

# PERSONALITY, AND PAIN ASSESSMENT IN CHILDBIRTH OF MARRIED AND UNMARRIED MOTHERS

By

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## INTRODUCTION

STUDIES which have investigated differences in pain tolerance between extraverts and introverts have reported that the former can tolerate pain better than the latter (Petrie, 1958; Poser, 1960). Nevertheless, behaviourally it was noticed that extraverts appear to complain of pain or discomfort readily and generally to "give voice" to their feelings more than introverts, who incline to "grin and bear it" and make light of past painful experiences. Furthermore, it has been shown in drug studies that subjects react differently to pain inflicted in a laboratory to that caused in other (i.e. natural) ways even if this be more severe (Beecher, 1957). It was therefore decided to investigate this discrepancy by testing subjects undergoing "natural", i.e. not experimentally inflicted, pain, and women in childbirth seemed a suitable group to approach.

Entering into the realm of obstetrics brought out a second point of interest for this project. It became obvious that obstetricians and midwives were unable to predict a woman's feelings and behaviour in the labour situation from her attitude at antenatal visits. This is partly because patients, at most antenatal clinics, are seen by a different doctor at each visit, and there is hardly time in the brief interviews for a predictive assessment of this kind to be formed. Nevertheless, general practitioners, who run district antenatal clinics and therefore see patients at each visit themselves (however briefly sometimes), find the same difficulty in making an accurate prediction of the patient's behaviour when she goes into labour. It seemed likely to us that the interviewers were concentrating on neuroticism as their criterion of "easy" or "hard" labours, this being discernible in terms of manifest anxiety, too many or too few questions about their pregnancy and labour, together with a general "worried" impression conveyed by the patient to the doctor.\* Though this may be a variable of some importance, it seemed to us that more telling by far is the position of the patient on the extraversion-introversion continuum (Eysenck, 1957) and that some knowledge of this variable would allow the clinician a better prediction of the labour behaviour of his patient.

Finally, in testing mothers, several who were unmarried were seen and since they appeared to differ in their personality make-up somewhat, they were tested as a separate group and all results have been quoted for married and unmarried mothers separately.

\* Stewart and Scott (1952) studied women in labour, giving interviews and Maudsley Medical Questionnaires to their subjects to ascertain whether the neurotic, tense women would be those likely to have "difficult" labours. They concluded that "Experience so far suggests that there is little if any relation between the behaviour in labour and the psychological assessment made during pregnancy. The great variability of behaviour suggests that a tense woman need not necessarily have a tense cervix or an abnormal labour." In later work, Scott and Thomson (1956) did report a tendency for the unstable women (as judged by interview and the Maudsley Medical Questionnaire) to have more difficult labours than the stabler ones.

## PROCEDURE

The writer tested one hundred mothers at the maternity wards of Lewisham General Hospital. Only primiparae and no Caesarean section or miscarriage patients were seen. Also, only English-born subjects were tested, partly to do justice to the vocabulary intelligence test used, and partly because foreign or Commonwealth attitudes and social mores (especially in respect to childbirth) differ so much from those in this country that it seemed unfair to mix the sample in this way.

Some unmarried mothers were seen at Lewisham General Hospital, but the majority, who came from Moral Welfare homes, were seen subsequently on their return after the confinement. To complete the sample of one hundred unmarried mothers, the writer tested at three Moral Welfare homes for unmarried mothers and their babies, and not all of these mothers were confined at Lewisham General Hospital.

The staff at the antenatal clinic of Lewisham General Hospital undertook to give out a questionnaire to all primiparae patients attending the clinic at the thirty-sixth week of pregnancy, and these forms (A.N. for Ante-Natal) were then placed into the patients' case papers, together with a brief questionnaire filled in by the doctor at this clinic, stating whether or not there was any *physical* abnormality which could cause the patient to have a difficult confinement. (Any such cases were excluded from our sample. There were, in fact, only three of these.)

The writer then extricated these papers from the case notes of the subject, together with a form filled in by the nurses present at the delivery of the patient, briefly assessing the behaviour of the patient during labour, listing drugs administered and length of labour. The patient was then seen for about twenty minutes, at any time convenient to the staff of the ward, during her ten days' or so stay in hospital.

