PERSONALITY AND SEXUAL BEHAVIOUR

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MANY AUTHORS have been concerned with the relation between sexual behaviour and personality, but most have been content with theoretical speculation, or single-case clinical types of study. Some authors, e.g. Kilpatrick et al., [1, 2] have concerned themselves with attitudes rather than behaviour; others, like Wilson [3], Miller and Watson [4], and Svensen [5, 6], have concentrated on psychopathology, happiness, and other concepts. More directly relevant to the hypotheses tested in this paper are reports by Schofield [7], Bynner [8], and Giese and Schmidt [9], all of whom derive their predictions explicitly from certain theories put forward by the present writer [10, 11]. According to these theories, extraversion constitutes a major dimension of personality which is positively related to criminal and generally anti-social behaviour [12], and (negatively) to dysthymic disorders [12]. In an early publication [14] the possibility was raised that both the experimental behaviour differences between extraverts and introverts (e.g. eyeblink conditioning, vigilance, reminiscence, etc.) and the social behaviour differences (neurosis, criminality, etc.) could be explained in terms of cortical arousal, with introverts being hypothesised to have greater arousal and extraverts less cortical arousal than ambiverts; this in turn was suggested as being due to differences in reticular formation functioning. A much more detailed presentation of this hypothesis, and the evidence supporting it, was published later [10].

It is possible to derive predictions about the sexual behaviour of introverts and extraverts either from the descriptive, factorially derived account of their personality, or from the causal theory just outlined, implicating the arousal system. Both types of prediction give similar results, as is to be expected when it is realized that the theory derives the *descriptive* trait variables characterizing extremes on the *E* dimension (e.g. sociability, impulsivity, care-freeness, activity, liveliness, excitability) from the causal theory [11]. The specific hypotheses which have been tested here, or by the authors named above, are as follows: (1) extraverts will have intercourse earlier than introverts; (2) extraverts will have intercourse more frequently than introverts; (3) extraverts will have intercourse with more different persons per unit time; (4) extraverts will have intercourse in more diverse positions than introverts; (5) extraverts will indulge in more varied sexual behaviour outside intercourse (so-called perversions). These predictions can be made (and have been made) for both male and female subjects, but it may be surmised (on grounds of common social knowledge, and not as a derivation from the general system of personality description in question) that predictions 4 and 5 might apply more directly to men than to women, i.e. give rise to higher correlations in male than in female samples, for the simple reason that men tend to determine more directly than women the form of sexual behaviour to be indulged in.[†]

The predictions mentioned above can be derived along more than one chain of deduction. It has been argued that extraverts are "stimulus hungry" because their

^{*} From the Dept. of Psychology, Institute of Psychiatry, De Crespigny Park, London SE5. † In addition to the study of sexual behaviour, it is of course also possible to study attitudes to sexual problems; this has been done in work reported elsewhere [15, 16, 17, 18, 18a]. These studies are complementary to the one reported here, and lend support to the main conclusions.

low cortical arousal raises their sensory thresholds, so that stronger stimuli are required to produce the same effect in them as weaker stimuli do in introverts [10]; a survey of the available experimental literature on this point is given in this reference. It has been argued that extraverts show more pronounced alternation behaviour because their lower arousal produces quicker habituation [10]; this would lead to quicker change in sex partners, and in position attempted during intercourse. It has been argued that the formation of socially approved forms of conduct is mediated by Pavlovian conditioning, and that extraverts are less easily conditioned, thus *certeris paribus* demonstrating less socialized conduct [12, 19, 20]; this would suggest that extraverts would show less inhibition in so far as socially disapproved sexual forms of conduct are concerned. It is not the purpose of this paper to go into details of the precise ways in which the predictions made are mediated; previous publications have done so in considerable detail. The nature of the predictions made is sufficiently precise to enable other investigators to formulate them accurately [7–9].

Predictions regarding other dimensions of personality are less clear-cut and certain than those associated with E. On the whole one would perhaps expect correlations with N (neuroticism) to be negative where those with E are positive; high N scorers are characterized by a labile autonomic system, and are thus susceptible to fear and anxiety to a degree which may make them less likely to indulge in sexual behaviour, particularly outside the legal bonds of matrimony (all the published material deals essentially with unmarried high school or university students). This view may be strengthened by the frequently suggested relation between psychopathology and sexual difficulties, but in dealing with non-pathological samples such considerations may carry little weight.

