common than visual hallucinations (14.0%), and more than one person in 10 has spoken to the dead spouse. The least common hallucination is the feeling of being touched by the dead spouse (2.7%).

TABLE IV—Incidence of Various Hallucinations

	All Widowed People		
	Male	Female	Total
Feels presence of deceased .. .. .	29 (43.9%)	86 (37.9%)	115 (39.2%)
Sees deceased .. .. .	11 (16.7%)	30 (13.2%)	41 (14.0%)
Hears deceased .. .. .	7 (10.6%)	32 (14.1%)	39 (13.3%)
Speaks to deceased .. .. .	13 (19.7%)	21 (9.3%)	34 (11.6%)
Touched by deceased .. .. .	1 (1.5%)	7 (3.1%)	8 (2.7%)

(Some people experienced more than one type of hallucination.)

nations (14.0%), and more than one person in 10 has spoken to the dead spouse. The least common hallucination is the feeling of being touched by the dead spouse (2.7%).

Though the total incidence of hallucination is similar for men and women variations occur in the incidence of certain hallucinations. Widows are more likely to be auditorily hallucinated than widowers (P < 0.01), with 32 (14.1%) widows having been auditorily hallucinated compared with 7 (10.6%) men. In contrast, widowers are more likely to have spoken to the dead spouse (P < 0.05) than widows, with 13 (19.7%) widowers and 21 (9.3%) widows being hallucinated in this way.

#### AGE WHEN WIDOWED

Most people were in the older age groups when widowed. Altogether 38 (57.6%) men and 96 (42.3%) women were aged 60 years or more when widowed, while 3 (4.5%) men and 31 (13.7%) women were below the age of 40. It is shown in Table V that people widowed below the age of 40 are the ones least likely to be hallucinated. This difference in the incidence of hallucinations between people widowed below the age of 40 compared with older widowed people is significant (P < 0.05).

TABLE V—Age when Widowed

Age (years):	-29	-39	-49	-59	-69	-79	-89
No. widowed ..	16	18	57	68	86	41	7
% hallucinated ..	20.7	22.2	54.4	44.1	52.3	48.8	0

Variations also occur with the age when widowed and certain types of hallucinations. A total of 11 (7.7%) of the 159 people widowed below the age of 60 conversed with the dead compared with 23 (17.2%) of the 134 people widowed at an older age. Of those aged below 60 when widowed 15 (10.6%) were visually hallucinated compared with 26 (19.4%) of those widowed at an older age. We thus find that people aged less than 60 when widowed have a lower incidence of conversing with the dead ( $P < 0.01$ ) and of visual hallucinations ( $P < 0.05$ ) than those widowed at an older age.

## DURATION OF WIDOWHOOD

An association exists between the duration of bereavement and the incidence of hallucination. The pattern is shown in Table VI. A significantly higher proportion of people widowed for under 10 years is hallucinated than is found for those widowed for a longer period ( $P < 0.05$ ).

TABLE VI—Duration of Widowhood

Duration (years):	-10	-20	-30	-40
No. widowed ..	158	68	45	22
% hallucinated ..	52.6	42.7	40.0	31.8

Significant variations occur also with duration of bereavement and type of hallucination. Nine men (13.6%) and 58 women (25.6%) were widowed for over 20 years, while 25 (37.9%) men and 68 (30.0%) women were widowed for under five years. Of those widowed for over 20 years 3 (4.5%) were visually hallucinated compared with 38 (16.8%) of those widowed for less than 20 years; similarly, of those widowed for over 20 years 2 (3.0%) conversed with the dead spouse compared with 15 (16.1%) of those widowed for under five years. Thus the people widowed for over 20 years were less likely to be visually hallucinated than those widowed for a shorter time ( $P < 0.05$ ) and were less likely to talk to the dead spouse than those widowed for under five years ( $P < 0.05$ ).

## PLACE OF DEATH

Rees and Lutkins<sup>1</sup> found that the mortality associated with bereavement varied with the site of death of the first spouse. In general no such variation occurs with place of death and incidence of hallucination. No difference occurs in the total proportion of hallucinated people whose spouse died at home (161) compared with those whose spouse died in hospital (109) or at some other site (23). Nevertheless, a sex-linked difference is present in the specific case of deaths in hospital. Of the 26 widowers whose wives died in hospital 9 (34.6%) were hallucinated, compared with 24 (60%) widowers whose wives died outside hospital. Conversely of the 83 (36.6%) widows whose husbands died in hospital 46 (55.4%) were hallucinated, compared with 37 (25.7%) widows whose husbands died elsewhere. Thus we find that widowers whose wives die in hospital are less likely to be hallucinated than those whose wives die outside hospital ( $P < 0.05$ ), and that widows whose husbands die in hospital are more likely to be hallucinated than those whose husbands die outside hospital ( $P < 0.05$ ).