First, the subjects were asked twelve questions on the P.N. (for Post-Natal) questionnaire, pertaining to the actual delivery, after which they were asked to rate, on a five-point scale, the *actual* pain they had felt during labour, taking the event all in all. Secondly, twenty-four extraversion and twenty-four neuroticism questions of the Maudsley Personality Inventory (Eysenck, 1959) were given, as well as twelve rigidity questions (Nigniewitzky, 1955). Finally, the Mill Hill Vocabulary Scale (Form I senior) set B was administered.

We thus had extraversion, neuroticism, rigidity and intelligence scores for all our subjects. In addition we had two measures of their pain in the labour situation:

1. The self-assessment, which was made from the following scale:

- (a) uncomfortable; (b) mildly painful; (c) painful; (d) very painful; (e) unbearable.

2. The Nurses' Ratings, which were made from the following scale:

- "During her labour, did your patient behave: (a) hysterically; (b) with great fear; (c) anxiously; (d) mildly anxiously; (e) calmly; (f) in perfect control?"

Since there was no opportunity of giving an A.N. form, or of obtaining Nurses' Ratings, on unmarried mothers not confined at Lewisham General Hospital, only the P.N. form and self-assessments could be quoted for this group.

## RESULTS

From the M.P.I., extraversion, neuroticism and rigidity scores for each subject were obtained. Their relative intelligence was computed from the Mill Hill Vocabulary Scale (Synonyms score); and their scores on Patient Ratings (self-assessment of pain in labour), Nurses' Ratings (Nurses' assessment of patients' behaviour during labour), and their ages were all tabulated. Finally the number of days after delivery that each subject was tested was also used as a measure to ascertain whether time elapsing after the event made any difference to their ratings or not. (There was in fact no relation with time passing as Table II will show.)

The means and standard deviations of the main scores are given in Table I, together with the critical ratio of the differences between married and unmarried mothers. The inter-correlations of the main variables were computed (Table II); Nurses' Ratings not being available, of course, for the unmarried mothers.

TABLE I  
*Means, Variances and Critical Ratios of Mean Differences*

	Married Mothers N=100		Unmarried Mothers N=100		C.R.	Significant Level %
	M	$\sigma^2$	M	$\sigma^2$		
Extraversion (E) ..	29.8	84.86	32.4	79.17	2.03	5
Neuroticism (N) ..	15.6	92.92	25.8	119.43	7.00	0.1
Patient Ratings (P.R.) ..	2.9	1.16	3.1	1.47	1.23	N.S.
Nurses' Ratings (N.R.) ..	4.1	1.43	—	—	—	—
Rigidity (R) ..	11.0	20.16	11.6	18.35	0.97	N.S.
Synonyms (S) ..	16.5	24.11	14.7	15.86	2.85	1
Age (A) ..	25.2	23.50	19.5	20.35	8.61	0.1
No. days tested after delivery (No.) ..	3.7	6.74	21.9	188.76	13.02	0.1
Population Norms (N=1800) are: E=24.91; $\sigma^2=94.28$ N=19.89; $\sigma^2=121.44$						

TABLE II  
*Intercorrelations*

		Married Mothers							No. Days
		E	N	R	S	A	P	NR	
Unmarried Mothers	E	.. ( )	-0.14	-0.32†	-0.24*	-0.06	-0.37†	-0.16	—
	N	.. -0.24*	( )	+0.35†	-0.00	-0.01	-0.19	+0.09	—
	R	.. -0.40†	+0.29†	( )	-0.23*	+0.18	-0.05	+0.08	—
	S	.. +0.08	-0.16	-0.26†	( )	+0.15	-0.01	+0.26†	—
	A	.. -0.04	-0.02	-0.02	+0.32†	( )	-0.14	+0.10	—
	P	.. -0.38†	+0.09	+0.31†	-0.03	+0.01	( )	+0.30†	+0.11
	NR	.. —	—	—	—	—	—	( )	+0.09
	No. days	.. —	—	—	—	—	-0.06	—	( )

\* = significant at 5% level.

† = significant at 1% level.

‡ = significant at 1% level.

Each of the questions on A.N. and P.N. questionnaires respectively were analysed with respect to extraversion, neuroticism and pain-rating variables, and the *t* test results are listed in Tables IV and VI. Since these forms were of the Yes-No type, the *t* test was run by taking the extraversion scores of all those who endorsed the item against all those who negated it (leaving out don't know replies), and similarly with neuroticism and pain-ratings. We could, therefore, determine which of the items differentiated the groups with respect to the three variables we were interested in here. Again there were no A.N. data for the unmarried mothers who did not fill in this form before their delivery. It seemed of additional interest to record the percentage replies in the affirmative for each item (Tables V and VII), and to compare these for married and unmarried mothers. Finally, several chi-squareds were computed to emphasize the difference in extraversion and neuroticism, not only of the married from the unmarried mothers, but also of the mothers from the population means as given in the norms of the M.P.I. (Eysenck, 1959). (See Table III.) The scatter diagrams of extraversion against neuroticism for each group will help to illustrate the differences; Figures 1 and 2.