Most difficult to assess in this regard is the third dimension of personality tested in this study, namely P (Psychoticism). This variable, and its measurement, has been discussed by Eysenck and Eysenck [21–24]; essentially this factor purports to describe the personality underlying psychoses of all types (approximating perhaps to some degree the "psychotic triad" of the MMPI). Traits such as hostile, impersonal, cruel, play a large part in this factor; details of the items included are given in the papers quoted above. Prediction is difficult as very little is in fact known about this factor; it seems possible that it may be related to the concept of "impersonal sex", and hence show positive correlations with the sex behaviour variables. However, this is not presented as a prediction derived from a more general psychological theory, but more as a hunch based on several years of experience with high and low P scorers, and their general behaviour.

Complementary to the measurement of personality is the measurement of sexual behaviour, where fortunately we have several well-conceived studies [25–28]. Freund and Costell [29] present a method of direct measurement of sexual response, but we have, like the other authors mentioned, relied on verbal measures; the reliability and validity of these will be discussed presently. The earlier workers relied on samples which were too small to give more than suggestive results, and their studies have been criticised on other grounds by Bentler, whose work is the most extensive and sophisticated. His sample also is none too large, and appears to include both married and unmarried students; this may confuse the issue. Where previous workers used a Guttman scaling technique, he used his own multi-dimensional homogeneity scaling technique. In general outcome, these studies give rather similar results; sexual

behaviour is capable of being scaled, along one single dimension ranging from frequently encountered behaviour, like kissing, to seldom encountered behaviour, like fellatio and cunnilingus. Scales so constructed are highly reliable (K-R 20), even when few items are used; Bentler quotes reliabilities of 0.88 for a 10-item scale, and of 0.95 for a 21-item scale; these are for a cross-validation sample, those for the original sample being even higher. Women give similar results to men, with similar K-R 20 reliabilities. Our own scale has been adapted from Bentler's, and resembles it sufficiently to suggest that it possesses similar scalability and reliability.

The fact that sexual behaviour scales of this type give reasonably high scalability coefficients does not rule out the possibility that there may be certain special affinities between certain groups of behaviours; no proper multiple factor analysis has to our knowledge been carried out on scales of this type. In order to explore this possibility, a principal components type of analysis was carried out on the intercorrelations of the 19 items of the sex behaviour questionnaire, and 3 meaningful factors were extracted, both for the males and the females. This additional information suggests more detailed psychological analysis of human sexual behaviour than would be justified by an undifferentiated scale.

METHOD

Subjects

Volunteer unmarried male and female students were approached by notices put up in suitable places, with the permission of the Provost or other responsible person, inviting them to take part in a questionnaire study of sexual attitudes and habits. Absolute anonymity was guaranteed. Students were given a "pep talk" in groups ranging from small to large, emphasising the scientific nature and importance of the study, and requesting their cooperation; to disabuse potential jokers stress was also laid on the length of the questionnaires. These were then handed out to volunteers (almost everyone present did in fact volunteer), together with printed and stamped envelopes; these were to be sent back directly to the writer, together with the completed, unsigned, inventories. The project generated much interest in the universities canvassed, and letters requesting questionnaires arrived from these, and even from other universities and technical colleges, long after the analysis of the data had begun. Altogether 423 male and 379 female students fulfilled the requirements of inclusion (unmarried, between 17 and 24 years of age, all questionnaires scorable). The number of men and women in the various age groups was as follows: 17 yr, 2 and 0; 18 yr, 47 and 54; 19 yr, 103 and 126; 20 yr, 129 and 102; 21 yr, 86 and 63; 22 yr, 28 and 19; 23 yr, 15 and 9; 24 yr, 13 and 6. It is not suggested that this population is a representative sample of British university students; the extent to which conclusions ranging beyond the actual sample tested can be drawn, and to what populations they might apply, will be discussed presently.

Inventories

Three inventories were applied to the subjects. The first of these was the so-called P.I. (Personality Inventory), a 78-item personality questionnaire purporting to measure the three personality dimensions of psychoticism (P), extraversion (E), and neuroticism (N). The items for the measurement of E and N were taken from the MPI and the EPI; those for the measurement of P from Eysenck and Eysenck [24]. The questionnaire, together with key, has been published elsewhere [19, 20]; also given there are the reliabilities, and evidence of its validity. The second inventory was the Sex Behaviour Questionnaire; this is given below as Table 1. Slight changes were made in the female form from the male form here given. The terms "by female" in items 7, 8, 10 and 17 were omitted, and the terms "by male" added after items 3, 4, 6, 9, 12, 13 and 15. Otherwise the male and female inventories were identical. The third inventory administered contained 98 questions relating to his or her attitudes to various sexual problems, practices or beliefs; this inventory will not be discussed here, and forms the subject of another publication.