## MARITAL HARMONY

Surviving spouses of unhappy marriages are unlikely to be hallucinated ( $P < 0.01$ ). Eleven widows stated that their marriage was unhappy and all these reported a complete absence of post-bereavement hallucinations.

## REMARRIAGE

The hallucinated were more likely to decline an opportunity to remarry than the non-hallucinated ( $P < 0.05$ ). Eleven of the 21 widowed people who remarried were hallucinated. The four who rejected subsequent remarriage were all hallucinated. They gave as their reason the feeling that the dead spouse was opposed to it, and one widow broke off a subsequent engagement for this reason.

## PEOPLE WIDOWED TWICE

Eleven people were widowed twice. Two were men, both septuagenarians, and neither was hallucinated. One 71-year-old widow had illusions of the presence of both dead spouses. A 58 year-old widow reported having had visual hallucinations on two occasions of her first husband but no hallucinations of the second. An 80-year-old widow had visual hallucinations of a son who died in early adulthood but none of her two husbands, of one of whom she was very fond while the other she disliked intensely.

## CHILDLESS MARRIAGES

Widowed spouses of childless marriages were less frequently hallucinated than people who had been parents ( $P < 0.05$ ). Out of 137 hallucinated people 20 (14.6%) were spouses of childless marriages compared with 37 (23.7%) of the 156 non-hallucinated people.

## HUSBAND'S OCCUPATION

In order to obtain reasonably sized figures the occupation only of the husband was taken and these were grouped into the seven classes shown in Table VII. The high incidence of hallucination

TABLE VII—Occupation and Incidence of Hallucination

	Profes- sional and Man- a- gerial	Self- em- ployed Industry and Com- merce	Farm- ers	Super- visors and Skilled Manual Workers	Non- man- ual and Sales Workers	Agric- ultural and Forestry	Labour- ers
No. widowed	25	47	62	68	40	25	26
% hallucinated ..	72	49	47.6	44.1	32.5	40	50

among the professional and managerial group compared with other groups is significant ( $P < 0.01$ ). Widows of the professional and managerial group were found to have a significantly higher incidence of hallucinations than other widows ( $P < 0.05$ ), with 14 (70%) of the 20 widows in this group being hallucinated. In contrast widows of men engaged in non-manual and sales work were the ones least likely to be hallucinated ( $P < 0.05$ ), with 9 (27.3%) of the 33 widows in this group being hallucinated.

## FACTORS NOT AFFECTING INCIDENCE OF HALLUCINATION

Some factors which did not affect the incidence of hallucination are listed in Table VIII. This shows in particular that no

TABLE VIII—Factors which do not affect Incidence of Hallucinations. Percentages of People involved are given in Parentheses

Sex	
Age when interviewed	
Cause of death	
Factors associated with death	{ Sudden (39.6%) Inquest (7.5%) Necropsy (11.9%) Relatives present (55.3%) Relatives expected death (46.7%)
Cultural background	{ Ability to speak Welsh (44.4%) Sectarian allegiance within Christian faith Regularity of church attendance
Residence when bereaved	{ Town (66.2%) Village (18.4%) Country (15.4%) Within Llanidloes area (81.9%) Wales outside Llanidloes area (9.9%) Outside Wales (8.2%)
Change of residence after bereavement	{ (43.7%)
Social isolation	{ Feeling lonely (41.3%) Living alone (42.6%) Relatives nearby (76.6%) Regular job (30.7%)
Depression requiring treatment	{ Before bereavement (2.7%) After bereavement (17.7%)

variation in the incidence of hallucination occurred with social isolation, certain cultural factors, and residence when bereaved. In addition the expected and distributed frequencies of hallucination with geographical area were looked at. These figures are given in Table IX and somewhat surprisingly show the two groups to tally exactly. It thus seems likely that the figures obtained in Llanidloes are generally applicable for England and Wales.

TABLE IX—Expected and Observed Frequencies of Hallucinations

	Within Llanidloes Area	Wales Outside Llanidloes	Outside Wales	Total
Total residents	240	29	24	293
Expected number hallucinated	112	14	11	137
Observed number hallucinated	112	14	11	137

With regard to sectarian allegiance the two main religious denominations in the area were Anglicans (27.0%) and Welsh Methodists (24.6%). The smallest group were the Roman Catholics with two members.