TABLE III

*Chi-Squared: Extraversion and Neuroticism*

	$\chi^2$	Significant Level	N <sub>1</sub>	N <sub>2</sub>
Married mothers and population norms ..	86.987	0.1%	100	950
Unmarried mothers and population norms ..	106.977	0.1%	100	950
Married and unmarried mothers' samples ..	37.256	0.1%	100	100

TABLE IV

*Ante-Natal Questionnaire Results**t*-Tests for YES Against NO Replies on the Following Items

	No.	t	Significant Level	Question
(a) For Extraversion	13	2.319	5%	"Do you worry a lot about what might happen during your confinement?"
(b) For Neuroticism	13	3.726	0.1	As above.
	15	2.259	5	"Does the sight of blood make you feel sick?"
	16	2.103	5	"When you experience pain of any kind, do you 'go to pieces' easily?"
(c) For Pain Ratings	3	2.342	5	"Did you stick to a special 'pregnancy diet'?"
	14	2.097	5	"Does pain at the dentist upset you very much?"

TABLE V

*Percentage of Yes Replies to Questions in Table IV (A.N.)*

	Question					Percentage Yes Replies
3	..	..	..	..	..	27
13	..	..	..	..	..	29
14	..	..	..	..	..	34
15	..	..	..	..	..	17
16	..	..	..	..	..	10

TABLE VI

*Post-Natal Questionnaire Results**t*-Tests for YES Against NO Replies on the Following Items

	Married Mothers			Unmarried Mothers			Question
	No.	t	Signifi- cant Level	No.	t	Signifi- cant Level	
			%			%	
(a) For Extraversion	3	2.694	1	3	2.686	1	"Would you say you had an easy labour?"
	6	2.906	1	—	—	—	"Were you ever, during labour, really afraid?"
	9	2.360	5	—	—	—	"Were there any events during the delivery that surprised you?"
(b) For Neuroticism	—	—	—	3	2.755	1	As above.
	6	5.192	0.1	—	—	—	As above.
	10	5.480	0.1	—	—	—	"Will you face a future pregnancy with some hesitancy?"
	11	3.088	1	—	—	—	"Would you say that at any time during your labour, you completely lost control?"
(c) For Pain Ratings	3	7.137	0.1	3	4.831	0.1	As above.
	6	3.281	1	—	—	—	As above.
	7	3.308	1	7	2.785	1	"Do you now think that having a baby is much easier than people make it out to be?"
	10	3.941	0.1	10	3.290	1	As above.
	11	4.738	0.1	11	3.243	1	As above.

TABLE VII

*Percentage of Yes Replies to Questions in Table VI (P.N.); and Critical Ratio of Mean Differences Between Married and Unmarried Mothers*

Question	Married Mothers Yes Replies %	Unmarried Mothers Yes Replies %	Critical Ratio	Significant Level	Question
3	62	69	1.045	N.S.	As given in Table VI.
4	41	21	3.175	1	"Do you consider that all you had heard about childbirth was in fact verified by your own experience?"
6	22	23	0.169	N.S.	As given in Table VI.
7	64	90	4.594	0.1%	As given in Table VI.
9	33	20	2.107	5%	As given in Table VI.
10	30	22	1.294	N.S.	As given in Table VI.
11	30	23	1.125	N.S.	As given in Table VI.
12	25	55	4.545	0.1%	"Do you now feel a bit despondent after it is all over?"

#### DISCUSSION

The first question we were interested in was that of the differential pain tolerance of extraverts and introverts. From Table II it will be seen that Extraversion and Patient Ratings (P.R.) correlate  $-0.37$  in the married and  $-0.38$  in the unmarried groups. Since the pain rating scale went from uncomfortable (score 5) to unbearable (score 1), the negative correlation we obtained means that the more extraverted the patient, the more unbearable did the labour situation seem to her in retrospect. Taking the Nurses' Ratings (N.R.) correlation with extraversion, however, it will be seen to be  $-0.16$  which is not significant statistically, although it is in the same direction as the self rating. (Nurses' Ratings scale went from hysterically (score 1) to in perfect control (score 6).)