RESULTS

Sex behaviour questionnaire

The items of the questionnaire shown in Table 1 were intercorrelated (Product-moment) and the resulting matrices factor-analysed, for males and females separately, using principal components

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Table 1.—Here are brief descriptions of sexual behaviour patterns which people indulge in. Indicate by putting a cross (X) in column 1 whether you have ever indulged in this type of behaviour

	(Note: <i>Manual</i> = by hand. <i>Oral</i> = by mouth)	(Column 1) Have done
1	One minute continuous lip kissing	
2	Manual manipulation of male genitals, over clothes, by female	
3	Kissing nipples of female breasts	
4	Oral manipulation of female genitals	
5	Sexual intercourse, face to face	
6	Manual manipulation of female breasts, over clothes	
7	Oral manipulation of male genitals, by female	
8	Manual manipulation of male genitals to ejaculation, by female	·
9	Manual manipulation of female breasts, under clothes	
10	Manual manipulation of male genitals, under clothes, by females	
11	Sexual intercourse, man behind woman	
12	Manual manipulation of female genitals, over clothes	
13	Manual manipulation of female genitals to massive secretions	
14	Mutual oral manipulation of genitals to mutual orgasm	
15	Manual manipulation of female genitals, under clothes	
16	Mutual manual manipulation of genitals	
17	Oral manipulation of male genitals to ejaculation, by female	
18	Mutual manual manipulation of genitals to mutual orgasm	
19	Mutual oral-genital manipulation	<u> </u>

methods and rotating into simple oblique structure by Promax [24a].* For both sexes, 3 latent roots exceeded unity (in order, men first: 8·18 and 9·07; 2·60 and 2·58; 1·30 and 1·33); accordingly, later factors were dropped from the rotation. The resulting factors were correlated; correlations between 1 and 2, 1 and 3 and 2 and 3 were as follows for the two sexes (men first): 0·61 and 0·63; 0·46 and 0·38; 0·22 and 0·55. The only suggestive difference is that relating factors 2 and 3; this relationship is much closer for women.

Detailed results of the analysis are given in Table 2. This shows, under the headings: Factor Loadings, the loadings of the 19 items on the 3 factors for males and females separately. The two patterns of loadings are reasonably similar, and the 3 factors clearly interpretable. Factor 1 has high loadings on items relating to petting (kissing, manipulation of female breast over or under clothes, kissing nipples of female breast). Factor 2 has high loadings on items related to intercourse and manual manipulation of sexual organs, such as would be unavoidably part of intercourse. Factor 3 has high loadings on items related to oral manipulation of partner's sexual organs (fellatio and cunnilingus). For the sake of convenience, we may perhaps speak of these factors in terms of petting, intercourse and perversion, if these customary terms be permitted.

There are certain differences in the loadings as we go from the men to the women. Item 13 has a high loading on Factor 1 for women, on Factor 2 for men; 12 and 15 follow a similar pattern. This would suggest that manipulation of the female genitals constitutes part of the "petting" pattern for females, but not for males. Item 3, on Factor 2, suggests the same conclusion (kissing nipples of female breasts); here too, an item which to the female suggests petting goes with the intercourse

* The use of the phi coefficient in connection with factor analysis has been criticized because it is affected by the marginal proportions to such an extent that its maximum possible value is restricted where proportions vary from one another; this particular phenomenon has been thought to be responsible for the introduction of spurious "difficulty" factors [30 32]. Tetrachoric coefficients and a corrected phi coefficient (phi/phi max.) have often been preferred. The whole problem has been examined empirically by Comrey and Levonian [33]; they state that "it seems reasonable to conclude that the phi coefficient is the method of choice in point correlation work where factor analysis is to follow. This thesis is strengthened by the fact that the number of significant centroid factors obtained is at least as great with phi-over-phi-max and tetrachoric r as with phi. Hence, if spurious factors exist with factor analysis of phi coefficients, they may be no less evident with phi-over-phi-max or tetrachoric coefficient." (p. 753.) Phi coefficients resulted in analyses relatively free of excessively high communalities encountered when using the other two types of coefficients. It may be concluded that the use of phi coefficients in this study is not contraindicated by the best available opinion.