The extent to which widowed people had been treated for depression was determined from their medical record cards. Altogether 17.7% of all widowed people had received treatment by either electric convulsion therapy or monoamine oxidase inhibitors or tricyclic compounds for depression sometime after widowhood; 15.0% had received only drugs, while 2.4% required electric convulsion therapy alone or in combination with drugs. The proportion who were depressed before bereavement was small (2.7%), but everyone in this group also suffered from depression after bereavement. All those requiring electric convulsion therapy had been referred to a psychiatrist, but most of the others were treated by the general practitioner alone. The proportion of widowers (7.6%) receiving treatment for post-bereavement depression was significantly smaller ( $P < 0.05$ ) than for widows (20.7%). The incidence of depression was similar for the hallucinated (17.5%) and non-hallucinated (18.0%) groups.

#### HYSTEROID-OBSOESSOID QUESTIONNAIRE

The hysteroid-obsessoid questionnaire was used to determine whether a relation exists between basic personality type and post-bereavement hallucinations. Of the 253 people who completed the questionnaire 39 men and 149 women were obsessoid while 15 men and 50 women were hysteroid.

As the hysteroid type is more imaginative than the obsessoid one expected the hysteroid subjects to have a higher incidence of hallucination than the obsessoid subjects. It is shown in Table X that this is so. A total of 40 (61.5%) hysteroid people were hallucinated compared with 85 (45.2%) obsessoid people ( $P < 0.05$ ). Hysteroid widows in particular were more likely

TABLE X—Percentage of Hallucinated People scoring at the Various Levels of the Hysteroid-Obsessoid Questionnaire

Score:	Obsessoid					Hysteroid				
	-16	-18	-20	-22	-23	-24	-26	-28	-30	31+
No. widowed	30	38	51	42	27	15	19	21	4	6
% hallucinated	46.7	36.8	43.1	50	51.9	66.2	63.2	57.1	50.0	50.0

to be hallucinated ( $P < 0.01$ ) than obsessoid widows, with 31 (62.0%) hysteroid widows being hallucinated compared with 64 (43.0%) obsessoid widows.

In Table X it is shown that people scoring in the lower range of hysteroid scores were particularly likely to be hallucinated.

#### PREVIOUS DISCLOSURE OF HALLUCINATIONS

Most widowed people do not disclose their hallucinations ( $P < 0.01$ ) and only 38 (27.7%) had done so; 20 (14.6%) people had made the disclosure to more than one person. The 34 (32.7%) widows who had previously disclosed them was a significantly larger proportion than the 4 (12.1%) widowers ( $P < 0.05$ ). No doctor had been informed and only one person had confided in a clergyman.

Of the 99 people who had not previously mentioned their hallucinations 51 could give no reason for not having done so. Of those who offered an explanation the most common—fear of ridicule—was mentioned by 14 people. Other reasons given were that it was too personal (7), no previous inquiry (6), people would not be interested (6), upset relatives if they knew (6), unlucky to talk about it (2), and various other reasons (7). Social isolation did not affect the frequency with which the information had been previously disclosed.

#### HELP FROM HALLUCINATIONS

Most percipients were helped by their hallucinations. Altogether 32 (78.0%) of the visually hallucinated, 26 (66.7%) of the auditorily hallucinated, 84 (73.0%) with illusions of the deceased's presence, and 28 (82.4%) of those who spoke to the dead person found it helpful. These proportions are all significantly greater than for those who were not helped ( $P < 0.01$ ). Six (75%) of those whose hallucinations were tactile found them helpful, but this figure was not significant.

In contrast to the 94 (68.6%) people who were helped, 8 (5.9%) found the hallucinations unpleasant while 35 (25.5%) found them neither helpful nor unpleasant.

#### TIME OF OCCURRENCE OF HALLUCINATIONS

Usually the hallucinations occurred at variable times throughout the day, and this was the experience of 99 (72.3%) hallucinated people. Fifteen people (10.9%) were continually hallucinated and felt that the dead spouse was always with them. Two people (1.5%) were hallucinated only in the morning, 2 (1.5%) only in the afternoon, and 19 (13.9%) only at night.

#### DURATION OF MARRIAGE

Having concluded the main survey and seen some of the results it seemed likely that the incidence of hallucinations would be greater for those who had been happily married for many years and that the period of cohabitation would be directly related to the occurrence of hallucinations. This hypothesis seemed worth testing, so the relation between duration of marriage and hallucinations was examined. For this test a sample of 100 widowed people was considered adequate, though data were obtained from 104 widows and 23 widowers

The additional information required was the year of marriage so that the duration of marriage could be determined. This information was obtained from widowed people or close relatives attending the surgery.

Some considerable time had elapsed between the conclusion of the main survey and the start of this subsidiary survey. During that time 7 widows and 10 widowers had died, so that 46.0% of the remaining 276 people were included in this additional test. Of the 17 people who died 11 (64.7%) were not hallucinated, though the difference is not significant.