Neuroticism on the other hand, correlated  $-0.19$  and  $+0.09$  with pain ratings for married and unmarried mothers respectively, neither figures being significant. Nurses' Ratings turned out similarly non-significant at  $+0.09$ . Neuroticism, then, appears to enter into the picture very little, as against the influence of extraversion.

It will be further seen from Table II that most of the other variables did not influence the patients' pain ratings or those of the Nurses, except in two cases. First, there is a  $+0.31$  correlation, in the unmarried mothers group only, between rigidity and pain ratings. However, when the influence of extraversion (quite highly correlated with rigidity; i.e.  $-0.32$ ) is removed, the partial correlation drops to  $+0.19$ , which is not significant. Secondly, there appears to be a  $+0.26$  correlation between intelligence and Nurses' Ratings, and this is quite interesting, because it suggests a tendency for nurses to judge the behaviour of their mothers in labour, in part by their intelligence, that is to say, by the ease with which they seem to follow instructions, etc.

The situation then, seems fairly clear on two counts. First, patients who maintain that their labours were very painful tend to be on the extraverted side, while those who make light of their experience incline towards the introverted end of the scale. It seems unlikely that extraverts should have *physically* harder labours than introverts, i.e. that they should be differentiated in terms of how

their babies position themselves in the uterus, or in their pelvic measurements, etc. The fact that extraverts express their labours as having been harder than do introverts suggests rather that they are the types, by and large, who are given to voicing their grievances, while introverts, with a life history of "keeping a stiff upper lip" and hiding their true feelings, are those who tend to play down the experience as not too painful. Extraverts, then, behaviourally *exaggerate* the painfulness of the situation, while introverts minimize it. This is an interesting finding, particularly in view of the experimental fact that introverts find pain *harder* to tolerate than do extraverts, thus suggesting that the exaggeration is indeed very gross.

It seemed possible that length of labour might affect the results in view of the build-up of reactive inhibition, particularly in the extraverted group (Eysenck, 1957). We consequently split our group (married mothers only because Nurses' Ratings were not available for unmarried mothers) into three; long, short and average labour times, and computed an F ratio of their respective extraversion scores, and this turned out to be non-significant. In other words, the length of labour did not differ for extraverts and introverts, which confirms that the intrinsic situation of childbirth is no different for extraverts and introverts, only their reactions to it because of their positions on this continuum.

Spontaneous and forceps delivery cases were kept separate in order to ascertain whether there were differences here, but none were found, so that the final computations were done with both groups combined. As might be expected, the only differences between mothers having their babies spontaneously and those requiring forceps help came from their ages, the forceps group being slightly older than the spontaneous group. (Age mean (married mothers) for the forceps group was 27.1, while that of the spontaneous group was 24.5.) However, age did not correlate with any other variable for the mothers (Table II), so that these differences were not relevant to our conclusions.

Secondly, as far as the Nurses' Ratings were concerned the situation is far less clear. Though the correlation of Nurses' Ratings with extraversion falls short of statistical significance, it is in the right direction, showing the tendency for nurses to notice the same trend as the patients themselves. Indeed the correlation between Patient and Nurses' Ratings was as high as +.30, which is significant at the 1 per cent. level (see Table II).

However, there were several difficulties we encountered here, administratively. First came the drug problem. Pethidine, Doriden and "gas and air" were given to the patients and naturally they were given different doses according to the length of labours and the general "need" for them as gauged by the nurses and midwives. Furthermore, it was impossible for nurses, who are already much overworked, to record their impressions at once (they have many more essential matters to record and see to at that moment, since in large wards like Lewisham labour ward it is not unusual for six or more babies to be born simultaneously!). Consequently the rating by the nurses was often done some time *after* the event (from memory) and even occasionally by other nurses, who had not themselves been present at the confinement, obtaining guidance from the case papers of the patient. We would, therefore expect that in a repetition of this kind of study, the Nurses' Ratings of the patients' behaviour would be more in line with the patients' own ratings, if it were possible to (a) control the drug intake of the subjects, and (b) obtain ratings by someone not engaged in other activities at the time who was concerned only with observing and rating the patients' behaviour in labour.