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[tem		Ц	2	E L	Σ	ц >	ਸ 2	L L	Facto	r loading	s (M) 3	Facto	r loading 2	55 (F) 3	Percentage sc of normal cu M	ores in terms irve deviate: F
	TAT	-		-	m	-		•	-	1	,		1			
-	00-0	0-08	0-23	0.20	- 0-08	0-08	-0.03	0.12	0-94	-0.19	0-03	0-59	0.02	-0.08	-1.60(19)	-1-41 (19)
7	0.01	0.17	0.23	0.18	-0.14	0.04	0·11	0-21	0.05	0.85	-0.08	0-08	0·85	-0.06	-0.54 (13)	$-0.37(11\frac{1}{2})$
l m	-0.01	0.10	0.19	0·18	-0.15	0.04	0.10	0.18	0.41	0.48	0.02	0.84	0·11	-0.02	-0.86 (16)	0-47 (14)
4	0.02	0.10	0.11	0.11	-0.03	-0.02	0.20	0.20	0.07	0.08	0.71	0-44	-0.05	0.55	0-41 (6)	0·26 (7)
ŝ	0.12	0.25	0.25	0.16	-0.07	0.04	0.14	0.29	0.27	0.35	0.21	-0.02	0.48	0.37	-0.48 (11)	0·14 (8)
9	0.02	0.06	0.30	0·15	-0.13	0.04	-0.01	0-06	0-97	-0.09	0.02	1.05	-0.28	-0.01	—1·37 (18)	—0·84 (18)
7	0.14	0.14	0.12	0.12	-0.04	-0.02	0.17	0.28	-0.01	0.21	0-68	0.02	0.17	0.75	0.44 (5)	0.44 (6)
8	0.00	0.19	0·18	0-21	-0.20	0.07	0-11	0-28	0-21	0.86	0.07	-0.04	0·88	0-01	-0.05 (8)	-0·13 (10)
6	0.04	0.08	0.32	0·13	-0.12	0.04	0.02	0.10	0.88	0.07	-0.00	66-0	60-0	-0·03	-1.23 (17)	-0-63 (17)
10	0.05	0.16	0.18	0.22	-0.10	0.04	0.12	0.32	0-05	0·81	-0.02	0.15	0.88	-0.10	-0·48 (11)	-0:49 (15)
11	0.04	0.17	0.11	0-11	-0.04	-0.03	0.26	0.24	0.10	-0.02	0.64	0-01	0·11	0.65	0·82 (4)	0-76 (4)
12	0.08	0.08	0.29	0.17	-0.16	00.0	60·0	0.11	0-41	0-47	-0.04	0.85	0.08	-0.05	0.69 (14)	-0.53 (16)
13	60·0	0·13	0.18	0.14	-0.09	-0.02	0.12	0.14	10-0	0.72	00.0-	0-45	0.25	0.19	-0·32 (9)	0.10 (9)
14	0.08	0.08	0.14	0.07	-0.04	-0.04	0.10	0.16	-0.03	-0.10	0·76	-0.14	-0.10	0.77	1:44 (1)	1.60(1)
15	0-03	0.12	0-25	0·15	-0.12	0-03	0·11	0·14	0-28	0-72	0.12	0.76	0.24	-0.04	-0-79 (15)	0:44 (13)
16	0.03	0·14	0.23	0.20	-0.08	0.01	0.15	0.31	0-04	0.82	-0.01	0-08	0.91	-0.06	-0.48 (11)	-0·37 (11 ¹ / ₂)
17	0.12	0.16	0.17	0·18	-0.01	-0.05	0.08	0.19	-0.07	0·0	0-74	-0-06	-0.07	0-87	0-91 (3)	1.01 (2)
18	0.03	0-04	0.16	0.18	-0.13	-0.01	0.16	0·12	-0.30	0.79	0.10	-0.25	0.77	0.11	0.21 (7)	0.47 (5)
19	0·0	0·12	0·13	0.10	-0.03	-0.02	0.15	0·21	0.03	-0.10	0·89	-0-01	0-01	0.85	0.95 (2)	0·82 (3)
Sig	nificant a nificant a	t 5% t 1% k	evel: (svel: 0)-10.												

TABLE 2

factor for men. It would be unwise to read too much into these not very pronounced divergencies; if similar results were to be discovered on repetition of the study with other samples it might be worth while to follow up this observation. No differences appear with respect to Factor 3.