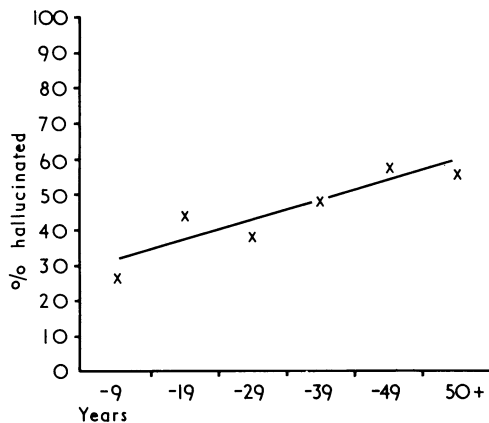
The figures for frequency of hallucination with relation to duration of marriage are given in Table XI. The  $\chi^2$  value for

TABLE XI—Relation between Duration of Marriage and Occurrence of Hallucinations in Widows and Widowers

	Duration of Marriage in Years						Total
	-9	-19	-29	-39	-49	50+	
Non-hallucinated ..	13 (72)	9 (56)	18 (62)	18 (51)	9 (41)	3 (43)	70 (55)
Hallucinated (including "sense of presence") ..	5 (28)	7 (44)	11 (38)	17 (49)	13 (59)	4 (57)	57 (45)
Total .. ..	18	16	29	35	22	7	127

Percentages are given in parentheses.

the  $2 \times 6$  contingency table is 5.1 and is not significant. The regression analysis uses more information as it takes into account the time sequence, and this yields positive information, with  $F_{1,4} = 20.31$ , which is significant at 5% (and almost at 1%). The linear regression curve in the Chart shows the continual trend of hallucinations with duration of marriage, so the predicted increase in hallucinations with increased duration of marriage does occur.



Relation between hallucinations and duration of marriage.

## Discussion

It is generally considered that the Celtic character is highly imaginative and perceptive. For this reason it might be considered that post-bereavement hallucinations might be more common in mid-Wales than elsewhere in the British Isles. There are four reasons for believing this is not so. Firstly, no

variation was found with incidence of hallucination and residence when bereaved. Secondly, no variation occurred within the cultural groups examined. Thirdly, the proportion of hysteroid people (25.7%) examined was considerably smaller than the proportion of less imaginative obsessoid (74.3%) people. Finally, there is the corroborative evidence of Marris.<sup>3</sup> Marris interviewed 72 young widows in south-east London, and though his main interest was socioeconomic he found that 36 (50%) had experienced hallucinations or illusions of the dead spouse. Marris interviewed only 69% of his original sample, but the reported incidence of hallucinations in London is very similar to that for widows (45.8%) in mid-Wales.

It remains possible that between countries with very different cultural traditions the incidence of post-bereavement hallucinations may vary considerably. Evidence of this viewpoint comes from Japan. Yamamoto and his colleagues,<sup>4</sup> wishing "to examine the process of mourning in a culture whose religions sanction the implied presence of the deceased through ancestor worship," interviewed 20 widows living in Tokyo. The original sample was 55, but for various reasons most could not be interviewed. Of those interviewed 18 (90%) reported feeling the presence of the dead spouse, though none reported cultivation of the idea of the presence of the deceased.

None of the Tokyo widows worried about their sanity because they felt their husband's presence. Yamamoto *et al.* considered that religion helped this aspect of grieving, for in their religious beliefs the husband was present as an ancestor. This may be so. It seems reasonable to conclude from the study in mid-Wales that hallucinations are normal experiences after widowhood, providing helpful psychological phenomena to those experiencing them. Evidence supporting this statement is as follows: hallucinations are common experiences after widowhood; they occur irrespective of sex, race, creed, or domicile; they do not affect overt behaviour; they tend to disappear with time; there is no evidence of associated illness or abnormality to suggest they are abnormal features; they are more common in people whose marriages were happy and who became parents; and people are able to integrate the experience and keep it secret. Evidence supporting the claim that these experiences are helpful is two-fold—most people feel they are helped, and among the people least likely to be hallucinated are those widowed below the age of 40, yet it is known from the evidence of Kraus and Lilienfeld<sup>5</sup> that people in this younger age group are particularly likely to die soon after widowhood.

This paper is based on a thesis to be submitted to the University of London. I am indebted to Mrs. Pat Jones, of the R.C.G.P. statistics unit, for analysing the punch card data, and to Miss Sylvia Lutkins for doing the statistical tests. Dr. R. J. F. H. Pinsent and Professor K. Rawnsley were kind enough to discuss the project with me at length. Professor J. M. Hinton and Dr. C. Murray Parkes very kindly read a draft of the thesis and made many useful and helpful suggestions. I am particularly indebted to Dr. J. Pollitt, of St. Thomas's Hospital, for his continual help and encouragement and to the many other people who helped in various other ways.

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