The application of our findings in this respect, seems to us to be that

patients ought to be given M.P.I. tests (especially noting extraversion scores) at one of their antenatal visits. Knowing the degree of extraversion of their patients might then help nurses to (a) drug extraverts more heavily than introverts and (b) make more nurses available for the former who tend to find the loneliness in the first stages of labour so much more intolerable than do the latter. In fact, experienced midwives appear to be able, instinctively, to pick out the "troublesome ones", i.e. those who are likely to be noisy or hysterical and disrupt the labour ward, making deliveries harder for others. Having decided that here they have a "difficult" case, midwives make their proper decisions as to drugs, etc. But probably they only identify the cases that will have a hard time in extremes; extraversion scores might help to get a broader classification perhaps.

This seemed to answer the second question we raised, which was the extent to which midwives and doctors could predict a woman's behaviour in labour from her attitude in antenatal interviews. This prediction, we feel, could be made more accurately when the concept of extraversion-introversion is included, it being doubtful whether neuroticism is involved to any great extent. We feel that intelligence is not really a factor here either (within normal limits), although we obtained a slight ( $-0.24$ ) correlation between intelligence and extraversion (Table II). This is probably because we used a vocabulary test of intelligence and this is known to give a slight bias in favour of introverts. When other tests of intelligence are included, this slight bias tends to cancel out and there are no longer any differences between them (Eysenck, 1947).

As a by-product to this investigation, very marked differences between married and unmarried mothers were observed. It will be seen from Table I that married mothers are more extraverted than the mean of the normal population (Eysenck, 1959); the critical ratios of the mean differences being 5.17 (significant at 0.1 per cent. level) for extraversion and 4.45 (significant at 0.1 per cent. level) for neuroticism. Also that unmarried mothers are even more so, having a slightly higher extraversion mean than the married group. The differences in neuroticism were even more marked, married mothers being *less* neurotic, on the whole, than the general population, while unmarried mothers are distinctly *more* so. Married and unmarried mothers did not differ in their rigidity and intelligence scores, but very much so in age.

When the extraversion and neuroticism scores of each group (married and unmarried mothers) are plotted (Figs. 1 and 2), it can be seen clearly that the main differences lie in two quadrants (low extraversion and low neuroticism, as well as high extraversion and high neuroticism). Very highly significant chi-squareds were obtained (Table III) when married and unmarried mothers respectively were compared with the general population norms, and when they were compared with each other.

In other words, though they do not differ in respect of intelligence and rigidity, unmarried mothers seem to be more extraverted and more neurotic than the general population, in addition to which they are far younger (as a group) than married mothers, when expecting their first baby (Table I). It is a little difficult to generalize too much from these figures, however, since all that can in fairness be said is that: unmarried mothers who go to institutions such as mother and baby homes (of the kind we tested in), tend to be extremely extraverted and/or neurotic. We do not know how many single girls have their babies at home, staying with their own parents, and whether their personality characteristics are similar to those we saw; nor can one tell how many girls have intercourse not resulting in illegitimate babies.



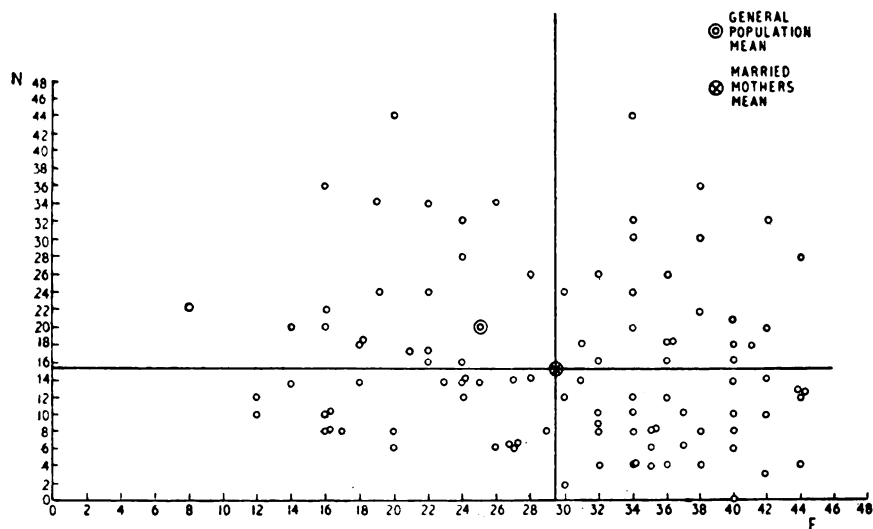


FIG. 1.—Scatter diagram of extraversion and neuroticism scores for married mothers.