It seemed worth while to pursue this matter just one step further. Percentage "yes" answers to each of the 19 items for the 19- and 20-yr-old men and women were turned into normal curve deviates in order to make possible a comparison on a meaningful basis; these two year groups were chosen as they contain a majority of subjects, and yet are relatively homogeneous with respect to age. The results are shown in the last two columns of Table 2; given in brackets are the relative positions of each item, in order from least frequent (1) to most frequent (19). The orders resulting from this are inherently meaningful, on the basis of regarding this as a scale of sexual experience; position 19 is occupied for both sexes by kissing, position 1 by "soixante neuf" (combined fellatio and cunnilingus). On these scales, items 3, 12, 13 and 15 do not show any exceptionally large differences as compared with other items; nor do the males appear to regard them as indicative of greater experience. (These figures are relative of course and do not show, as the percentage figures do, that females in almost every case have lower frequencies of each type of behaviour.) These results do not suggest any obvious answer to the problems raised in the preceding paragraph.

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The first 8 columns in Table 2 give the correlations, for males and females separately, of P, E, N and Age with the 19 items of the Sex Behaviour Questionnaire. Correlations of 0.10 are statistically significant at the 5% level, correlations of 0.13 at the 1% level; only two-tailed tests are used in this paper. Before discussing the 3 personality variables, it may be worth while to look at age as a factor; this has not been partialled out as it does not correlate with P, E or N within the narrow range of ages here sampled. It does, however, correlate with sexual experience; as one might have expected, all the correlations (with two trivial exceptions) are positive, and the tendency is clearly for females to have rather higher values than males. The highest values, for both sexes, are with items loading on factors 2 and 3; correlations of age with factor 1 items are uniformly low, or even negative. Petting, in these groups, is probably so universal even at 17–18 that there is little increase; it is the more serious items in factors 2 and 3 which show such an increase. Even so, the values are perhaps somewhat lower than one might have expected; age never seems to account for more than 10% of the variance.

Correlations with P are almost uniformly positive; high P scorers have more experience in all forms of sexual conduct. Figures are pretty uniformly higher for females than for males; the most notable difference is in connection with item 5 (intercourse), where the correlations are 0.12 and 0.25. Correlations are highest, for both sexes, in connection with items loading on factors 2 and 3; they are insignificant for items loading factor 1. Hence P influences sexual conduct only when this is going beyond simple petting; in terms of our theory it seems possible that petting involves a less impersonal element of interaction, although this hypothesis may be quite beside the point. The variance contributed by this dimension of personality is not high, but it should be remembered that the distribution of P scores is rather J-shaped, with very few students having high scores; this would tend to lead to an underestimation of the importance of P.

Correlations with E, as predicted, are all positive, and, as also predicted, are higher for males than for females as far as the majority of items are concerned. Particularly large differences are observed in relation to items 5, 6, 9, 12, 14 and 15; slight inversions of the general rule occur with a few items. The "perversion" factor items on the whole tend to have lower correlations with E, although still positive; petting, intercourse and manual manipulation of partner's sexual parts tend to give higher correlations. It is not clear why this should be so; possibly the small number of subjects who indulged in "perverted" practices of this kind is responsible for the observed facts.

Correlations with N, as predicted (although without much confidence) tend to be negative---uniformly so for the men, less so for the women. In addition, the correlations for the men tend to be bigger than those for the women. This again is understandable in terms of the more active role which the male traditionally assumes in this field; the high-N male may have difficulties in initiating sexual meetings and practices, while the high-N female may have less difficulties in simply responding. Indeed, she may have some difficulties in not responding---to react in a negative fashion may require anxiety-provoking self-assertion and independence! The general run of the correlations is not high; they tend to be intermediate between those for P and those for E, perhaps somewhat nearer the former than the latter.

Proportional indulgence in intercourse

We have given in Table 2 the *relative* figures, in terms of normal curve deviates, for the frequencies of different types of behaviour in males and females; Table 3 gives the actual percentages for four age groups (those containing sufficient numbers to make this worthwhile), and for 9 items on the

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scale which are roughly equally spaced from most to least frequent. These figures may be of some interest in comparison with those published by others [7, 9, 34, 35] concerning other countries and other social groups. They bear out previous findings that women tend to have proportionately less experience than males, although for the older females this is not true at the bottom end (items 11, 19 and 14); however, the numbers in these categories are of course deceptively small.