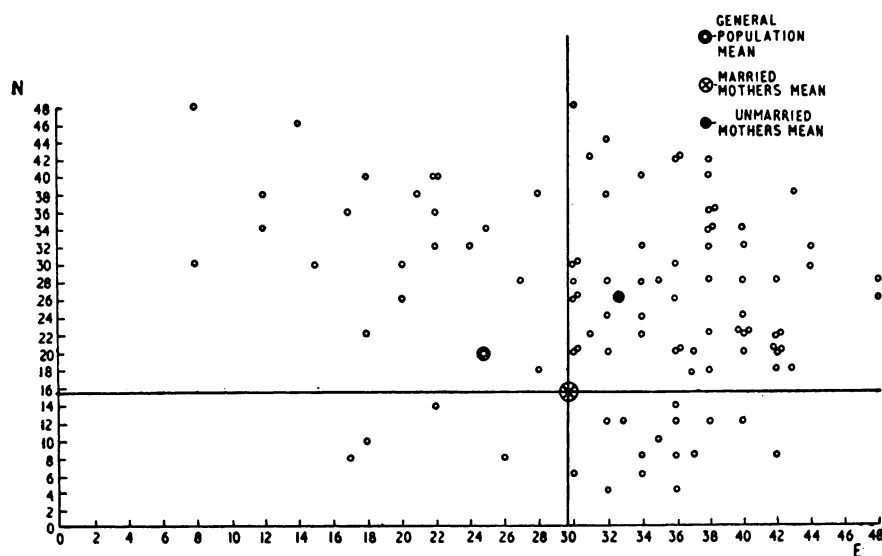


FIG. 2.—Scatter diagram of extraversion and neuroticism scores for unmarried mothers.

The results, however (taking the population sample we obtained), suggest that the girls who might be expected to become pregnant before marriage, would be those with high extraversion scores, or those with high neuroticism scores, or, most likely of all, those who score high on both. Girls who are sociable and mix easily and readily with people are more likely to meet many boys and go to parties, etc., where opportunities for intimacies could present themselves. Moreover, unstable girls might tend to look for security through

a boy friend, and be very amenable to persuasion through their fear of losing him. Doubtless when the two factors are fused, the likelihood of an early pregnancy is increased. It is perhaps worth suggesting here, that one other aspect of extraversion might be partly responsible for the illegitimate baby, and this is the lack of planning so characteristic of the extravert. It is not known, after all, how many introverts have intercourse before marriage but do not produce babies as a result, perhaps their capacity for looking ahead and planning being responsible.

There is a possibility that the high neuroticism scores of the unmarried mothers are slightly spurious. Certain items of the M.P.I. may measure temporary neurotic depression symptoms such as: "Do you ever feel 'just miserable', for no good reason?" or "Have you often lost sleep over your worries?" But there are other questions hardly relevant to their specific state of mind (due to their traumatic experience). It is thus possible that the neuroticism scores of these girls are somewhat inflated due to their recent "worry"; but this hardly accounts for their very much increased score over and above the general population mean. It would be interesting to give objective tests of neuroticism to unmarried mothers to see to what extent the M.P.I. still holds for people who have just experienced a major personal upset. One other thing suggests that the scores cannot be too erroneous. Not *all* the girls were highly neurotic; there were as many stable, but extraverted ones as there were unstable and introverted ones.\*

At first the very gross age difference between our married and unmarried groups rather worried us, but Table II showed that very few items correlated with this variable of relevance to our study. The only significant correlation was between age (+.32, significant at the 1 per cent. level) and intelligence and this was found only in the unmarried mothers' group. This, we feel, is because they have not fully matured yet in intelligence, especially since this test was of the verbal kind. Table I shows a significant critical ratio between the groups for intelligence, which suggests that, when fully mature, the unmarried mothers would be of equal intelligence to the married ones. Pollock (1958) found that: "Social class, economic level and intelligence are not significant factors in the problem of unmarried motherhood."