		Ma	ales			Fen	nales	
Item	18	19	20	21	18	19	20	21
1	96	94	95	93	80	91	93	92
6	96	92	91	92	69	78	82	79
12	83	73	78	85	44	67	73	71
16	62	66	71	83	30	61	68	78
8	53	49	55	58	28	50	60	65
18	30	41	42	48	17	30	34	43
11	9	15	26	21	4	19	26	30
19	13	16	18	19	9	17	24	27
14	9	10	5	14	2	6	5	13

TABLE 3.—PERCENT OF MALE AND FEMALE STUDENTS OF DIFFERENT AGES WHO HAVE PARTICIPATED IN CERTAIN TYPES OF SEXUAL ACTIVITY

Table 4 gives a direct comparison of some of our findings with those reported by Schofield [7]. The reason for making this comparison is discussed in detail in the next section; it relates to the assessment of the representative nature of our sample. The Schofield study contains what is undoubtedly the most carefully chosen and tested sample of 18-yr-olds in the literature; in addition very great care was taken in interviewing the high school adolescents in question. It seemed desirable to discover to what extent our 18-yr-old students resembled the members of this sample; excessive departures from the figures reported by him might lead one to suspect that response to our appeal for volunteers had not been unbiassed. Of course the very fact that our sample was made up of students, mostly not living at home, while his was made up of school boys and girls, nearly all living at home, would lead one to expect somewhat higher figures for our sample. This is clearly true for the males, but not for the females; possibly females who enter university are more introverted and studious than those who do not. The same argument may not apply so strongly to males, in view of the fact that going on to higher education is still much less frequent among girls than among boys, with a consequent higher selection ratio for the latter. But on the whole, figures agree reasonably well with each other; figures for intercourse, for instance, are almost identical for the girls in the two samples. (The figures for the Schofield study were derived from his Figs. 3/1 and 3/2, and may be in error by 1, or at most $2\frac{6}{2}$).

TABLE 4.—PERCENT OF 18-YR-OLD BOYS AND GIRLS IN SCHOFIELD SAMPLE, AND 18-YR-OLD STUDENTS IN PRESENT SAMPLE, WHO INDULGED IN 4 MAIN TYPES OF SEXUAL ACTIVITY

		Boys (%)	Students (%)	Girls (%)	Students (%)
1	Kissing	93	96	96	80
2	Breast manipulation				
	Over clotĥes	80	96	80	69
	Under clothes	70	91	62	57
3	Manual genital stimulation				
	Active	56	72	30	30
	Passive	44	64	45	39
4	Intercourse	35	55	18	19

How do our rates for intercourse compare with other studies? Elias [34] summarizes American studies by saying that "in the college male samples, approximately two-thirds have experienced premarital coitus, while the females have had this experience in only about one-third of the cases." This is not very different from Kinsey's [36, 37] original figures, and throws some doubt on the reality of the "permissive society". Giese and Schmidt [9] mention figures of 41 and 39% (men and women) for unmarried German students 20 or 21 years of age; these rise to 56 and 48% among all students, including the older ones. German students seem to have achieved greater equality for men and women than American or British ones! Our own figures for the 20- and 21-yr-olds are 72 and 52%, but for the whole sample they would of course be lower, and resemble the two-thirds and one-third mentioned by Elias. (The actual figures are not given as they are pretty meaningless considering that the proportion of students in each age category was entirely fortuitious, and not representative; no figures for the British student population broken down by age are available to make a more meaningful comparison possible.)

DISCUSSION

Interpretation of the data presented depends of course on two factors which are not easily susceptible to non-inferential proof. Unless our sample was reasonably representative, and unless most subjects told the truth, no conclusions of any value can be drawn. To support our belief that both assumptions are on the whole justified, we must rely on circumstantial evidence. Let us first consider sampling: to what extent is our sample representative of British students, or of British youths in general? Discussion of this problem must begin with a consideration of our central question, i.e. the relation between personality and sexual behaviour. Correlations are much less subject to sampling errors than are means, provided that variances are reasonably large (compared with the population), and there are no special selective factors which would have led the investigator to choose his sample in such a way as to destroy the true relationship between variables. Thus it would not matter much if our sample had more pre-marital sex experience, or was more extraverted, than the population in question; it would matter, however, if our sample was biased in both directions simultaneously, and with a tendency for the more extraverted and less experienced, or the less extraverted and more experienced, to be selected. Even intentionally such a double selection against the grain would be difficult to achieve; although not impossible, we do not consider it likely that this has happened in our study.