Our picture of the unmarried mother as highly extraverted and/or neurotic seems to blend in well with impressions given by the staff of the Moral Welfare institutions we visited. They speak of the "really difficult girls" who moan and complain constantly, are very sociable (but often constitute a bad influence on the rest of the girls), hypochondriacal and generally create a trying atmosphere. We would expect this type of girl to be extremely extraverted and neurotic. In addition there are those who are very sociable and are keen to go out a great deal and at all times while, nevertheless, taking well to the rules of the institution and adapting well to any discipline imposed. These we would expect to be the stable extraverts. Finally, there are the quiet, broody introspective girls, who do not mix well and tend to "bottle up" their worries. They are regarded as somewhat atypical in these homes, and would seem to us to typify the neurotic introvert. Since only 4 per cent. of our total group were stable introverts they must be considered to be very much in the minority. (Half of

\* Eilenberg (1960), studying married and unmarried mothers, noted this natural depressed and worried state in the latter group and commented that: "The clinical picture that emerges from the two groups is that the illicit group is characterized by a relative absence of previous mental illness associated with a minimal family history of psychiatric disorder; the pregnancy is unwanted and a temporal relationship exists between the pregnancy and the affective disorder. In effect the psychiatric illness is predominantly reactive."

these came from Moral Welfare homes, while the other half were seen at Lewisham General Hospital.)\*

In addition to the M.P.I., from which extraversion, neuroticism and rigidity were scored, and the Mill Hill vocabulary test of intelligence, two forms were administered to ascertain some aspects of the patients' attitudes antenatally and postnatally. The A.N. form, which married mothers only completed at the thirty-sixth week of the pregnancy, comprised twenty questions on their attitude to their pregnancy and future delivery. The questionnaire was of the Yes-No type and *t*-tests on each item were computed for those saying yes against those saying no on extraversion, neuroticism and pain rating scores respectively. The results (Table IV) show that very few of the questions managed to differentiate the groups with respect to the variables mentioned and this may be either because we posed the wrong questions or because the subjects filled in their forms hastily at the antenatal clinic (probably in a hurry to get away home), and possibly several women discussed the items deciding collectively on the replies.

However, question 13: "Do you worry a lot about what might happen during your confinement?" gave a 5 per cent. level of significance differentiation on extraversion and a much clearer 1 per cent. level of significance one on neuroticism. Again, at the 5 per cent. level only, question 15: "Does the sight of blood make you feel sick?" and question 16: "When you experience pain of any kind, do you 'go to pieces' easily?" differentiated on the neuroticism variable. Question 3: "Did you stick to a special pregnancy diet?" and question 14: "Does pain at the dentist upset you very much?" differentiated between subjects who later gave high and low pain ratings. One is hesitant to interpret differences which are of such tenuous significance statistically, but inasmuch as they were found, tendencies might be noted for future work of this kind. For example, the result on question 3 suggests that those sticking to a special diet did, in fact, report less pain at their confinement. This, of course, might mean several things: (a) that the diet helped to produce an easier confinement; (b) that subjects having stuck to such a diet *believed* that it had made the confinement easier; (c) that the kind of person likely to have an easy confinement anyway is the type of person who is likely to adhere to diets and exercises during the pregnancy. It may be of interest here to note that (Table V) only 27 per cent. of the group endorsed this item, although there is some stress on diet in the antenatal care of the hospital.

Briefly then, though the results on this questionnaire were disappointing, it would seem that questions pertaining to worrying feature on the neuroticism variable, while those to do with pain attitudes differentiate subjects who later give high or low pain ratings of their confinement.

The P.N. questionnaire, administered after baby had been born, gave much more interesting results (Table VI). Question 3: "Would you say you had an easy labour?" differentiated extraverts from introverts and also, as might be expected, gave highly significant *t* results for pain ratings. In other words, extraverts said no to this question, as did those who rated their labour as painful. This result was confirmed in both married and unmarried mothers' groups, while with the latter neuroticism also plays a part in replying to this question.

\* As a matter of interest a note was kept of which girls kept their babies and which formally agreed to adoptions. Their scores on extraversion, neuroticism, rigidity and intelligence were computed, but no significant differences were found. These variables, then, presumably do not influence the choice made by the unmarried mother as to the future of her baby.

Question 6, though extraversion was involved, clearly is mainly a matter of neuroticism, with a highly significant  $t$  obtained on this variable. (Unmarried mothers did not give significant differences on this question.) This question: "Were you ever, during labour, really afraid?" is one on which one would expect the neurotics (where worry and fear items usually receive affirmative replies) to differ, and where perhaps the extraverts feel it is part of the exaggeration of the labour situation. Similarly, those who scored high on the pain rating scale endorsed this question significantly more than those who scored low on pain ratings. (There is bound to be a certain amount of overlap here, of course, due to the correlation between extraversion and pain ratings; we felt, however, that it was worth while computing differences separately because the pain ratings score might give clearer differentiations on a questionnaire dealing mainly with pain or discomfort during labour.)

Question 7 gave some differentiation for both married and unmarried mothers on the pain ratings dimension only. ("Do you now think that having a baby is much easier than people make it out to be?") This, presumably, is just a matter of expecting a rather worse situation than they actually encountered, and this may well be why significantly more unmarried than married mothers endorsed this question (Table VII). This may tie up with the lower number of unmarried than married mothers who endorsed question 4: "Do you consider that all you have heard about childbirth was in fact verified by your own experience?" It suggests that unmarried mothers are more apprehensive of the delivery, and this may be because (being so young generally) they are much more ignorant of the procedure in childbirth. An effort is made, in the Moral Welfare homes in which these girls stay, to instruct them on mothercraft, etc., during their six weeks' stay before their babies arrive. On the other hand, there is probably another, much stronger influence coming from those girls who are back after their confinements, and who (being so predominantly extraverted) tend to exaggerate the horror of the event. This might account for the finding that unmarried mothers are surprised to find that what they had heard about childbirth (question 4) was not necessarily true, and are consequently of the opinion that having a baby is easier than people make it out to be (question 7). It seems a paradox that the girls speak of their own confinements as hard, yet are surprised that it was not as bad as others had made them expect!

Question 10: "Will you face a future pregnancy with some hesitancy?" gave significant differences for pain ratings in both groups and a very significant difference on neuroticism for married mothers only. As far as the former is concerned, the result is fairly clearly that those women who rated the event as painful were going to hesitate before starting a new pregnancy. But the interesting point to be made about this question is that although those who score high on neuroticism take note when they have had hard labours, and remember this when answering a question, such as this, about the future; there is no significance on the extraversion scale, which suggests that extraverts, though appearing to have had a hard labour, do *not* anticipate hesitation in starting another baby. (This confirms a lack of planning and learning from past experience which is also characteristic of extreme extraverts.)

Question 11: "Would you say that, at any time during your labour, you completely lost control?" gave differentiations on neuroticism and pain ratings. (The latter only for unmarried mothers.) Perhaps those who were high on neuroticism tended to really lose control at times, while extraverts exaggerate and verbally endorse that they lost control without necessarily having done so. At any rate, we do not place much confidence in this question as it stands, since

the wording caused some misunderstandings, some thinking that "losing consciousness" was meant by losing control.

Finally (Table VII), it might be of interest to note that a very significantly greater proportion of the unmarried than married mothers endorsed question 12, which was "Do you now feel a bit despondent after it is all over?" This may be due to the whole event seeming more undesirable for unmarried rather than married mothers. If it is true, as is sometimes maintained, that depressions or unpleasant events are forgotten rapidly, the above effect would be enhanced by the fact that unmarried mothers were seen very much later, after the birth, than were the married mothers (Table I). If the single girls had been seen straight after the births of their babies, even more of them might have been depressed than later.

The results on the P.N. form, then, suggest that extraverts, as compared with introverts, after the births of their babies, would be expected to hold the following attitudes about labour: (a) that it was not easy and (b) that they experienced moments of real fear during labour. Those women high on neuroticism would hold that (a) there were moments of fear during labour; (b) that they would hesitate before starting another pregnancy, and (c) that they thought they might have lost control during the delivery. For those women who considered their labours relatively painless, there was the additional belief that having a baby is easier than people make it out to be.

#### SUMMARY

Though we have chosen a very complex problem to analyse, the results of the study appear fairly clear-cut. One hundred married and one hundred unmarried primiparae mothers were tested after the birth of their babies, and scores on extraversion, neuroticism, rigidity and intelligence were obtained, as well as replies to a postnatal questionnaire pertaining to their labours. In addition, married mothers completed an antenatal form at the thirty-sixth week of their pregnancy. The results show that:

(a) Extraverts tend to complain of more severe pain experiences during labour than do introverts.

(b) Neuroticism played no part in predicting either the behaviour or the attitude to labour of the mothers.

(c) Intelligence played no part in the patients' assessments of pain during labour.

(d) Married mothers had higher extraversion and lower neuroticism scores as compared to the general population means.

(e) Unmarried mothers tended to be more extraverted or more neurotic than the general population, the majority being both more extraverted and more neurotic.

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