This leaves us with the question of means and variances. We have already shown that with respect to sexual experience our sample is similar to other samples, some of which have been chosen with the most careful attention to all requisite variables (e.g. Schofield, [7]). What is the position with respect to the personality variables? Groups of 500 men and 250 women, constituting a random sample of the general population are available for comparison; in previous work we have found (Eysenck and Eysenck, [24]) that students differ from the general population by having somewhat higher N scores and somewhat lower E scores. Table 5 gives the means for the various groups; variances are almost identical in each case. It is clear that differences between our sample and the general population are small, and are in the usual direction; there is no evidence in these figures that our sample has been unduly biased with respect to personality. This finding agrees well with Waters and Kirk [36], who found little difference between volunteers and non-volunteers for psychological experiments. (Their review shows that while many investigators find the same, others do not; clearly the question is too wide to be answered in any general form.) We may conclude that our sample does not deviate to any very noticeable extent from the general student or even population mean (of the age in question) with respect to the sex behaviour or the personality variables which constitute our correlation parameters; we would suggest that our findings are likely to be in the right direction, although the precise numerical values are of course subject to adjustment when larger and better selected samples are tested.

	Ma	ules	Fem	ales
	Our sample	Population	Our sample	Population
P	4.36	4.56	2.42	2.95
Ε	12.28	12.35	11.25	11.58
Ν	11.24	9.97	12.79	12.02

Table 5.—Means of P, E and N scales in our samples and in general population samples

Did our subjects tell the truth? In principle this question is not capable of a definitive answer; all that can be done is to put forward a number of considerations which suggest that they did. (1) The inventories were lengthy, complex, and took a long time to fill in conscientiously; under the conditions of anonymity prevailing it seems unlikely that any jokers would have deliberately (for what purpose?) falsified his statements. Checks were incorporated in the inventories, by asking the same question twice in somewhat disguised form; e.g. item 5 in the Sex Behaviour Questionnaire, regarding coitus, was duplicated in the Sex Attitudes Questionnaire in the form: At what age did you have your first intercourse? These checks did not disclose any obvious attempts to deceive, and it would have taken a joker quite some time to work out all the possible traps, and avoid them. (2) Many respondents took the occasion to write in comments which indicated how seriously they took the whole thing, and how keen they were not to be misunderstood. Thus many girls who admitted to having had sexual intercourse wrote to say: "Only with my fiancé!" or "But not promiscuously". Several respondents included lengthy accounts of experiences or attitudes, indicating their sincere interest. (3) Student friends and younger staff members at some of the colleges used were asked to listen for comments regarding the investigation, particularly with respect to claims to have "fooled" the investigators; they found nothing but genuine interest and a desire to cooperate. These points cannot provide definitive proof, but they suggest to us that if there were any conscious falsifications of fact, they were very much in the minority.

More important, scientifically, is perhaps another line of proof. If high E scorers are more active sexually, and are so earlier, then one would expect them to, (1) have more illegitimate babies, and (2) to report more frequently to a V.D. clinic, as a result of casual contacts. Eysenck [37] has reported results supporting the former deduction, and Wells [38] the latter; here we would seem to have some evidence for actual sexual activity, as opposed to verbal reports of such activity. This proof, too, is of course only partial; it could be argued that even with equal exposure extraverts might be more careless, and consequently acquire extra-martial pregnancies and V.D.

A third line of proof, and in our opinion the most important, relies on the fact that correlations discovered are actually predicted from theory, and form part of a nomological network. Regarded as simple inductive findings our results are certainly not too impressive; to look upon them from this point of view, however, would not be correct. The results reported form part of a chain of deduction from certain premises which have by now received strong experimental support (Eysenck [10]); some deductions such as that introverts have lower sensory thresholds, or show less alternation behaviour, than extraverts, are of a similar nature to the deductions here tested (and indeed very relevant to them), but can be tested in the laboratory. The fact that such laboratory studies support the general theory must lend support to the inherently less conclusive evidence here presented in a more social field. All this of course only tends to support our contention that the results reported are meaningful; it is not claimed that these arguments are conclusive.

It is also relevant, perhaps, to point out that other studies have resulted in similar findings. Schofield [7] and Bynner [8] have published evidence which is somewhat indirect, as they did not use personality questionnaires, but relied largely on social attitude inventories. Using Eysenck's [39] hypothesis linking E and tough-mindedness, they discovered a factor very similar to tough-mindedness in their data, and also discovered that this factor was related to overt sexual behaviour; Bynner in addition used some personality items relating to the topic of "having a good time" which resemble E items from the E.P.I., and which had high loadings on tough-mindedness. The conclusions of these two writers are tentative, but broadly in support of our thesis. The tentative nature of this support is due almost entirely to their failure in not using a personality inventory appropriate to their sample.

The most relevant study we have been able to locate is that by Giese and Schmidt [9]; it is also the most extensive. Dealing with some 6000 German students (not all of whom entered into every table, as some were married and have not been included in the figures here quoted), they administered a lengthy and thorough sex behaviour inventory, as well as a short personality scale purporting to measure E and N. Their findings are reported in terms of percent claiming to take part in various activities, subdivided into high E or N, average, and low E or N, with something like 60% in the average group in each case. Figures for N do not reveal very much except that high N scorers masturbate more frequently, have greater desire for coitus, rate their libido as stronger, and claim to have spontaneous erections more frequently. So much for the males; among females high N scorers claim to have less frequent orgasm and to have stronger menstrual pains. Actual behaviour (coitus vs. no coitus) is not significantly related to N in this study.

As regards *E*, high scorers (both men and women) masturbate less, pet to orgasm more, have coitus more frequently, have coitus earlier, adopt more different positions in coitus, indulge in longer pre-coital love play (men only), and practice fellatio and cunnilingus more frequently. Some of the actual figures may be of some interest; leaving out the average group, we are here contrasting introverts and extraverts only. For coitus, the percentage figures are 47% and 77% (men) and 42% and 71% (women). Frequency of coitus is 3.0 and 5.5 (men) and 3.1 and 7.5 (women). More than 4 different coital positions are claimed by 7% and 25% (men), and 4% and 17% (women) respectively. Relevant to our hypothesis regarding earlier intercourse in extraverts are figures for coitus by age 17 and 19. For the former, percentages are 5% and 21% (men) and 4% and 8% (women); for the latter, 15% and 45% (men) and 12% and 29% (women). These figures agree very well with our own, in so far as similar questions are being asked, and they support strongly the hypotheses stated at the beginning of this paper. Giese and Schmidt [9] also found, as had Eysenck [40], that extraverts smoked and drank more than introverts; this too is in line with theory.

Some of our findings and hypotheses would appear to have a bearing on psychiatric theories. According to Eysenck's interpretation of Jung's theory, dysthymics would be expected to have high N scores and low E scores (neurotic introverts), while hysterics would be expected to have high N sources and also high E scores (neurotic extraverts); there is some support for these views [11, 41]. Our empirical results, as well as our theoretical anticipations, would lead us to believe that the combination of high N and

low E in the dysthymic would result in an exceptionally strong blocking of the sexual impulses, and clinical testimony to this effect is not lacking. According to Slater and Roth [42], "sexual coolness and frigidity is found in a high proportion of instances" in cases of anxiety (p. 90), and conversely, "men of very weak libido tend to . . . be more subject than others to neurotic illness" (p. 161.) It is, however, in the case of hysterics that we would expect rather more interesting and in fact contradictory behaviour patterns; their high E component would make them react positively to sexual situations, while their high N component would make them react negatively. This conflict is well expressed in Lewis's phrase characterising hysterics as "coquettish and frigid" [43] and Chodoff and Lyons [44] mention both the "lasciviousness, sexualization of all non-sexual relations, coquetry and provocativeness" of the hysteric, as well as his "sexual frigidity, intense fear of sexuality and failure of the sex impulse to develop toward its goal". O'Neill and Kempler [45] have published an experimental study which makes use of the concept of approach-avoidance conflict; this fits in well with our scheme. The N component raises the avoidance gradient above average, and the E component raises the approach gradient above average; it follows from the general theory of approach-avoidance conflict that this should be exacerbated. Experimental work along these lines would be of obvious interest and importance. We may conclude that our findings do not contradict psychiatric experience, and that the theory which suggested this research may be useful in accounting for these psychiatric observations.

SUMMARY

Four-hundred and twenty three male and 379 female unmarried students were administered a questionnaire regarding their sexual behaviour, as well as a personality inventory purporting to measure psychoticism (P), extraversion (E) and neuroticism (N). A factor analysis was performed on the responses to the nincteen questionnaire items, and three non-orthogonal factors extracted (labelled petting, intercourse and perversions). Scores on all three personality scales were found to intercorrelate significantly and in predictable directions with the sex behaviour items. It is argued that sexual behaviour can in part be understood in terms of more embracing psychological principles, including personality constructs.

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